Emergency Medical Services Agency
Bulletin 2021-06  September 30, 2021

**PLEASE POST**

**Protocol # 644 Symptomatic Bradycardia, Procedure #716 Transcutaneous Pacing, and Policy #121 Attachment A**

Please see and distribute the attached protocol, procedure, and policy. Protocol # 644 Symptomatic Bradycardia, Procedure # 716 Transcutaneous Pacing, and Policy # 121 Attachment A will go into effect on October 1, 2021, at 0800. Please reread and become familiar with Protocol # 644, Procedure # 716, and Policy # 121.

If you have any questions regarding Protocol #644, Procedure #716, and Policy #121 feel free to contact kparker@co.slo.ca.us
# SYMPTOMATIC BRADYCARDIA

## ADULT

- Universal Protocol #601
- Pulse Oximetry
  - O₂ administration per Airway Management Protocol #602

## PEDIATRIC (≤34KG)

- Same as Adult
  - **Unstable**
    - HR <60 bpm and decreased level of consciousness
  - Ventilate with BVM and O₂
  - If HR<60 persists despite ventilations
    - HPCPR – High Performance CPR Procedure #712

## BLS

- Obtain 12-lead ECG
- With STEMI contact STEMI base prior to administration of Atropine unless in extremis

## Unstable

- **Normal Saline** fluid bolus 500 mL
  - Start concurrently with Atropine administration
- **Atropine** 0.5 mg IV
  - May repeat every 3-5 min (not to exceed 3 mg total)

- **TCP** – TCP Procedure #716
  - Initiate TCP for any of the following:
    - Patient in extremis
    - Refractory to other treatments
    - High-degree AVB with wide QRS complex
    - Inability to rapidly establish vascular access for other treatments

- **Pain Management**
  - If pain is persistent with TCP refer to Pain Management Protocol # 603

## ALS Standing Orders

- Obtain 12-lead ECG

## Unstable

- **Epinephrine 1:10,000** 0.01 mg/kg (0.1 ml/kg) slow IV not to exceed 0.3 mg per dose
  - May repeat every 3-5 min

## Base Hospital Orders Only

- **Calcium Chloride** 1 Gm slow (over 5 min) IV/IO
  - Suspected Hyperkalemia with wide complex bradycardia
- **Atropine** 0.5 mg IV for stable patient or STEMI patient not in extremis

- **Atropine** 0.02 mg/kg IV (minimum dose of 0.1 mg and maximum dose of 0.5 mg)
  - May repeat every 3-5 min (not to exceed 1 mg total)
- **Normal Saline** fluid bolus 20 mL/kg
- **Push-Dose Epinephrine 10 mcg/mL**
  1 mL IV/IO every 1-3 min
  - repeat as needed titrated to SBP >90mmHg
  - See notes for mixing instructions

- **Epinephrine Drip** 10 mcg/min IV/IO infusion
  - Consider for extended transport
  - See formulary for mixing instructions

**Suspected Overdose**
(Beta-Blocker, Calcium Channel Blocker, Tricyclic, Organophosphate)

- Ingestion/Poisoning/OD Protocol #614
- As needed

**Notes**
- **Mixing Push-Dose Epinephrine 10 mcg/mL (1:100,000):** Mix 9 mL of Normal Saline with 1 mL of Epinephrine 1:10,000, mix well
- Pediatric bradycardia is most commonly due to hypoxia. Treatment should focus on ventilation and oxygenation
- Atropine in pediatric patients may cause paradoxical bradycardia
- High degree heart blocks (Second degree type II, and Third degree) may respond poorly to Atropine
  - Consider obtaining Base Hospital Orders for pressor doses of Epinephrine
  - If unstable proceed directly to TCP consider early base notification to STEMI Receiving Center (French Hospital)
- 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
## TRANSCUTANEOUS PACING - TCP

### BLS
- Universal Protocol #601
- Pulse Oximetry – \(O_2\) administration per Airway Management Protocol #602

### ALS Standing Orders
- **Indications:**
  - Symptomatic Bradycardia < 45 bpm with signs of hemodynamic instability:
    - Hypotension (SBP < 90)
    - Signs of poor perfusion
    - ALOC
  - Evaluate potential causes of bradycardia:
    - Dysrhythmia
    - Implanted pacemaker failures
    - Acute myocardial infarction (12-Lead EKG)
    - Hypoxia, overdose, electrolyte imbalance, hypothermia
  - Transcutaneous Pacing for:
    - Patients in extremis due to symptomatic bradycardia
    - Refractory to other therapies
    - High-degree AV-block (2\textsuperscript{nd} degree Type II or 3\textsuperscript{rd} degree)
    - May attempt trial of **atropine** 0.5 mg IV/IO
- For persistent pain with TCP refer to **Pain Management Protocol (# 603)**
- Place pacing pads on patient per manufacturers recommendations
- Set initial heart rate: 80 beats per minutes (bpm)
- Begin increasing output in increments of 10-20 mA until capture is noticed
- Confirm mechanical capture with palpated pulses, pulse oximetry, and response to procedure
- Increase output by 10mA after confirmation of mechanical capture (palpated pulses)
  - If no mechanical capture (palpated pulses) , consider “false capture.” Continue to increase output
  - If mechanical (palpated pulses) capture but no improvement of findings or blood pressure
    - Increase the heart rate by 10 bpm, repeat x1 if needed (max rate of 100 bpm)
    - If continued problems with signs of shock consider vasopressor doses of **epinephrine** as described in **Shock protocol (#619)**
- Discontinue TCP if unable to achieve capture or if innate rhythm override
- After initiation of TCP transport to closest STEMI Receiving Center (French Hospital or Marian )

### Base Hospital Orders Only
- **Contact SLO County STEMI Receiving Center (French Hospital)**
  - As needed
Notify the appropriate Base Hospital for the following situations:

**RECEIVING SLO BASE HOSPITAL**
- Notifications
- Medication Requests
- Physician Consultation
- Termination of CPR for cardiac arrests in patients ≤ 34 kg
- Termination of CPR for pulseless arrests not of cardiac origin (i.e. OD, drowning, etc.)
- Stroke Alert
- AMA after ALS procedures performed or indicated

**TRAUMA CENTER (Sierra Vista)**
- Trauma Alert Step 1 and 2
- Destination Consultation for Trauma Step 3 and 4 including Marian
- Traumatic arrests

**STEMI BASE (French Hospital)**
- STEMI Alert
- Cardiac arrest orders
- ROSC
- ROSC to MMC if orders required
- 12-Lead Consult
- Termination of CPR for pulseless arrest of cardiac origin (>34 Kg)
- After initiation of Transcutaneous Pacing

**MARIAN MEDICAL CENTER**
When MMC is the intended receiving facility the medic may communicate directly for:
- Notifications
- STEMI Alerts
- Trauma Alerts
- Stroke Alerts
- ROSC – no additional orders needed

For any orders, medication request or consultations the medic shall use the appropriate County of SLO Base or Specialty Care Hospital.