



COUNTY OF SAN LUIS OBISPO HEALTH AGENCY  
PUBLIC HEALTH DEPARTMENT

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County of SLO Emergency Medical Services Agency

Bulletin 2019 - 2

**PLEASE POST**

May 8<sup>th</sup>, 2019

**Push-Dose Epinephrine - Required ALS Training and Rollout (review before June 1<sup>st</sup>)**

A review of current practices in prehospital medicine across California, as well as common practices in many areas of critical care, has led the EMS Agency to move toward the prehospital use of Push-Dose (PD) Epinephrine for vasopressor therapy, and a move away from the use of traditional dopamine.

PD Epinephrine has been used for years in critical care medicine, and anesthesia, and has been increasingly used in recent years by more and more emergency medicine practitioners. Over half of local EMS Agencies in California have moved towards the use of epinephrine over dopamine. Local adoption of PD Epinephrine is expected to improve both clinical and operational elements of prehospital care.

This change has resulted in updates to the following protocols (attached):

#619 Shock (Medical)

#641 Cardiac Arrest

#644 Bradycardia

#660 General Trauma

Push-Dose Epinephrine Formulary

These updated protocols will go into effect on **June 1<sup>st</sup>**. Stocking of dopamine will become optional based upon current stock available medication. Provider agencies will not be expected to purchase any more supply of dopamine, and dopamine will be phased out from the field in the near future.

A short training presentation will be provided to your agency training coordinators and must be reviewed (along with the attached protocols and drug formulary) by all accredited paramedics before **June 1<sup>st</sup>**.

Please take note, the protocols referenced above will not be updated in the current EMS iPhone app until the EMS Agency is able to produce an updated version in the near future. In the meantime, updated protocols will be available via a link directly from the EMS Agency's homepage at [www.sloemsa.org](http://www.sloemsa.org) starting **June 1<sup>st</sup>**.

Please direct any questions to EMS Coordinator Douglas Brim at [dbrim@co.slo.ca.us](mailto:dbrim@co.slo.ca.us)

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[www.slopublichealth.org](http://www.slopublichealth.org)

<b>SHOCK (MEDICAL) - HYPOTENSION/SEPSIS</b>	
<b>ADULT</b>	<b>PEDIATRIC (≤34KG)</b>
<b>BLS</b>	
<ul style="list-style-type: none"> <li>• Universal Protocol #601</li> <li>• Pulse Oximetry                             <ul style="list-style-type: none"> <li>○ O<sub>2</sub> administration per Airway Management Protocol #602</li> </ul> </li> <li>• Place in supine position if tolerated</li> </ul>	<p>Same as Adult</p>
<b>ALS Standing Orders</b>	
<p><b>SBP &lt; 100 mmHg or other signs of hypotension</b></p> <ul style="list-style-type: none"> <li>• <b>Normal Saline</b> up to 500 mL IV                             <ul style="list-style-type: none"> <li>○ repeat x1 if hypotension persists</li> </ul> </li> <li>• Consider establishing secondary IV access</li> <li>• Consider 12-lead ECG</li> <li>• If shock is due to trauma refer to General Trauma Protocol #660</li> </ul>	<p><b>Signs of hypotension specific to age – see Universal Protocol #601 Attachment A</b></p> <ul style="list-style-type: none"> <li>• <b>Normal Saline</b> 20 mL/kg IV/IO                             <ul style="list-style-type: none"> <li>○ repeat x1 if hypotension persists</li> </ul> </li> <li>• Consider establishing secondary IV access</li> <li>• If shock is due to trauma refer to General Trauma Protocol #660</li> </ul>
<b>Base Hospital Orders Only</b>	
<p style="text-align: center;"><b>Non-Hypovolemic Shock</b></p> <ul style="list-style-type: none"> <li>• <b>Dopamine 5-20 mcg/kg/min IV/IO infusion</b></li> <li style="text-align: center;"><b>OR</b></li> <li>• <b>Push-Dose Epinephrine 10 mcg/mL</b>                              1 mL IV/IO every 1-3 min                             <ul style="list-style-type: none"> <li>○ repeat as needed to maintain SBP &gt;90mmHg</li> <li>○ See notes for mixing instructions</li> </ul> </li> <li>• As needed</li> </ul>	<ul style="list-style-type: none"> <li>• As needed</li> </ul>
<b>Notes</b>	
<ul style="list-style-type: none"> <li>• <b>Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000): Mix 9 mL of Normal Saline with 1 mL of Cardiac Epinephrine 1:10,000 (0.1 mg/mL), mix well</b></li> <li>• Consider underlying causes of shock</li> <li>• Use caution with fluid challenges if signs of CHF or history of liver or renal failure</li> <li>• Keep patient warm</li> <li>• Treatable/Reversible considerations:                             <ul style="list-style-type: none"> <li>○ Hypoxemia</li> <li>○ Tachycardia</li> <li>○ Bradycardia</li> <li>○ Hyper/Hypothermia</li> <li>○ Hypovolemia</li> <li>○ Altered mental status</li> <li>○ Fractures/Bleeding/Tension pneumothorax</li> <li>○ Anaphylaxis</li> <li>○ Chest pain</li> <li>○ Overdose</li> </ul> </li> </ul>	

