GENERAL INTERNAL MEDICINE REVIEW COURSE

NOVEMBER 2020

DR. TIFFANY PRIESTER

STAFF CARDIOLOGIST, VA LOMA LINDA HEALTHCARE SYSTEM

ASSISTANT PROFESSOR OF MEDICINE, LOMA LINDA UNIVERSITY

ASSOCIATE PROFESSOR OF MEDICINE, UNIVERSITY OF CALIFORNIA AT RIVERSIDE

- DUE TO TIME CONSTRAINTS content of some slides will be only discussed briefly but is here so you can STUDY it on your OWN
- Each organ system has multi-year subspecialty training
- Expectations: establish a working diagnosis, initiate treatment, know when to refer to a specialist
- Limitations: diagnostic testing, availability of specialists
- Do the best you can (medical ethics)
  - If it's key to the diagnosis, facilitate external testing
  - Give it your best guess and initiate treatment and assess for response
  - Refer to specialist when indicated
  - See them back to coordinate care

CARDIOLOGY OVERVIEW

- **Heart** including chambers, valves, blood supply, automaticity
  - Congenital heart disease
  - CCF (systolic, diastolic, right-sided, valvular, shunts)
  - Ischemic heart diseases
  - Conduction diseases
- Aorta and major **blood vessels**
  - Vasculitis (cardio/rheum/heme-onc/ID)
  - Aneurysms (cardio, gen surg, thoracic surg, vascular surgery, neuro, neurosurg)
  - Hypertension (cardio, GP, renal)
  - PAD/PVD (GP, cardio, gen surg, vasc surg, heme-onc)
  - Arterial and venous thrombosis (cardio, GP, gen surg, vas surg, heme-onc, pulm)
  - Pulmonary hypertension (cardio, pulm)

CARDIOLOGY OVERVIEW

- Basic arrhythmias: diagnosis and management
- Heart failure: diagnosis and acute & chronic treatment goals
- Ischemic heart disease:
  - the acute coronary syndrome spectrum
  - management of stable coronary artery disease
  - Coronary disease equivalent: vascular disease, diabetes
- Anticoagulation: warfarin adjustment
- Rheumatic heart disease: medical management

COMMON ARRHYTHMIAS

Tachycardia (> 100 bpm)

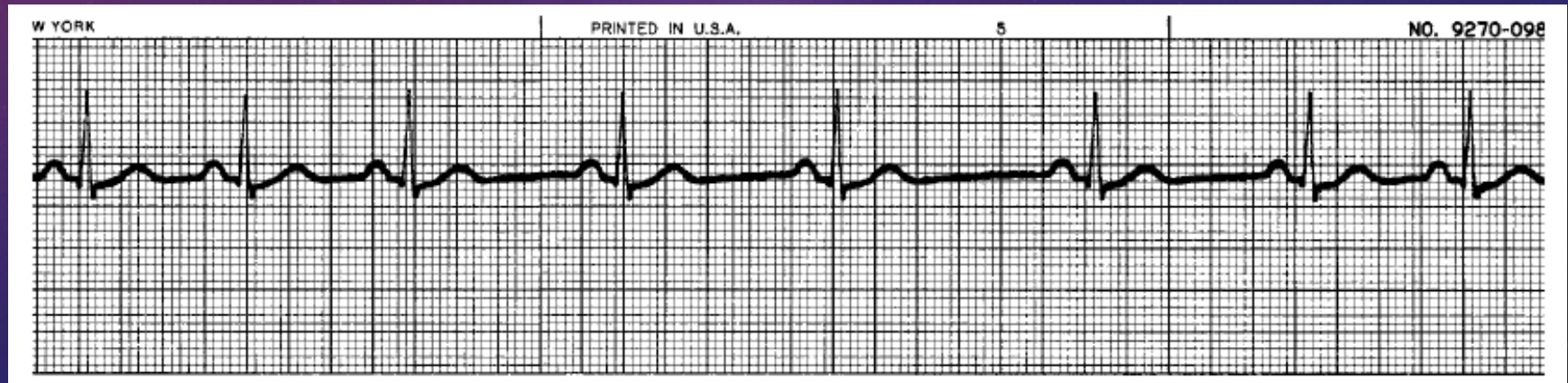
- Sinus arrhythmia
- Premature atrial or ventricular beats
- Sinus tachycardia
- Atrial fibrillation / flutter
- Atrial tachycardia
- Multifocal Aatrial Tachycardia
- Other SVT (AVRT, AVNRT, accessory pathway)
- Ventricular tachycardia or fibrillation

Bradycardia (< 60 bpm)

- Sinus bradycardia
- First degree AV block
- Second degree AV block
  - Type I (usually benign)
  - Type 2
- Third degree AV block (complete heart block)
- Sick Sinus Syndrome

