Treatment Protocol: CARDIAC DYSRHYTHMIA - BRADYCARDIA **Ref. No. 1212**

Base Hospital Contact: Required for all patients with symptomatic bradycardia.

1. Assess airway and initiate basic and/or advanced airway maneuvers prn *(MCG 1302)*

2. Administer **Oxygen** prn *(MCG 1302)*

3. Initiate cardiac monitoring *(MCG 1308)*
   Assess cardiac rhythm and obtain 12-lead ECG

4. If cardiac chest pain/STEMI suspected as cause of bradycardia, treat in conjunction with *TP 1211, Cardiac Chest Pain*

5. Maintain supine for patients with signs of poor perfusion, if respiratory status allows

6. Establish vascular access *(MCG 1375)*
   Do not delay transcutaneous pacing (TCP) if indicated for vascular access

7. For suspected hyperkalemia ❶
   Calcium Chloride 1gm (10mL) slow IV/IO push, may repeat x1 for persistent symptoms
   Albuterol 5mg (6mL) via neb, repeat continuously until hospital arrival
   CONTACT BASE to obtain order for **Sodium Bicarbonate 50mEq (50mL) slow IVP** ❷

8. For poor perfusion:
   Atropine 1mg (10mL) IV/IO push, repeat every 3-5 min prn, maximum total dose 3mg
   If IV cannot be rapidly established or if HR ≤ 40bpm in 2nd degree type II or 3rd degree heart block, proceed immediately to transcutaneous pacing ❸
   If no improvement after initial dose of **Atropine**, proceed to TCP

9. **TCP** for HR ≤ 40 with continued poor perfusion Initiate TCP as per *MCG 1365* ❹
   CONTACT BASE concurrent with initiation of TCP

   If TCP will be utilized for the awake patient, consider sedation and analgesia
   For sedation:
   Midazolam 5mg (1mL) slow IV/IO push or IM/IN
   May repeat in 5 min prn x1, maximum total dose prior to Base contact 10mg
   For pain management: refer to *MCG 1345, Pain Management*

   CONTACT BASE for additional sedation and/or pain management after maximum dose administered: May repeat as above to a maximum dose of Midazolam 20 mg, and Fentanyl 250mcg or Morphine 20mg

10. For signs of poor perfusion with HR > 40:
    CONTACT BASE to discuss appropriateness of TCP

11. For persistent poor perfusion after initiating TCP:
    CONTACT BASE to obtain order for **Normal Saline 1L IV/IO rapid infusion** and/or **Push-dose Epinephrine**

While infusing **Normal Saline**, reassess after each 250 mL increment for evidence of volume overload (pulmonary edema); stop infusion if pulmonary edema develops

Push-dose Epinephrine – mix 9mL Normal Saline with 1mL Epinephrine 0.1mg/mL (IV formulation) in a 10mL syringe. Administer **Push-dose Epinephrine (0.01mg/mL) 1mL IV/IO** every 1-5 min as needed to maintain SBP > 90mmHg ❺

12. For suspected overdose, treat in conjunction with *TP 1241, Overdose/Poisoning/Ingestion* ❻

13. For nausea or vomiting:
    Ondansetron 4mg ODT/IV/IM, may repeat x1 in 15 min prn ❼

SPECIAL CONSIDERATIONS

❶ Patients at increased risk for hyperkalemia include those with history or clinical evidence of renal failure, missed dialysis or patients taking potassium-sparing diuretics such as spironolactone. ECG signs of hyperkalemia included peaked T-waves, wide QRS, bradycardia, long PR interval and absent P-waves.

❷ Sodium Bicarbonate is another rapid-acting treatment for suspected hyperkalemia. Due to the risk of pulmonary edema, contact Base to discuss administration.

❸ In patients with 2nd degree type II or 3rd degree heart block, atropine is unlikely to produce clinical improvement, therefore TCP should not be delayed for atropine administration.

❹ Electrical capture can occur without mechanical capture. Assess for electrical capture by reviewing the rhythm strip for a QRS complex and a T wave after each pacer spike. Assess for mechanical capture by palpating a pulse with each QRS complex.

❺ **Push-dose Epinephrine** is appropriate for non-traumatic shock including cardiogenic shock. Additional doses beyond 10mL may need to be prepared for prolonged transports.

❻ Consider calcium channel blocker and beta blocker overdose in patients with bradycardia and hypotension. Ask about potential exposures including medications in the home. Hyperglycemia is a common finding with calcium channel blocker overdose.

❼ Nausea and vomiting cause vagal stimulation, which can worsen bradycardia. Ondansetron may be administered to reduce potential for nausea or vomiting.