

# STEMI Refresher

# Code STEMI – RN Transfer with local EMS

If you are the RN escort on a patient being transferred with a STEMI be aware that:

- This patient is UNSTABLE – high risk for cardiac arrest/other arrhythmias
  - The reperfusion (restoration of some blood flow) makes the cells electrically unstable due to changes at ion channels.
- This patient is under the care of PRH and the RN, meaning the RN is responsible for patient care.
  - The RN manages all medications, monitoring, and IV pumps during transfer
  - EMS will assist if the patient has a cardiac arrest
    - Pull over, EMS to defibrillate the patient, then re-route to the nearest ER department. Call back to PRH to update MRP and EMS will patch ahead to the nearest ER that you are coming.
  - If you need assistance or advice, call back to PRH to speak to the MRP for further direction or to report a change or deterioration in patient status
  - You can also call to the charge nurse to discuss other questions or concerns

# Anticipate patient deterioration (prepare for the worst)

- Many STEMI patients will fare well during transfer and have no complications, however be aware of the potential for rapid deterioration
- Be prepared and ask the MD for transfer orders, prepare your transfer medications and know how to give them (print off the IV monograph pages)
  - Consider what meds the patient has needed for stability pre-transfer while in the ER and whether you need to prepare these meds for transfer.

# Anticipate patient deterioration (prepare for the worst)

- Eg. **if the patient has been nauseated**, will they need additional anti-nauseants en route or have they had all that they allowed to have prior to transfer?
- Eg. **if the patient is having chest pain**, what meds have they needed in ER and how did they respond?
  - Did nitro relieve the pain? What was the BP post nitro administration?
  - Was morphine required? What was the BP post morphine administration?
- Eg. **if the patient has been hypotensive**, they might need IV fluids or if the enough heart muscle has been damaged, they might have “pump failure” = cardiogenic shock and infusions such as dobutamine or milrinone may be required
- Eg. **if the patient has been bradycardic**, have a plan in place for transfer
  - Atropine
  - Dopamine infusion
  - Epinephrine infusion
  - Isuprel infusion for 2<sup>nd</sup> degree type II or 3<sup>rd</sup> degree blocks

# Do your best to plan ahead

- Ask the MD what they anticipate might happen, what meds to prepare for transfer. Ideally, have 2-3 IV sites in case one becomes interstitial on transfer
- Keep a close eye on the monitor!
- Program the monitor for vitals q5-10minutes
- In a patient who has had TNK, monitor closely for signs of bleeding, including oozing from IV sites.
  - Ensure you can visualize your IV sites, especially if vasoactive infusions are running (risk for extravasation).

# Special considerations – Inferior STEMI

- Consider what you might anticipate knowing the type of STEMI
  - **Inferior (most common type of infarct, generally less mortality) – anticipate bradycardia and hypotension**
    - Usually (80% of the time) the RCA is the culprit artery. The RCA supplies the AV node, and additionally in many people the RCA also supplies the SA node. Anticipate bradycardias. An increase in vagal tone due to ischemia in these patients may also create a lower heart rate.
    - Sinus brady, sinus exit blocks or pauses, or progressive heart block may develop
    - Right sided involvement occurs in up to 40% of inferior STEMI. The patient may become severely hypotensive and preload dependent (where vasodilators such as nitro and morphine are usually contraindicated).

# Special considerations – Anterior STEMI

- Consider what you might anticipate knowing the type of STEMI
  - **Anterior**
    - LAD is the culprit artery, which supplies the left ventricle. **Anterior infarcts have a higher mortality related to higher risk for left ventricular heart failure.**
    - Left ventricular heart failure creates risk for sloshing and poor pumping increasing risk for an LV thrombus (clot) to develop
    - If enough muscle is damaged, the patient may experience **cardiogenic shock** and they may benefit from medications that increase heart pump force of contraction (inotropes) such as milrinone or dobutamine. Other meds that also impact inotropy include epinephrine, atropine, levophed (not an all-inclusive list).
      - *Be aware that medications that make the heart beat harder (force) or faster (speed) will increase cardiac oxygen demands and possibly make the patient symptomatically worse – watch for this and discuss with the MD*
    - High rates of ventricular ectopy (PVCs)
    - Anterior leads include V1/V2 (septal) – risk for conduction disturbances, commonly RBBB which may progress to complete heart block

# Cardiac Irritability

- Be prepared to see a lot of ectopy (ventricular irritability) in the form of PVCs, PACs, rhythm changes.
  - Ventricular tachycardia and ventricular fibrillation are the most common cause of sudden death in STEMI after blood flow has been re-established
  - Bradycardia and heart blocks are possible
- The patient may flip into an **accelerated idioventricular rhythm (AIVR)**



# Accelerated Idioventricular Rhythm (AIVR)



**Accelerated** = faster than normal. Normal ventricular rate = 20-40 bpm; AIVR rate 40-120 bpm, faster than 120 → ventricular tachycardia (follow ACLS)

**Idioventricular** = originates from ventricles (wide QRS and no P waves)

AIVR is usually benign, usually does not require treatment. HR is usually tolerated well because it is within normal rates; less symptomatic.