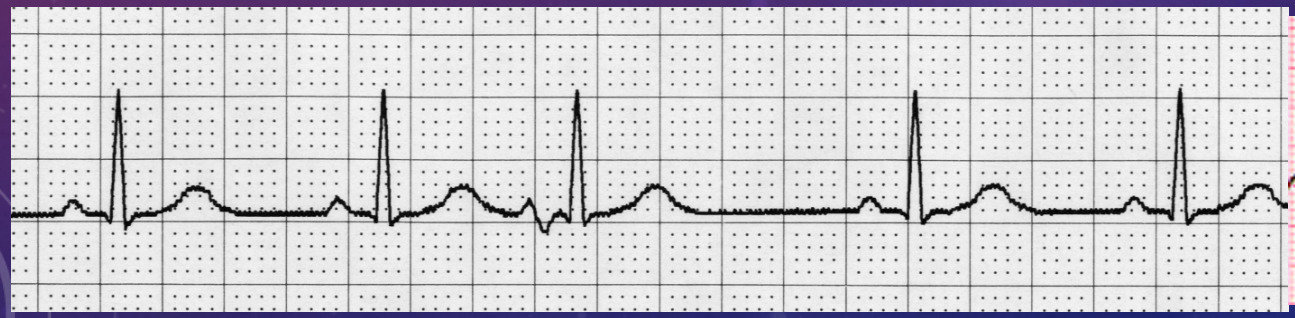
SINUS ARRHYTHMIA

- A condition in which the heart rate varies with respiration
- A normal variant
  - This is usually a benign condition
  - No specific treatment or workup needed



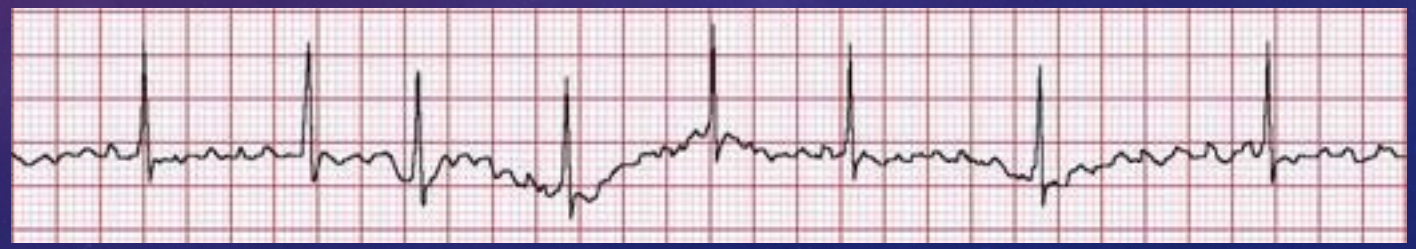
TACHYCARDIA – PACS/PVCS

- Premature atrial or ventricular complexes
  - An early beat originating from the atria or ventricle
  - Results in an irregular pulse
  - Triggered by stimulants (tea, coffee, coca cola, illicit drugs, alcohol, medications) and stress/lack of sleep
- Treatment is rarely necessary



TACHYCARDIA – ATRIAL FIBRILLATION

- Multiple, disorganized, small foci of depolarizations in the atria
- Irregularlly, irregular pulse
- Ventricular response rate can be varied
- Symptoms
  - Often none
  - Palpitations, easy fatigability, lightheadedness, dizziness, effort intolerance, stroke



BRADYCARDIA – SINUS BRADYCARDIA

- Second most common arrhythmia referred to me
- Many are side effects of medications
  - Beta blockers, calcium channel blockers, digoxin
  - Reduce medication to ½ or ¼ prior dose if mild to moderate
- Avoid AV node blocking agents
- Use stimulants (salbutamol, caffeine)

