




MEDICAL CONTROL DIRECTIVE

2023-12

DATE: May 16, 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: Medical Operations Manual (MOM) Volume 1 Revision 

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

Effective Date: 0800 hrs. June 1, 2023

- Pinellas County Medical Operations Manual (MOM) - Effective Dates

Volume	Title	Effective Date
One	Clinical Operations Guidelines (COG) Rev 2023.3 <ul style="list-style-type: none"> ○ Protocol C1 Medical Cardiac Arrest <ul style="list-style-type: none"> ▪ OLMC <ul style="list-style-type: none"> • Lidocaine dosing added ▪ PEARLS <ul style="list-style-type: none"> • Highlighted that early defibrillation is critical • Highlighted two minutes of “priming CPR” is no longer recommended • Added - 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 ▪ REFERENCES <ul style="list-style-type: none"> • Updated 	June 1, 2023

Volume	Title	Effective Date
One (cont.)	<ul style="list-style-type: none"> ○ Protocol C4 Bradycardia <ul style="list-style-type: none"> ▪ ALS <ul style="list-style-type: none"> • Examples of symptoms for Stable - Symptomatic and Unstable added • Atropine dosing increased from 0.5 mg to 1 mg. ▪ OLMC <ul style="list-style-type: none"> • Calcium chloride dosing added ▪ PEARLS <ul style="list-style-type: none"> • Added - Clinically impactful bradycardias are generally at a rate of less than 50 bpm ▪ REFERENCES <ul style="list-style-type: none"> • Updated ○ Protocol C5 Tachycardia <ul style="list-style-type: none"> ▪ ALS <ul style="list-style-type: none"> • Examples of symptoms for Unstable - Wide/Narrow added • Treatment for Stable - Wide Regular Monomorphic changed to “Consult OLMC for antiarrhythmic choice” • Max dose of Diltiazem increased from 20 mg to 25 mg for Stable - Narrow Regular History of atrial fibrillation and Irregular ▪ OLMC <ul style="list-style-type: none"> • Antiarrhythmic options added for Stable Wide Regular Monomorphic Tachycardia ○ Protocol F11 Epinephrine <ul style="list-style-type: none"> ▪ Contraindications <ul style="list-style-type: none"> • Removed cardiogenic shock 	June 1, 2023

Attachments:

- C1 Medical Cardiac Arrest
- C4 Bradycardia
- C5 Tachycardia
- F11 Epinephrine

Distribution:

- EMSChiefs e-mail distribution group
- Vector Solutions
- Pinellas County EMS Office of the Medical Director Webpage www.pcemso.md.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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Ensure BLS resuscitation steps are completed • Secure airway and establish vascular access per Compression Performance Resuscitation procedure (Ref. CP9.1, CT3) • Defibrillate at 150_J as indicated for ventricular fibrillation or pulseless ventricular tachycardia <ul style="list-style-type: none"> ○ 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: <ul style="list-style-type: none"> ○ Asystole/Pulseless Electrical Activity: <ul style="list-style-type: none"> ▪ 1 mg epinephrine (0.1 mg/mL concentration) intravenous/intraosseous every 3 - 5 minutes. Maximum 3 doses ○ Ventricular Fibrillation/Pulseless Ventricular Tachycardia: <ul style="list-style-type: none"> ▪ 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

C1 MEDICAL CARDIAC ARREST

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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://nasmso.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 <i>(Ped. Ref. P6)</i>	GOALS OF CARE
Identification and treatment of brady-dysrhythmias	

BLS
<ul style="list-style-type: none"> Obtain baseline and repeat vital signs If the patient has evidence of dyspnea, apply supplemental O2 Shock position as required

ALS
<ul style="list-style-type: none"> Establish vascular access Assess cardiac rhythm and treat as follows:

Stable - Asymptomatic	Stable - Symptomatic <i>(e.g., lightheadedness, weakness, nausea, palpitations, etc.)</i>	Unstable <i>(e.g., chest pain, altered mental status, shortness of breath, hypotension, etc.)</i>
<p>Obtain 12 lead ECG to assess for ischemia or other abnormalities</p>	<p>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</p>	<p>Initiate transcutaneous pacing (Ref. CP14)</p> <p style="text-align: center;">And</p> <p>May give atropine 1 mg intravenous/intraosseous while preparing to pace, but DO NOT DELAY PACING!</p>
<p>Consider underlying causes</p>	<p>Obtain 12 lead ECG to assess for ischemia or other abnormalities</p>	<ul style="list-style-type: none"> ○ Midazolam: <ul style="list-style-type: none"> ▪ First Dose: <ul style="list-style-type: none"> • 2.5 mg intravenous/intramuscular OR 5 mg intranasal (2.5 mg per nare) ▪ Second Dose (if required after 3 - 5 min): <ul style="list-style-type: none"> • 2.5 mg intravenous/intramuscular or 5 mg intranasal (2.5 mg per nare)

C4 - BRADYCARDIA

C4 BRADYCARDIA

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
<ul style="list-style-type: none"> 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	<ol style="list-style-type: none"> Modified Valsalva Maneuver (Ref. CP30) Adenosine 6 mg rapid intravenous push Adenosine 12 mg rapid intravenous push 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)

C5 TACHYCARDIA (WIDE/NARROW)

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://naseonso.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	<ul style="list-style-type: none"> • 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/	

F11 - EPINEPHRINE