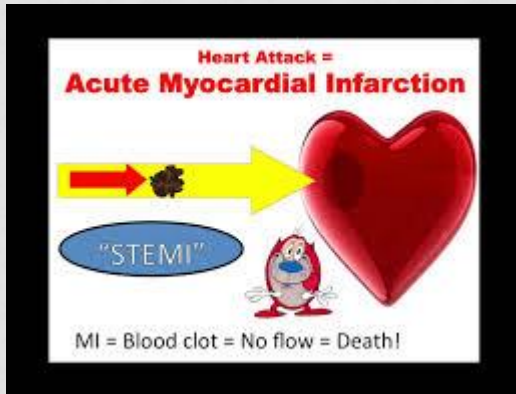
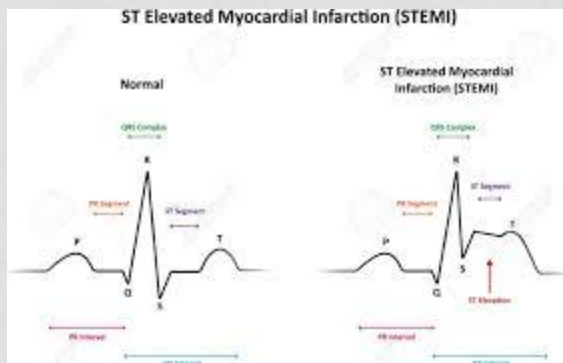
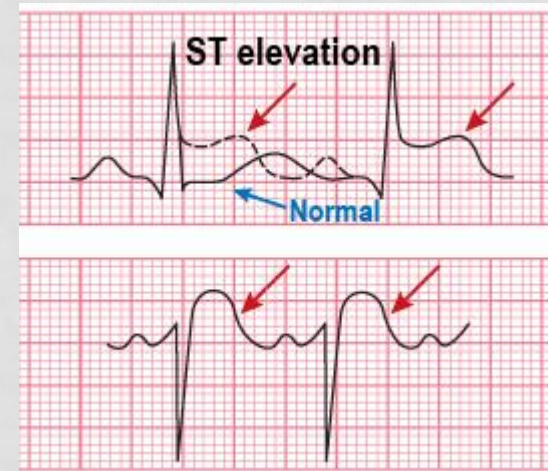


South Cook County EMS April, 2017



STEMI Care



OBJECTIVES

Cognitive

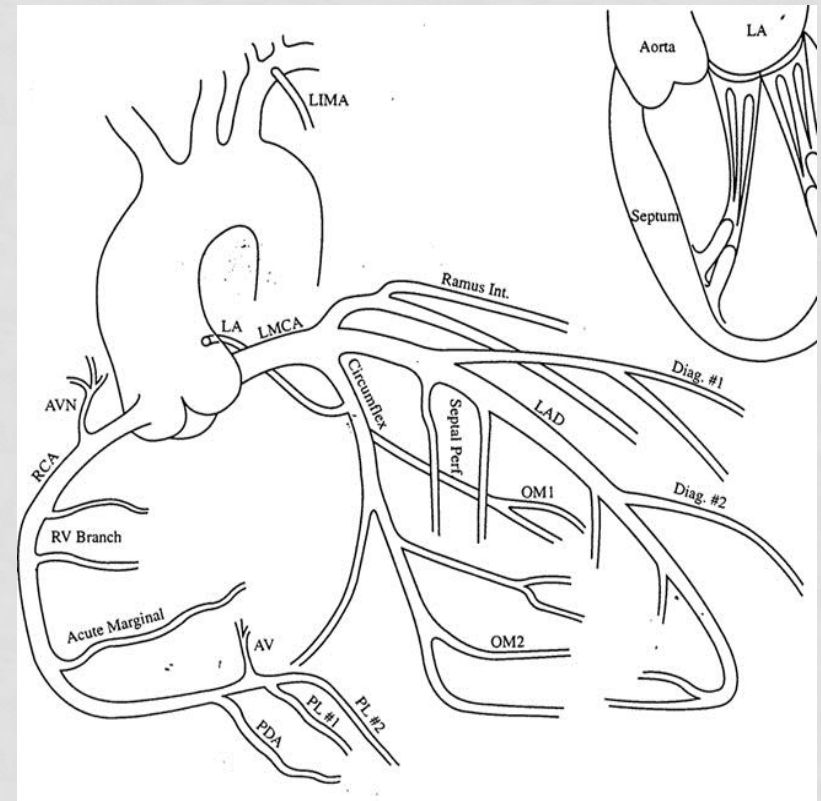
1. Describe the following , STEMI and NSTEMI
2. Explain the assessment for a STEMI patient, including the key indicating factors in diagnosing a STEMI patient in the field.
3. Describe the proper treatment for a STEMI patient, including appropriate transport.