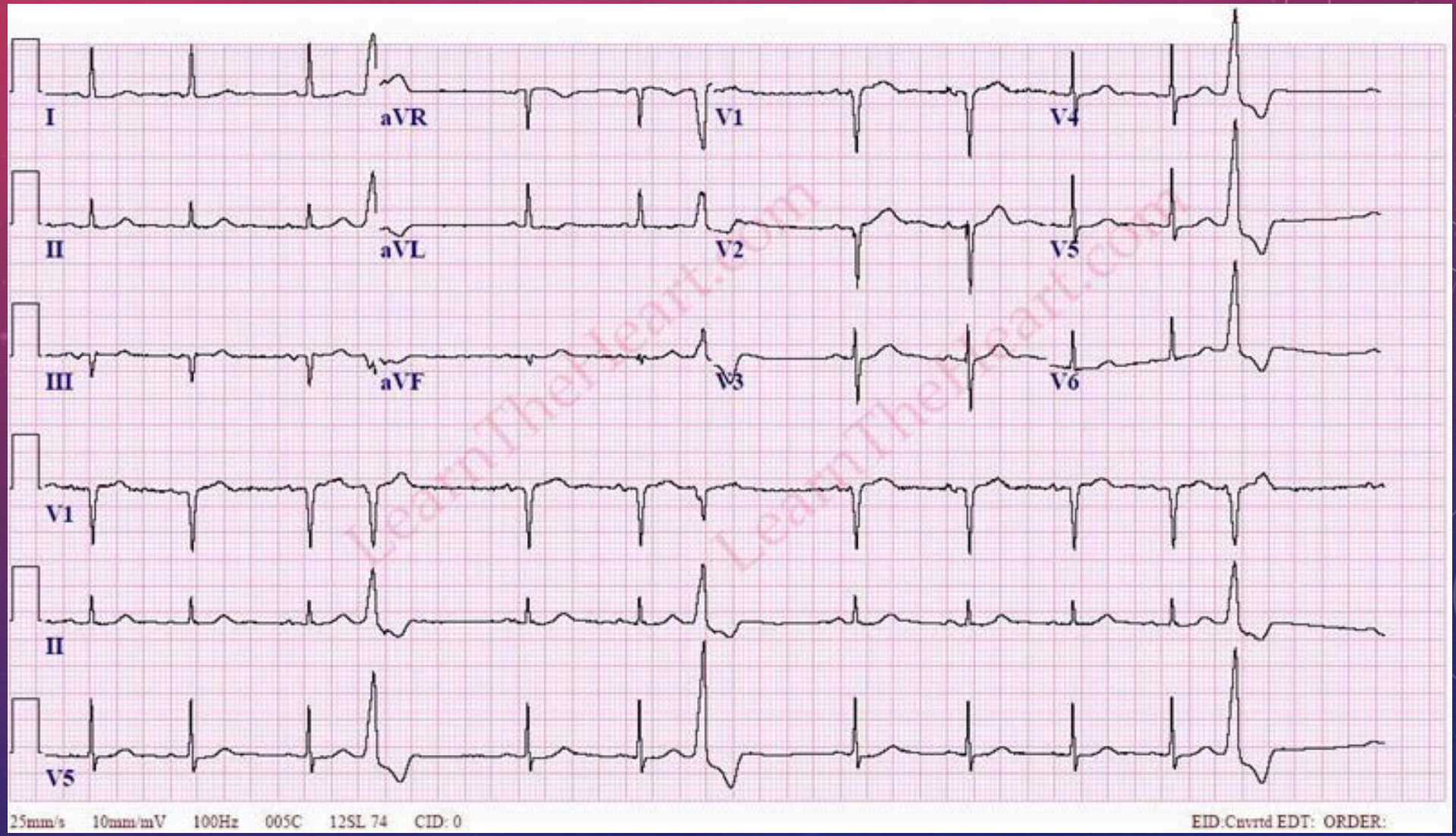
BRADYCARDIA – 1ST AV BLOCK

- Prolonged PR interval
- Generally benign, usually doesn't progress
- No need to hold beta blockers

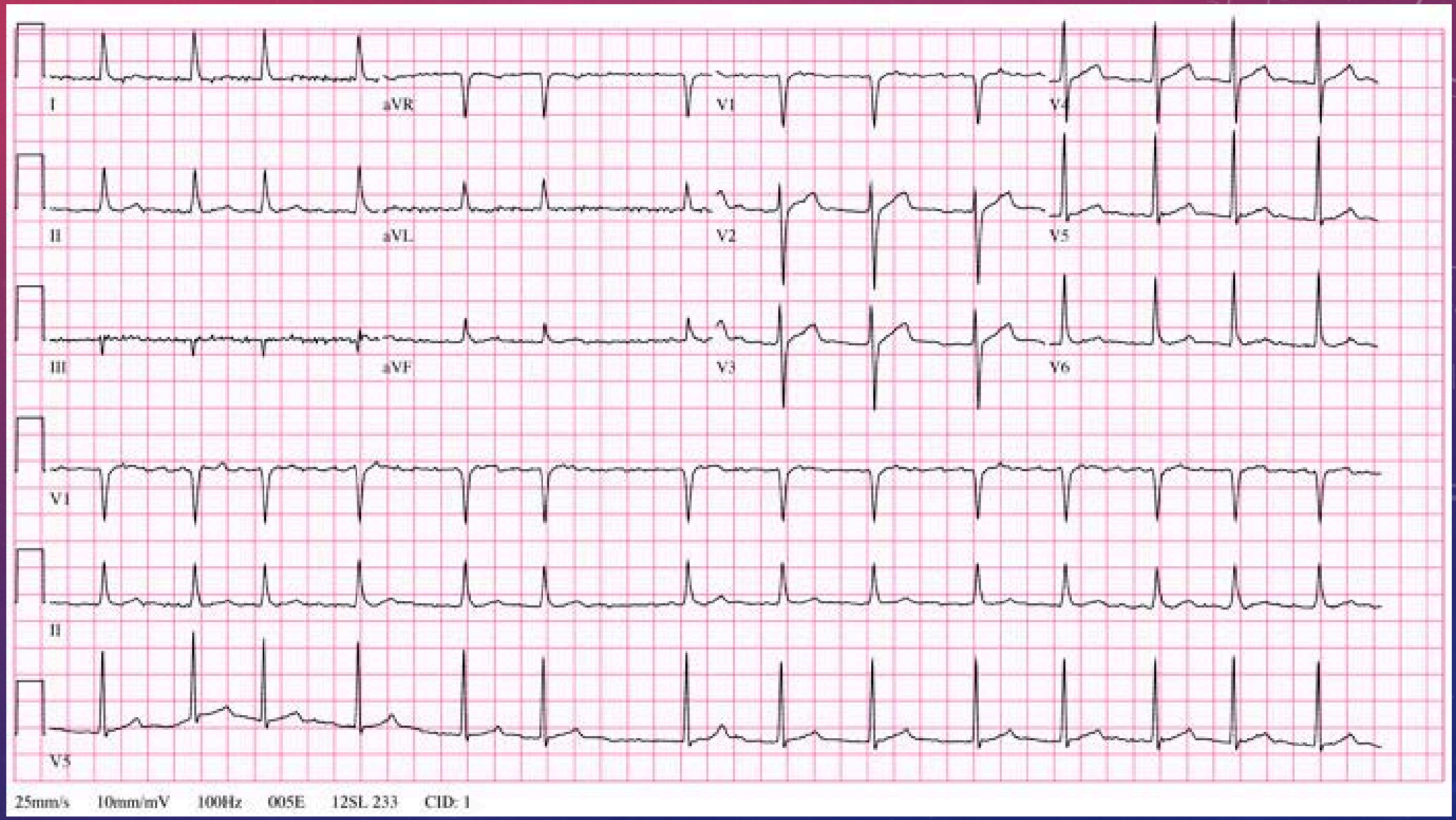
BRADYCARDIA – 2ND AV BLOCK

- Type I – Wenchkebach
- Generally considered benign
- Related to high vagal tone
- Rarely progresses to more advanced block if no underlying structural heart disease, avoid beta blockers