<b>PULSELESS CARDIAC ARREST (ATRAUMATIC)</b>	
<b>ADULT</b>	<b>PEDIATRIC (≤34 kg)</b>
<b>BLS</b>	
<ul style="list-style-type: none"> <li>• Universal Protocol #601</li> <li>• High Performance CPR (HPCPR) (10:1) per Procedure #712                             <ul style="list-style-type: none"> <li>○ Continuous compressions with 1 short breath every 10</li> </ul> </li> <li>• AED application (if shock advised, administer 30 compressions prior to shocking)</li> <li>• Pulse Oximetry                             <ul style="list-style-type: none"> <li>○ O<sub>2</sub> administration per Airway Management Protocol #602</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Same as Adult (except for neonate)</li> <li>• Neonate (&lt; 1 month) follow AHA guidelines</li> <li>• CPR compression to ventilation ratio                             <ul style="list-style-type: none"> <li>○ Newborn – CPR 3:1</li> <li>○ 1 day to 1 month – CPR 15:2</li> <li>○ &gt; 1 month – HPCPR 10:1</li> </ul> </li> <li>• AED – pediatric patient &gt; 1 year</li> <li>• Use Broselow tape or equivalent if available</li> </ul>
<b>ALS Standing Orders</b>	
<ul style="list-style-type: none"> <li>• <b>Rhythm analysis and shocks</b> – At 200 compressions begin charging the monitor – continue CPR while monitor is charging. Once fully charged, stop CPR for rhythm analysis:                             <ul style="list-style-type: none"> <li>○ V-fib/Pulseless V-tach – shock at 120J</li> <li>○ Subsequent shock at 150J then 200J</li> <li>○ Recurrent V-fib/Pulseless V-tach use last successful shock level</li> <li>○ No shock indicated – dump the charge</li> </ul> </li> <li>• <b>V-fib/Pulseless V-tach</b> – medications                             <ul style="list-style-type: none"> <li>○ <b>Epinephrine 1:10,000</b> 1 mg IV/IO repeat every 3-5 min</li> <li>○ <b>Lidocaine</b> 1.5 mg/kg IV/IO repeat once in 3-5 min (max total dose 3 mg/kg)</li> </ul> </li> <li>• <b>Non-shockable rhythm</b> – medications                             <ul style="list-style-type: none"> <li>○ <b>Epinephrine 1:10,000</b> 1 mg IV/IO repeat every 3-5 min</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Rhythm analysis and shocks</b> – At 200 compressions begin charging the monitor – continue CPR while monitor is charging. Once fully charged, stop CPR for rhythm analysis:                             <ul style="list-style-type: none"> <li>○ V-fib/Pulseless V-tach - shock at 2J/kg</li> <li>○ Subsequent shock at 4J/kg</li> <li>○ Recurrent V-fib/Pulseless V-tach use last successful shock level</li> <li>○ No shock indicated – dump the charge</li> </ul> </li> <li>• <b>V-fib/Pulseless V-tach</b> – medications                             <ul style="list-style-type: none"> <li>○ <b>Epinephrine 1:10,000</b> 0.01 mg/kg (0.1 ml/kg) IV/IO, not to exceed 0.3mg, repeat every 3-5 min</li> <li>○ <b>Lidocaine</b> 1 mg/kg IV/IO repeat every 5 min (max total dose 3 mg/kg)</li> </ul> </li> <li>• <b>Non-shockable rhythm</b> – medications                             <ul style="list-style-type: none"> <li>○ <b>Epinephrine 1:10,000</b> 0.01 mg/kg (0.1 ml/kg) IV/IO, not to exceed 0.3mg, repeat every 3-5 min</li> </ul> </li> </ul>
<b>Base Hospital Orders Only</b>	
<p style="text-align: center;"><b>ROSC with Persistent Hypotension</b></p> <ul style="list-style-type: none"> <li>• <b>Dopamine 5-20 mcg/kg/min IV/IO infusion</b> <b>OR</b></li> <li>• <b>Push-Dose Epinephrine 10 mcg/mL</b> 1 mL IV/IO every 1-3 min                             <ul style="list-style-type: none"> <li>○ repeat as needed to maintain SBP &gt;90mmHg</li> <li>○ See notes for mixing instructions</li> </ul> </li> </ul> <p><b>Contact STEMI Receiving Center (French Hospital)</b></p> <ul style="list-style-type: none"> <li>• Refractory V-Fib or V-Tach not responsive to treatment</li> </ul>	<p>Contact closest Base Hospital for additional orders</p> <p style="text-align: center;"><b>ROSC with Persistent Hypotension for Age</b></p> <ul style="list-style-type: none"> <li>• <b>Dopamine 5-20 mcg/kg/min IV/IO infusion</b> <b>OR</b></li> <li>• <b>Push-Dose Epinephrine 10 mcg/mL</b> 1 mL IV/IO every 1-3 min                             <ul style="list-style-type: none"> <li>○ repeat as needed to maintain SBP &gt;90mmHg</li> <li>○ See notes for mixing instructions</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• As needed</li> </ul>