CORONARY ARTERY ANATOMY

- Right (Coronary Artery)
 - Supplies
 - right ventricle
 - posterior 1/3 of septum
 - inferior wall of LV, a portion of the posterior wall of LV (via the posterior descending branch - PDA)

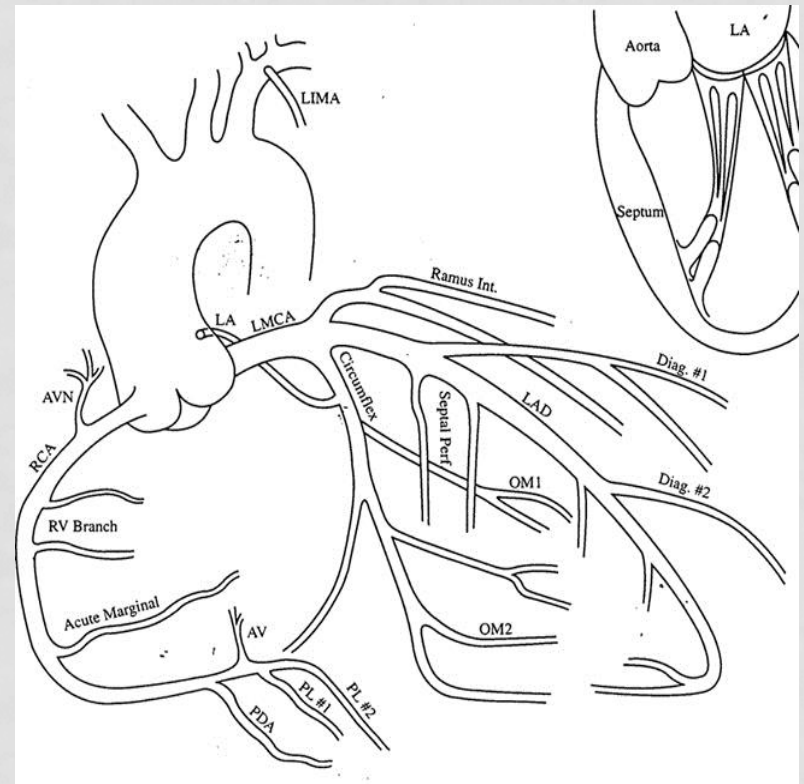
*LV- left ventricle

*PDA – Posterior Descending Artery



CORONARY ARTERY ANATOMY

- Left (Coronary Artery)
 - Left Main, bifurcates into
 - Left Anterior Descending (LAD)
 - Left Circumflex (LCX)
 - Supply anterior left ventricle, anterior 2/3 of septum, apex, lateral & posterior walls

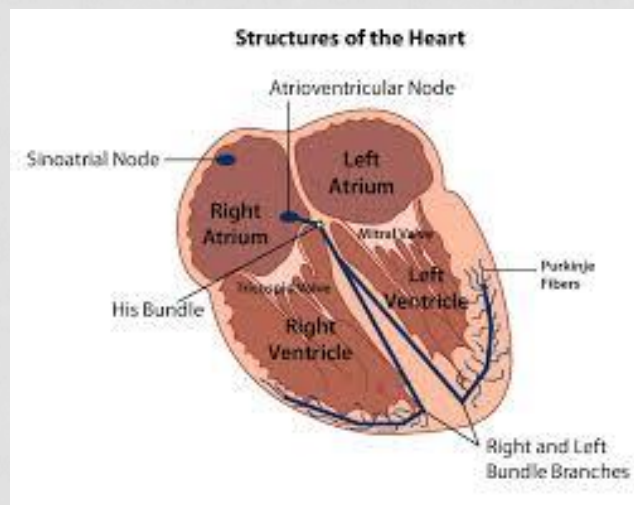


CAN YOU PREDICT WHICH ARTERY IS COMPROMISED BY DYSRHYTHMIA?