35 YO PALPITATIONS



72 YO SHORT OF BREATH



CARDIOLOGY OVERVIEW

- Basic arrhythmias: diagnosis and management
- Heart failure: diagnosis and acute/chronic treatment goals
- Ischemic heart disease:
  - the acute coronary syndrome spectrum
  - management of stable coronary artery disease
  - Coronary disease equivalent: vascular disease, diabetes
- Anticoagulation: warfarin adjustment
- Rheumatic heart disease: medical management
- Don’t forget pulmonary diseases

CONGESTIVE CARDIAC FAILURE

- Symptom complex / clinical diagnosis
- Etiology varies
  - LV systolic dysfunction LVEF < 45% (HFrEF)
  - Preserved LV function (diastolic dysfunction or RV dysfunction) LVEF > 55% (HFpEF)
  - Other cardiac (rheumatic/valvular, congenital, endomyocardial fibrosis, pericardial diseases)
  - Non cardiac (volume overload, renal failure, anemia, sepsis with SIRS, pulmonary embolism, cirrhosis, hypoalbuminemia)

CCF DIAGNOSIS

- Based on detailed history, cardiovascular exam, testing
- Be specific & descriptive
  - CCF with reduced LV function & dilated LV
  - CCF with reduced RV function but preserved LV function secondary to cor pulmonale from COPD
  - CCF with normal RV & LV systolic function from acute renal failure and volume overload
  - CCF from valvular dysfunction
- Non cardiac: volume overload, renal failure, anemia, sepsis, pulmonary embolism/infarct, severe pulmonary infection or inflammatory response, cirrhosis, thiamine deficiency, hypoalbuminemia, malignancy (esp lymphangitic spread)

EVIDENCED-BASED THERAPY FOR STAGE C SYSTOLIC HEART FAILURE

Control Volume

Na^+ Restriction
+
Diuretics

Reduce Mortality

ACEI or ARB
+
β–Blocker
+
Aldosterone Antagonist

Control Residual Symptoms

Digoxin

ICD and/or CRT*

Hydralazine + Isosorbide*

**For all indicated patients*

Table 20 Dosages of commonly used drugs in heart failure

	Starting dose (mg)		Target dose (mg)	
ACEI				
Captopril	6.25	t.i.d.	50–100	t.i.d.
Enalapril	2.5	b.i.d.	10–20	b.i.d.
Lisinopril	2.5–5.0	o.d.	20–35	o.d.
Ramipril	2.5	o.d.	5	b.i.d.
Trandolapril	0.5	o.d.	4	o.d.
ARB				
Candesartan	4 or 8	o.d.	32	o.d.
Valsartan	40	b.i.d.	160	b.i.d.
Aldosterone antagonist				
Eplerenone	25	o.d.	50	o.d.
Spironolactone	25	o.d.	25–50	o.d.
β-Blocker				
Bisoprolol	1.25	o.d.	10	o.d.
Carvedilol	3.125	b.i.d.	25–50	b.i.d.
Metoprolol succinate	12.5/25	o.d.	200	o.d.
Nebivolol	1.25	o.d.	10	o.d.

European Journal of Heart Failure (2008), 933–989

CARDIOLOGY OVERVIEW

- Basic arrhythmias: diagnosis and management
- Heart failure: diagnosis and acute/chronic treatment goals
- **Ischemic heart disease:**
  - **the acute coronary syndrome spectrum**
  - **management of stable coronary artery disease**
  - **Coronary disease equivalent: vascular disease, diabetes**
- Anticoagulation: warfarin adjustment
- Rheumatic heart disease: medical management
- Don’t forget pulmonary diseases

TABLE 1

Epidemiology of Chest Pain in Primary Care and Emergency Department Settings

	Percentage of patients presenting with chest pain		
*Diagnosis**	*Primary care: United States[4]*	*Primary care: Europe[3]*	*Emergency department[3]*
Musculoskeletal condition	36	29	7
Gastrointestinal disease	19	10	3
Serious cardiovascular disease†	16	13	54
Stable coronary artery disease	10	8	13
Unstable coronary artery disease	1.5	—	13
Psychosocial or psychiatric disease	8	17	9
Pulmonary disease‡	5	20	12
Nonspecific chest pain	16	11	15

*—*Diagnoses are listed in order of prevalence in United States.*

†—*Including infarction, unstable angina, pulmonary embolism, and heart failure.*

‡ —*Including pneumonia, pneumothorax, and lung cancer.*

Adapted with permission from Klinkman MS, Stevens D, Gorenflo DW. Episodes of care for chest pain: a preliminary report from MIRNET. J Fam Pract 1994;38:349, with additional information from reference 3.

ACUTE CORONARY SYNDROMES

An umbrella term used for the spectrum of conditions brought on by sudden, reduced blood flow to the heart

- Unstable **angina** or accelerated **angina**
- Non-ST **myocardial infarction**
- ST elevation **myocardial infarction**

QUESTION 2: WHICH OF THE FOLLOWING IS ANGINA?