- Request for a change in destination if patient rearrests en route
- Termination orders when unresponsive to resuscitative measures
- As needed

**Contact appropriate Base Station per Base Station Report Policy #121** - Atraumatic cardiac arrests due to non-cardiac origin (OD, drowning, etc.)

#### Notes

- **Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000): Mix 9 mL of Normal Saline with 1 mL of Cardiac Epinephrine 1:10,000 (0.1 mg/mL), mix well**
- **Use manufacturer recommended energy settings if different from listed**
- **Assess for reversible causes**
  - Tension PTX, hypoxia, hypovolemia, hypothermia, hyperkalemia, hypoglycemia, overdose
- **Vascular access** – IV preferred over IO – continue vascular access attempts even if IO access established
- **Oral Intubation (Adults)** – Consider only if airway is not compliant or with maintained ROSC
- **Adult ROSC that is maintained:**
  - Obtain 12-lead ECG and vital signs
  - Transport to the nearest STEMI Receiving Center *regardless of 12-lead ECG reading*
  - Maintain O<sub>2</sub> Sat ≥ 94%
  - Monitor ETCO<sub>2</sub>
  - Consider oral intubation
  - With BP < 100 mmHg, contact SRC (French Hospital) for fluid, or Push-Dose Epinephrine orders
- **Termination for patients > 34 Kg - Contact SRC (French Hospital) for termination orders**
  - If the patient remains pulseless and apneic following 20 minutes of resuscitative measures
  - Persistent ETCO<sub>2</sub> values < 10mmHg, consider termination of resuscitation
  - Documentation shall include the patient's failure to respond to treatment and of a non-viable cardiac rhythm (copy of rhythm strip)
- **Pediatric patients ≤ 34 kg**
  - Stay on scene to establish vascular access, provide for airway management, and administer the first dose of epinephrine followed by 2 min of HPCPR
  - Emphasize quality CPR rather than immediate transport
  - Evaluate and treat for respiratory causes
  - Use Broselow tape if available
  - Contact and transport to the nearest Base Hospital
  - Receiving Hospital shall provide medical direction/termination for pediatric patients