- Sinus Node
 - In 60% of patients, the sinus node artery arises from the proximal RCA
 - In 40%, it arises from the LCX
- AV Node
 - In 90% of patients, the AV node is supplied by the RCA
 - In 10% of patients, it is supplied by the LCX
- Obstruction of the RCA commonly affects:
 - AV node – AV blocks, bradycardia
 - SA node – sinus bradycardia and other sinus dysrhythmias like block/arrest
- Obstruction of the LCA commonly causes ventricular dysrhythmias and LV infarction

CAN YOU PREDICT WHICH ARTERY IS COMPROMISED BY DYSRHYTHMIA?

- Obstruction of the RCA (right coronary artery) commonly affects:
 - AV node – AV blocks, bradycardia
 - SA node – sinus bradycardia and other sinus dysrhythmias like block/arrest
- Obstruction of the LCA (left coronary artery) commonly causes ventricular dysrhythmias and LV infarction



INCIDENCE

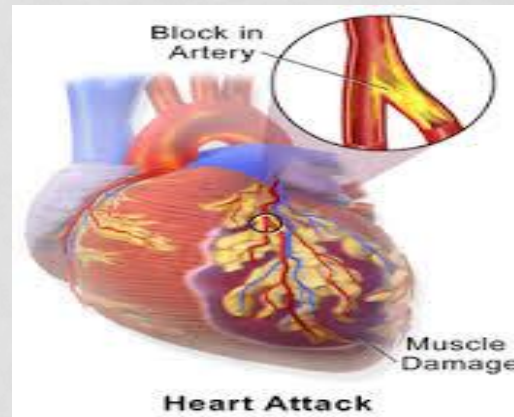
Three types of ACS (Acute Coronary Syndromes)

- Unstable Angina (40% of total)
- NSTEMI - non-ST Elevation Myocardial Infarction (25% of total)
- STEMI - ST Elevation Myocardial Infarction - Accounts for (35% of total)
- 1,500,000 myocardial infarction patients in the US diagnosed per year (per AHA)
- ~ 500,000 deaths due to ACS (per AHA)

ACUTE CORONARY SYNDROME

Caused by an obstructed or partially obstructed coronary artery

- Can result in cardiac tissue becoming injured, ischemic, or infarcted, which causes abnormalities in cardiac conduction
- Electrical abnormalities can be detected with an electrocardiogram (usually a 12 lead EKG)

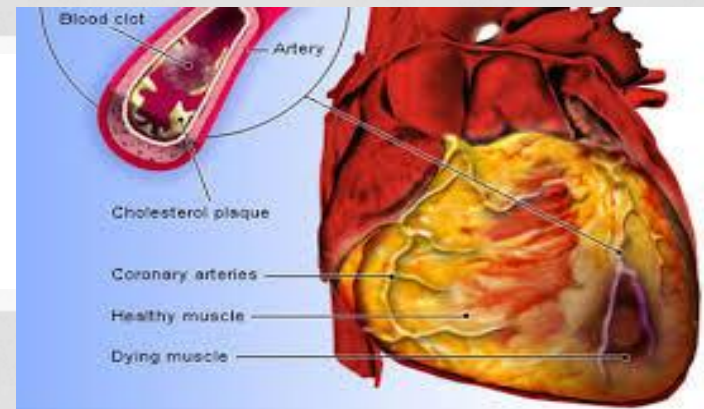


RISK FACTORS

- High cholesterol
- Hypertension
- Hyperlipidemia
- Stress
- Drug use
- Family history
- Diabetes
- Smoking
- Angina
- Stroke
- Known coronary artery disease
- Increased age
- Increased weight
- Inactive lifestyle



STEMI



A clinical syndrome defined by:

- characteristic symptoms of myocardial ischemia,
- in association with persistent electrocardiographic (EKG) ST elevation,
- and subsequent release of biomarkers of myocardial necrosis (*biomarkers are serial hospital lab values*)
- Time is muscle, and therefore performance, when it comes to the heart
- Half of the patients who will die of AMI, die before reaching the hospital.