A. 17 yo man with sharp chest pain lasting 2 hours not improved by anything
B. 34 yo woman with burning chest pain at night after a big meal
C. 53 yo man with chest discomfort for 3 days after a fight with his wife
D. 65 yo woman with chest tightness every time she goes up the hill in her neighborhood and improves if she rests on a nearby bench
E. 80 yo man with chest pain every time he carries the firewood out, lasts 3 hours, no improvement with resting on a nearby bench

QUESTION 2: WHICH OF THE FOLLOWING IS ANGINA?

A. 17 yo man with sharp chest pain lasting 2 hours not improved by anything
B. 34 yo woman with burning chest pain at night after a big meal
C. 53 yo man with chest discomfort for 3 days after a fight with his wife
D. 65 yo woman with chest tightness every time she goes up the hill in her neighborhood and improves if she rests on a nearby bench
E. 80 yo man with chest pain every time he carries the firewood out, lasts 3 hours, no improvement with resting on a nearby bench

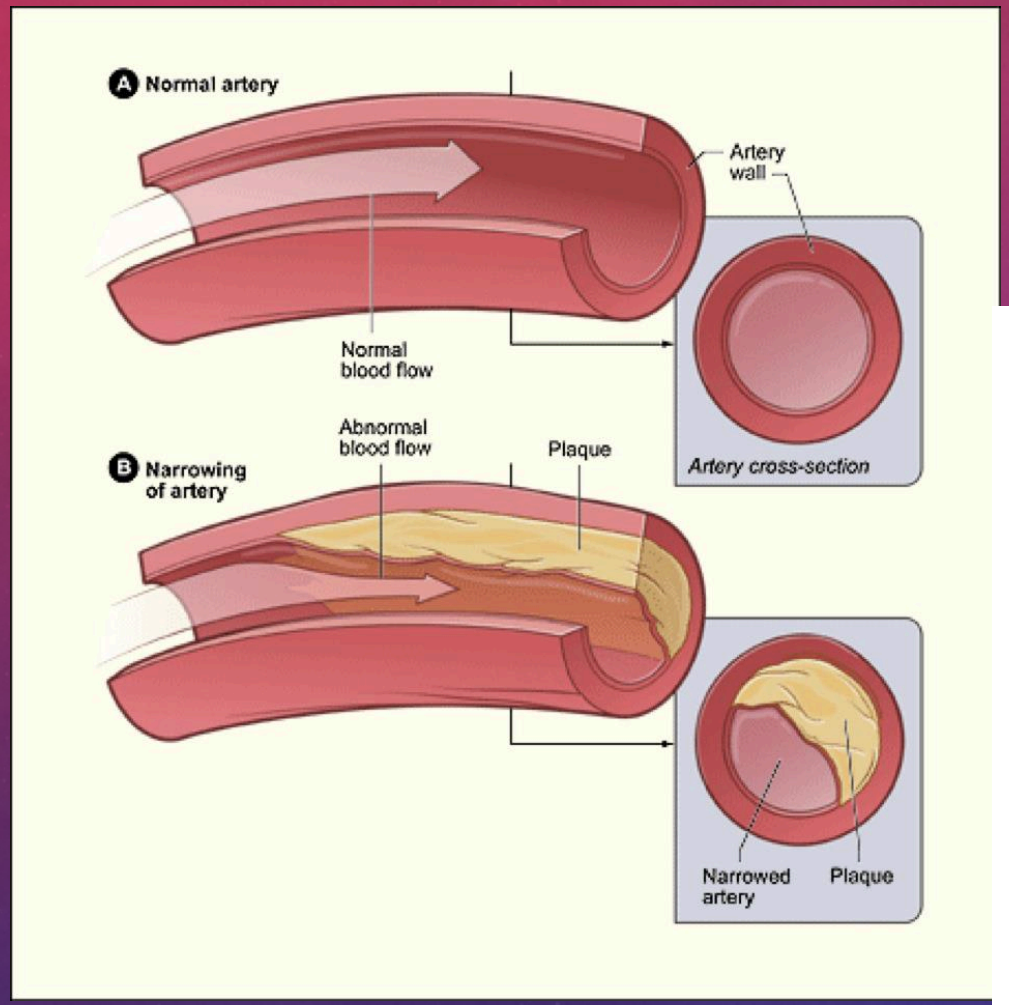
CHEST PAIN - ANGINA

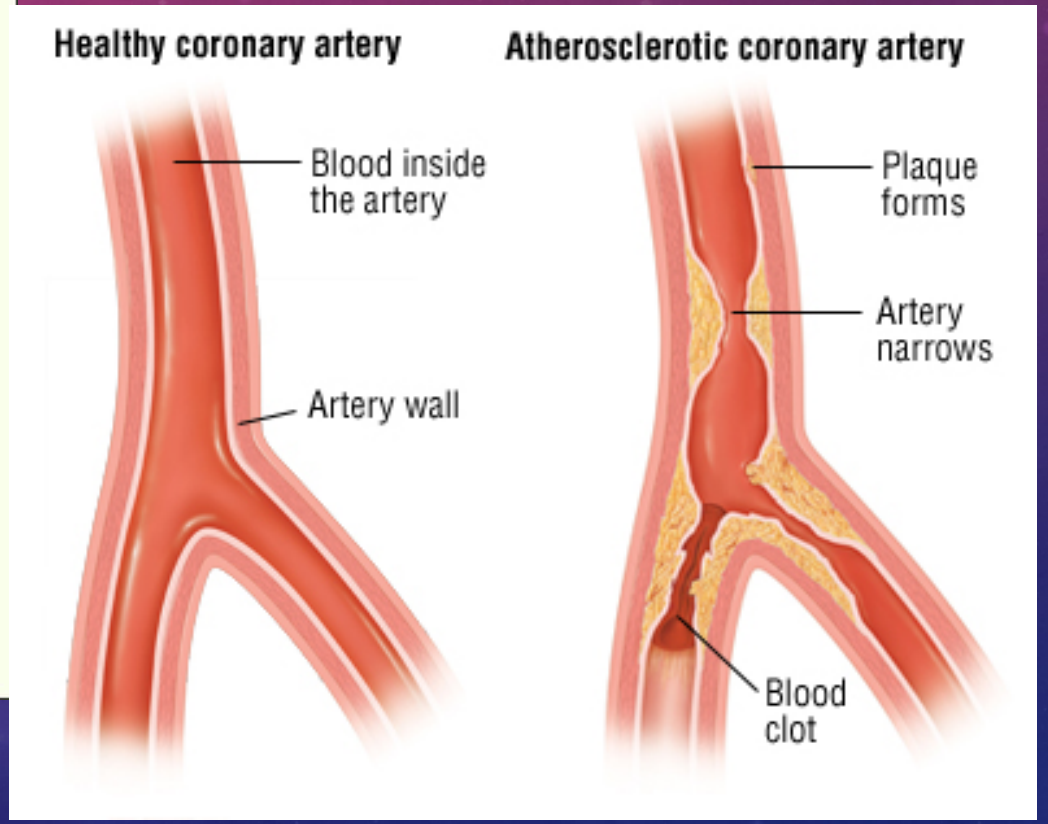
Angina is 1) chest pressure or tightness that is 2) triggered by exertion or stress and 3) improves with rest or nitroglycerin

- Atypical Chest Pain
  - 2 of the 3 features
- Non-cardiac chest pain
  - No features
- “Anginal equivalent”
  - Non-chest pain symptoms such as arm/jaw pain or nausea/vomiting

CHEST PAIN

- Angina vs Myocardial Infarction
  - Angina is transient chest pressure or Angina usually indicates > 70% narrowing of a blood vessel to the heart
  - Angina is usually evaluated with a stress test
- While some people get arm/jaw pain or nausea/vomiting together with angina it is **very rare** to have **only** arm pain or only nausea
  - Exception is diabetes and in the elderly


A Normal artery