BRADYCARDIA	
ADULT	PEDIATRIC (≤34KG)
BLS	
<ul style="list-style-type: none"> <li>• Universal Protocol #601</li> <li>• Pulse Oximetry                             <ul style="list-style-type: none"> <li>○ O<sub>2</sub> administration per Airway Management Protocol #602</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Same as Adult</li> </ul>
ALS Standing Orders	
<ul style="list-style-type: none"> <li>• Obtain 12-lead ECG</li> <li>• With STEMI contact STEMI base prior to administration of Atropine unless in extremis</li> </ul> <p style="text-align: center;"><b>Unstable</b></p> <ul style="list-style-type: none"> <li>• <b>Atropine</b> 0.5 mg IV                             <ul style="list-style-type: none"> <li>○ May repeat every 3-5 min (not to exceed 3 mg total)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Obtain 12-lead ECG</li> </ul> <p style="text-align: center;"><b>Unstable</b></p> <ul style="list-style-type: none"> <li>• <b>Epinephrine 1:10,000</b> 0.01 mg/kg (0.1 ml/kg) slow IV not to exceed 0.3 mg per dose                             <ul style="list-style-type: none"> <li>○ May repeat every 3-5 min</li> </ul> </li> </ul>
Base Hospital Orders Only	
<ul style="list-style-type: none"> <li>• <b>Normal Saline</b> fluid bolus 500 mL</li> <li>• <b>Atropine</b> 0.5 mg IV for stable patient or STEMI patient not in extremis</li> <li>• <b>Dopamine</b> 5-20 mcg/kg/min IV/IO infusion</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• <b>Push-Dose Epinephrine 10 mcg/mL</b> 1 mL IV/IO every 1-3 min                             <ul style="list-style-type: none"> <li>○ repeat as needed to maintain SBP &gt;90mmHg</li> <li>○ <u>See notes for mixing instructions</u></li> </ul> </li> </ul> <p style="text-align: center;"><b>Beta Blocker Overdose</b></p> <ul style="list-style-type: none"> <li>• <b>Glucagon</b> 3-10 mg slow IV (when cache available)</li> </ul> <p style="text-align: center;"><b>Calcium Channel Blocker Overdose</b></p> <ul style="list-style-type: none"> <li>• <b>Calcium Chloride</b> 1 Gm slow IV/IO</li> </ul> <p style="text-align: center;"><b>Organophosphate Overdose</b></p> <ul style="list-style-type: none"> <li>• <b>Atropine</b> 2 mg IV/IO/IM repeat as needed</li> </ul> <p style="text-align: center;"><b>Tricyclic Overdose</b> – with wide QRS (&gt;0.1 seconds)</p> <ul style="list-style-type: none"> <li>• <b>Sodium Bicarbonate</b> 1 mEq/kg IV/IO, may repeat every 10 minutes at ½ the initial dose with persistent QRS widening</li> </ul> <p style="text-align: center;"><b>Hyperkalemia</b></p> <ul style="list-style-type: none"> <li>• <b>Calcium Chloride</b> 1 Gm slow IV/IO</li> <li>• <b>Sodium Bicarbonate</b> 1 mEq/kg IV/IO</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Atropine</b> 0.02 mg/kg IV (minimum dose of 0.1 mg and maximum dose of 0.5 mg)                             <ul style="list-style-type: none"> <li>○ May repeat every 3-5 min (not to exceed 1 mg total)</li> </ul> </li> <li>• <b>Normal Saline</b> fluid bolus 20 mL/kg</li> </ul> <p style="text-align: center;"><b>Beta Blocker Overdose</b></p> <ul style="list-style-type: none"> <li>• <b>Glucagon</b> 0.1 mg/kg IV/IM</li> </ul> <p style="text-align: center;"><b>Calcium Channel Blocker Overdose</b></p> <ul style="list-style-type: none"> <li>• <b>Calcium Chloride</b> 20 mg/kg slow IV/IO (maximum single dose of 500 mg)</li> </ul> <p style="text-align: center;"><b>Organophosphate Overdose</b></p> <ul style="list-style-type: none"> <li>• <b>Atropine</b> 0.05-0.1 mg/kg IV/IO/IM</li> </ul> <p><b>Tricyclic Overdose</b> – with signs of QRS widening</p> <ul style="list-style-type: none"> <li>• <b>Sodium Bicarbonate</b> 1 mEq/kg IV/IO, may repeat every 10 minutes at ½ the initial dose with persistent QRS widening</li> </ul> <ul style="list-style-type: none"> <li>• As needed</li> </ul>

- As needed

**Notes**

- **Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000): Mix 9 mL of Normal Saline with 1 mL of Cardiac Epinephrine 1:10,000 (0.1 mg/mL), mix well**
- Atropine in pediatric patients may cause paradoxical bradycardia
- High degree heart blocks (Second degree type II, and Third degree) may respond poorly to Atropine
  - If unstable consider obtaining Base Hospital Orders for Push-Dose Epinephrine instead of Atropine
- Ensure all Calcium Chloride is thoroughly flushed from IV tubing prior to administration of Sodium Bicarbonate
- Higher doses of Atropine may be needed for organophosphate OD

GENERAL TRAUMA	
ADULT	PEDIATRIC (≤34 KG)
<b>BLS</b>	
<ul style="list-style-type: none"> <li>• Universal Protocol #601</li> <li>• Pulse Oximetry                             <ul style="list-style-type: none"> <li>○ O<sub>2</sub> administration per Airway Management Protocol #602</li> </ul> </li> <li>• Assess for injuries meeting Trauma Triage Guidelines Policy #153</li> <li>• Spinal Motion Restriction (SMR) Procedure #702</li> <li>• Tourniquet/Hemorrhage Control Procedure #706</li> <li>• MCI Policy #210</li> <li>• EMS Air Resources Policy #155</li> </ul> <p style="text-align: center;"><b>Unstable</b></p> <ul style="list-style-type: none"> <li>• <u>Communicate if SBP &lt; 90mmHg at ANY time</u></li> </ul> <p><b>Pelvic injury</b> – High-risk mechanism with: pelvic, low back, or groin pain <u>and</u> SBP &lt;90 mmHg</p> <ul style="list-style-type: none"> <li>• <b>Pelvic Binder</b> as indicated per Pelvic Binder Procedure #713</li> </ul>	<p style="text-align: center;">Same as Adult</p> <ul style="list-style-type: none"> <li>• Communicate ANY age specific hypotension see Universal Protocol #601 Attachment A</li> </ul>
<b>ALS Standing Orders</b>	
<p style="text-align: center;"><b>Stable</b></p> <ul style="list-style-type: none"> <li>• Monitor patient</li> </ul> <p style="text-align: center;"><b>Unstable</b></p> <p><b>Hypotension</b> – utilize saline lock with drip set</p> <ul style="list-style-type: none"> <li>• <b>Normal Saline</b> up to 500 mL IV                             <ul style="list-style-type: none"> <li>○ repeat X 1 for SBP of &lt; 90 mmHg or if unable to palpate peripheral pulses</li> <li>○ If hypotension continues – establish a second IV with saline lock</li> </ul> </li> </ul> <p><b>Tension pneumothorax</b> see Needle Thoracostomy Procedure #705</p>	<p style="text-align: center;"><b>Stable</b></p> <ul style="list-style-type: none"> <li>• Monitor patient</li> </ul> <p style="text-align: center;"><b>Unstable</b></p> <p><b>Hypotension</b> – as identified for age group</p> <ul style="list-style-type: none"> <li>• <b>Normal Saline</b> IV/IO 20 mL/kg                             <ul style="list-style-type: none"> <li>○ repeat x1 if no change in SBP</li> </ul> </li> </ul> <p><b>Tension pneumothorax</b> see Needle Thoracostomy Procedure #705</p>
<b>Base Hospital Orders Only</b>	
<ul style="list-style-type: none"> <li>• Additional <b>Normal Saline</b></li> <li>• <b>Neurogenic Shock Refractory to Fluids</b></li> <li>• <b>Dopamine</b> 5-20 mcg/kg/min IV/IO infusion</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• <b>Push-Dose Epinephrine 10 mcg/mL</b> 1 mL IV/IO every 1-3 min                             <ul style="list-style-type: none"> <li>○ repeat as needed to maintain SBP &gt;90mmHg</li> <li>○ See notes for mixing instructions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Additional <b>Normal Saline</b></li> <li>• <b>Neurogenic Shock Refractory to Fluids</b></li> <li>• <b>Dopamine</b> 5-20 mcg/kg/min IV/IO infusion</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• <b>Push-Dose Epinephrine 10 mcg/mL</b> Up to 1 mL IV/IO every 1-3 min                             <ul style="list-style-type: none"> <li>○ repeat as needed to maintain age appropriate SBP</li> <li>○ See notes for mixing instructions</li> </ul> </li> </ul>

• As needed	• As needed
<b>Notes</b>	
<ul style="list-style-type: none"><li>• <b>Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000): Mix 9 mL of Normal Saline with 1 mL of Cardiac Epinephrine 1:10,000 (0.1 mg/mL), mix well</b></li><li>• Destination and documentation per Trauma Triage and Destination Policy #153</li><li>• Early transport with treatment en route for high risk or unstable patients</li><li>• A manual blood pressure is preferred for all unstable trauma patients</li><li>• BLS responders – when in doubt regarding pelvic injury – avoid unnecessary movement, consider preparation for placement of pelvic binder until ALS evaluation</li><li>• Pain Control – Pain Management Protocol #603</li><li>• Include Step Criteria with MIVT Base Hospital report – update 5 min out or with changes</li><li>• IV access large bore (&gt;18G) with a saline lock to facilitate tubing changes at the Trauma Center</li><li>• Maintain body temperature/warm as indicated</li><li>• Treatable/reversible considerations for critical trauma patients<ul style="list-style-type: none"><li>○ Hypoxemia</li><li>○ Hemorrhage/Hypovolemia</li><li>○ Tension pneumothorax</li></ul></li></ul>	



**PUSH-DOSE EPINEPHRINE 10 mcg/mL (1:100,000) (Adrenalin®)**

**Classification:** Sympathomimetic agent (catecholamine)

**Actions:**

1. Increases cardiac output due to increased inotropy, chronotropy, dromotropy, and AV conduction ( $\beta$  1 effect)
2. Relaxes smooth muscles of the respiratory tract ( $\beta$ 2 effect)
3. Increases systolic blood pressure due to increased cardiac output ( $\beta$ 1 effect) and vasoconstriction ( $\alpha$  effect)

**Indications:**

1. Symptomatic adult bradycardia refractory to other therapies
2. ROSC with persistent hypotension
3. Distributive shock (septic or neurogenic) unresponsive to fluid resuscitation
4. Cardiogenic shock with signs/symptoms of CHF or not responding to fluid resuscitation

**Contraindications:** There are no absolute contraindications in a life-threatening situation

1. **Hypovolemia**
2. **Non shock (perfusing) states**

**Adverse Effects:**

**Cardiovascular**

Tachycardia and other dysrhythmias  
Hypertension  
Chest pain  
Palpitations

**Neurological**

Anxiety  
Dizziness  
Headache  
Tremors

**Other**

Nausea/vomiting  
Local tissue necrosis if extravasated

**Respiratory**

Pulmonary edema

**Pharmacodynamics:**

**Onset**

Immediate

**Duration:**

Half-life <5 min

**Administration:**

Mix 1 mL of epinephrine 1:10,000 (0.1 mg/mL) with 9 mL NS in a 10 mL syringe. Mixture now provides 10 mL of epinephrine at a 10 mcg/mL concentration

**ADULT DOSE**

1. **Base station order only:** 1 mL IV every 1-3 minutes, titrated to blood pressure, heart rate, or other indicators of perfusion.

**PEDIATRIC DOSE**

1. **Base station order only:** Up to 1 mL IV every 1-3 minutes, titrated to age appropriate SBP or other indicators of perfusion.
2. **Bradycardia:** See epinephrine 1:10,000 formulary

**PUSH DOSE EPINEPHRINE 1:100,000 (Adrenalin®) - continued****Notes:**

- Tachycardia is not a contraindication to epinephrine.
- Attempt to correct hypovolemia prior to administration of a pressor like push-dose epinephrine
- Due to potential for pulmonary edema (secondary to increased peripheral vasoconstriction and increased myocardial workload) dopamine, if available, might be preferred for treatment of CHF with hypotension and pulmonary edema.
- **Anaphylactic shock and pediatric bradycardias** with circulatory collapse should be given epinephrine as directed in those protocols (#611 and #644), not push-dose epinephrine.