SIGNS & SYMPTOMS

- Substernal chest pain that radiates
- Shortness of breath
- Chest pain/pressure tightness/heaviness squeezing
- Sensation of indigestion/ heartburn
- Pain that worsens with activity
- Pain that persists at rest
- Abnormal vital signs
- Anxiety/feeling of doom
- Denial of severity
- Diaphoresis
- Pale skin
- Altered mental status
- Nausea
- Lightheaded /dizzy



ATYPICAL SIGNS & SYMPTOMS

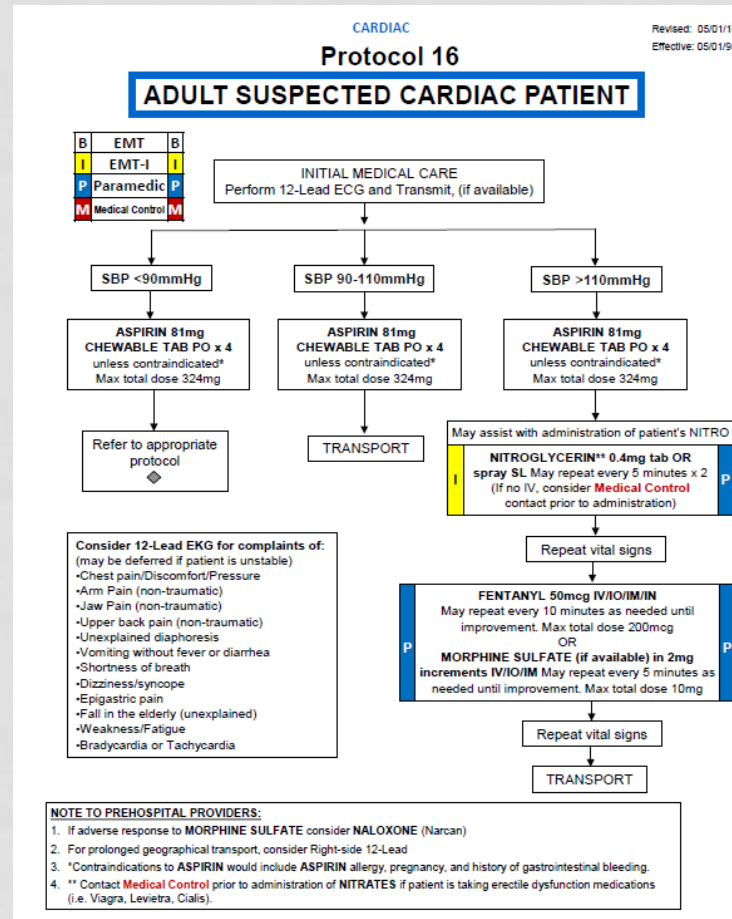
- Vague, diffuse pain
- Slight shortness of breath
- Nausea
- Weakness
- Lightheadedness
- Fatigue
- Syncope



Note: consider “atypical” presentations with the elderly, women, and diabetic patients.

PROTOCOL 16

ADULT SUSPECTED CARDIAC PATIENT



PAIN RELIEF



- The Protocol allows for Fentanyl or Morphine for pain relief.
- As of February, 2017, the South Cook County EMS system removed Morphine from the Ambulance supply.
- This is based on data collected during the past 8 months and recent scientific research which questions the efficacy of Morphine for CHF.
- Fentanyl will remain on the SCC drug list.

NITROGLYCERIN

- From a group of drugs called nitrates
- Vascular smooth muscle relaxant
- Actions:
 - Dilates both arteries and veins
 - Venous dilation predominates at normal therapeutic levels
 - Reduces venous pressure
 - Reduces ventricular preload
 - Systemic arterial dilation reduces afterload

Dosage: 0.4mg SL tab or spray. May repeat every 5 minutes x 2



NITROGLYCERIN (CONT'D)

Contraindications:

- Hypotension
- Erectile dysfunction meds

Side Effects:

- Headache
- Hypotension
- Nausea/vomiting
- Flushing
- Orthostatic hypotension/syncope

FENTANYL

- Fentanyl is an opioid analgesic. The onset of pain relief is 1-2 min when given IV and the duration is 30 min to one hour. It decreases the workload of the heart.