Artery wall
Normal blood flow
Artery cross-section
B Narrowing of artery
Abnormal blood flow
Plaque
Narrowed artery
Plaque


Healthy coronary artery
Blood inside the artery
Artery wall
Atherosclerotic coronary artery
Plaque forms
Artery narrows
Blood clot

MYOCARDIAL INFARCTION

- Sudden lack of blood flow to a part of the heart muscle **that causes muscle injury**
  - Typically from an acute blood clot that forms when a cholesterol plaque ruptures
  - More than 75% of blood clots form in an area with only moderate narrowing (40-60% stenosis)
  - For most, stress test would be normal
  - Other causes: dissection (tear in the artery), embolism, demand mismatch (sepsis, anemia, LVH, severe tachycardia, poisoning), spasm (cocaine)
- Usually causes acute, persistent chest pain
- When 1 large artery forms a thrombus
  - Usually ST elevation on ECG

MYOCARDIAL INFARCTION

- Similar symptoms to many other conditions
  - Chest pain has more than 100 causes
  - Diabetics may have only nausea or low BP
- Heart muscle cell injury or death
  - Blood tests: normal in the first 3-6 hours
  - ECG: “ST-elevation” vs “non ST elevation”
  - Both ECG and blood tests can be equivocal in the first 6-12 hours of a heart attack
  - Some types require tests 6-8 hours apart to evaluate!

CASE – MR. PHIRI

- Mr. Phiri comes to see you
  - 1 week off & on chest pain
  - Chest pressure, lasts 5-10 minutes
  - Usually after exertion
  - Today, persistent after he walked the dog and his dog got in a fight with another dog who was not on a leash; Mr. Thompson's dog was injured
- Vitals: HR 98, O2 98%, RR 25, Temp 98
- Exam – intermittent S3 gallop
- Labs – pending

QUESTION : WHAT DO YOU ORDER FIRST?

A. U&E, CBC
B. CK, CKMB, troponin
C. Chest x-ray
D. ECG
E. Echocardiogram
F. Stress test
G. Gastroscopy
H. Diazepam for anxiety