Indication:

Pain control

Contraindication:

- Respiratory depression
- Hypotension
- Head injury
- Cardiac dysrhythmias (brady rhythms)
- Myasthenia gravis
- Hypersensitivity to opiates



FENTANYL (CONT'D)

Adverse reactions:

- Respiratory depression
- Bradycardia
- Hypotension or hypertension
- Nausea and vomiting

Dosage and Administration:

50 mcg IV/IO/IM/IN. May repeat every 10 min as needed until improvement. *Max total dose 200 mcg*

Fentanyl

Onset:	1-2 minutes IV/IO 8 minutes IM
Peak:	3-5 minutes IV route Less predictable IM route
Duration:	30-60 minutes IV 1-2 hours IM
Duration of respiratory depressant effect of fentanyl may be longer than the analgesic effect	

VITAL SIGNS AND EKG

Vital signs are most useful as a trend over time, one set does not give a most accurate picture.

Document:

- Pulse
- Respirations
- BP
- Skin
- Mental Status
- O2 Sat.

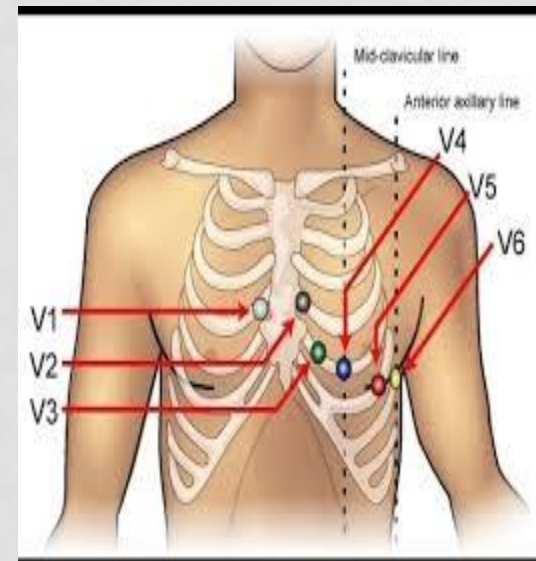


Reassess every 15 min, (if not sooner), after any intervention, or after any change in patient condition.

12 LEAD

Consider 12 lead EKG for complaints of the following:

- Chest pain/discomfort/pressure
- Arm and/or jaw pain
- Upper back pain
- Unexplained diaphoresis
- Vomiting without fever or diarrhea
- SOB, dizziness, syncope, weakness, fatigue
- Epigastric pain
- Unexplained fall (in the elderly)
- Unexplained brady or tachycardia



12 LEAD ST CHANGES

Non – STEMI

Occurs as microemboli from the clot become lodged in the coronary arteries. This produces minimal damage to the myocardium. However, these pts are at a high risk for progression to MI

Non-STEMIs are evident with ST-segment depression or T-wave abnormalities.

STEMI

Occurs when the thrombus occludes the coronary vessel for a prolonged period.

STEMI's are evident by ST-elevation in two or more contiguous (adjacent) leads.

TRANSPORT

Contact hospital as soon as patient's condition permits. If no radio contact can be established or patient's condition requires immediate tx, begin interventions immediately.

Transport to closest hospital.



SUMMARY AND KEY POINTS

Key Points

IMC

- Monitor and support CAB's
- Prepare for CPR/defib
- Position of comfort/O2

Administer ASA and consider NTG (contraindications, etc)

Obtain 12 Lead

Consider Fentanyl

Medical Control contact.

Summary

- STEMI is one of 3 coronary syndromes
- EMS needs to quickly recognize s/s and well as know the treatment/transport protocols
- Reading/interpreting 12 leads takes practice in order to accurately identify STEMI's.

12 LEAD EKG - STEMI

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral