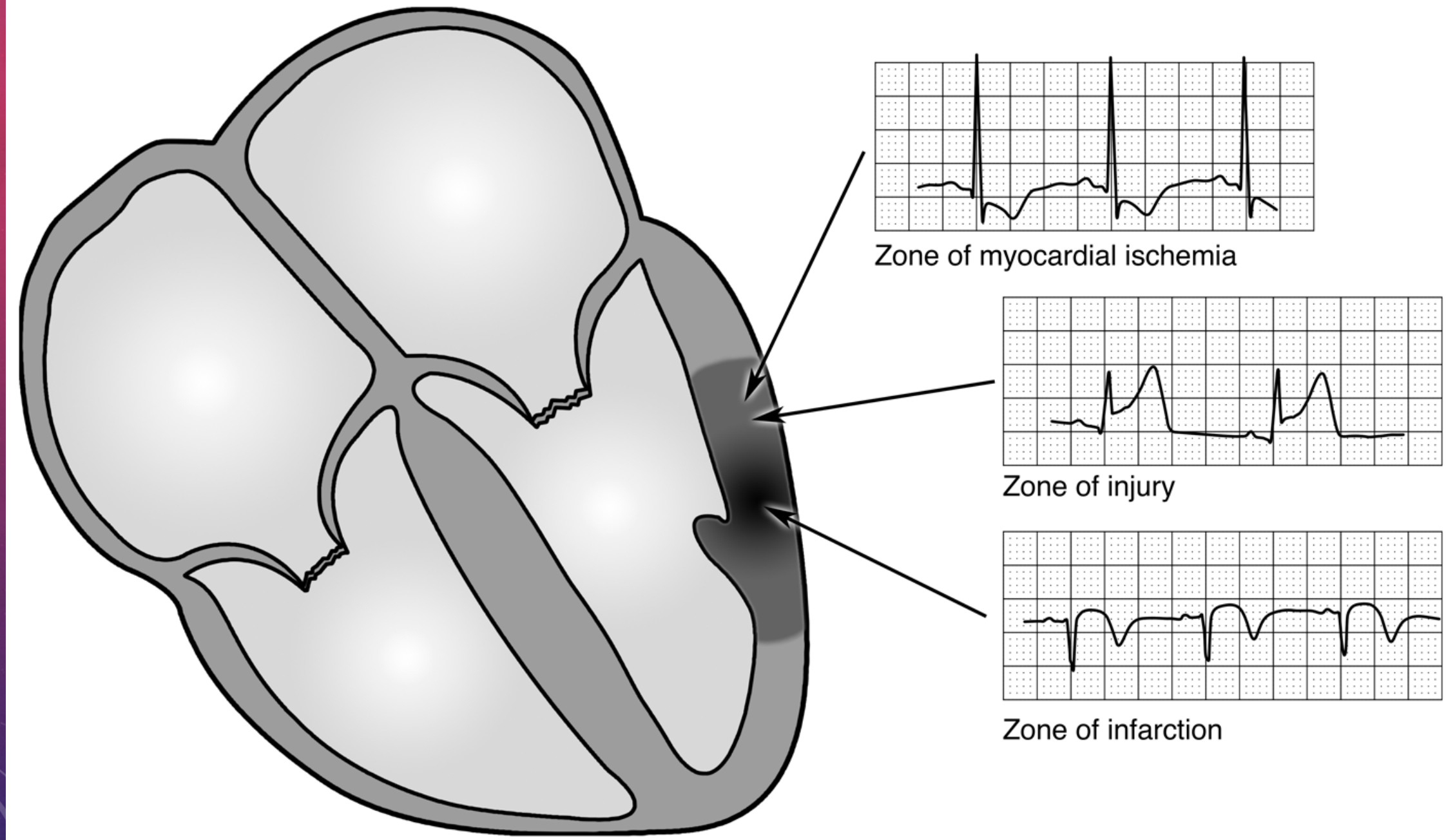
QUESTION 3: WHAT DO YOU ORDER FIRST?

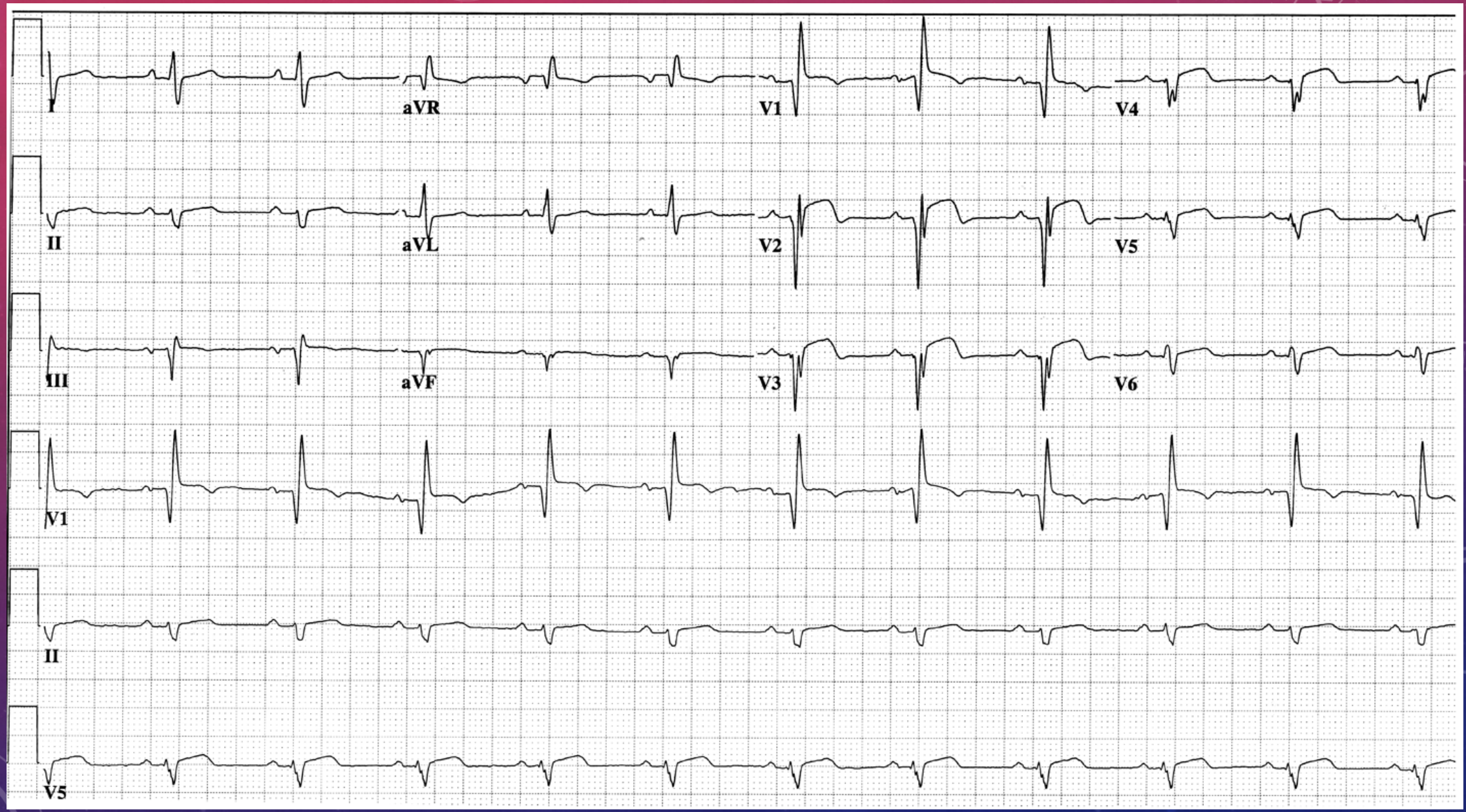
A. CK, CKMB, troponin
B. Chem 13, CBC
C. Chest x-ray
D. ECG
E. Echocardiogram
F. Stress test
G. Upper Endoscopy
H. Diazepam

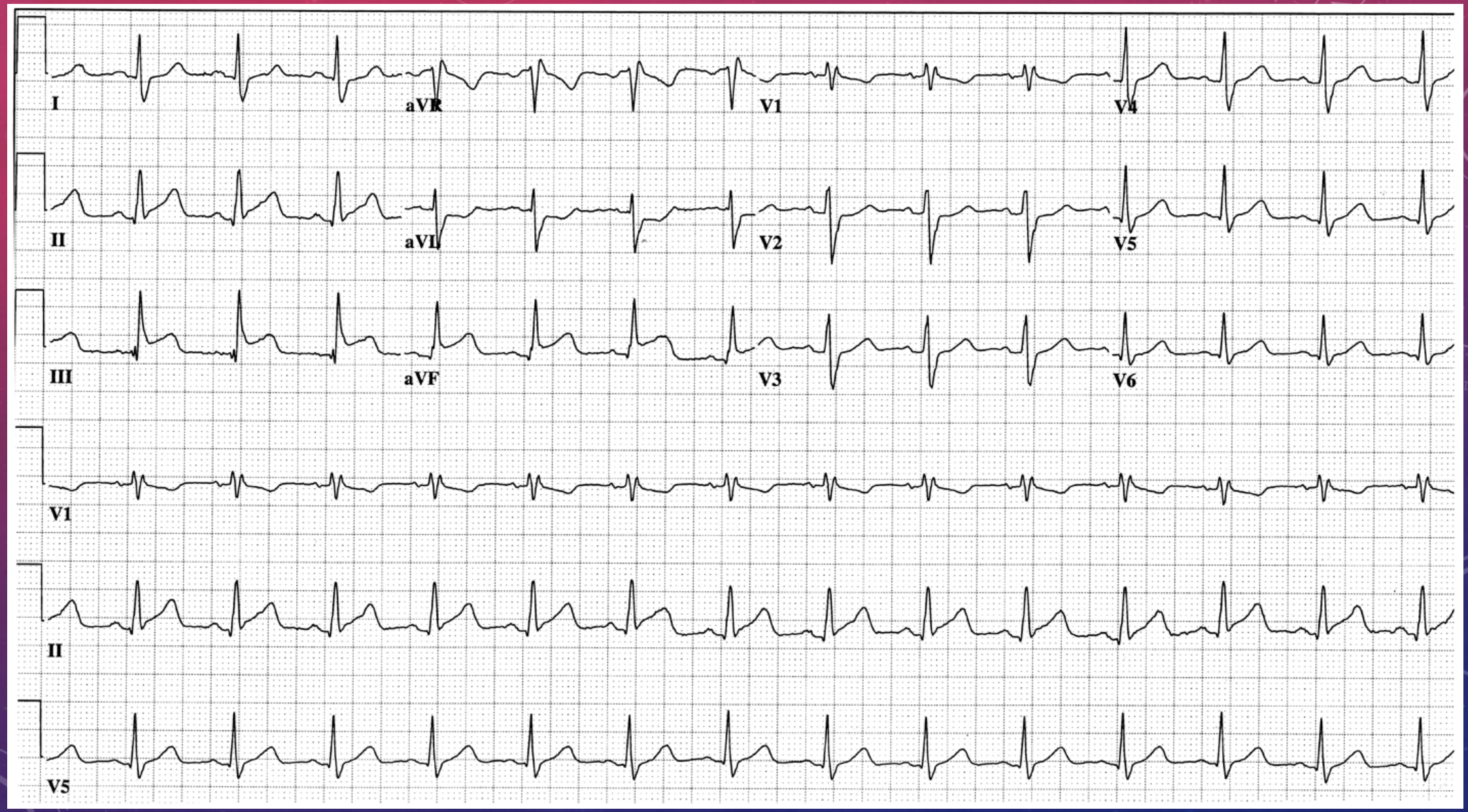
ECG

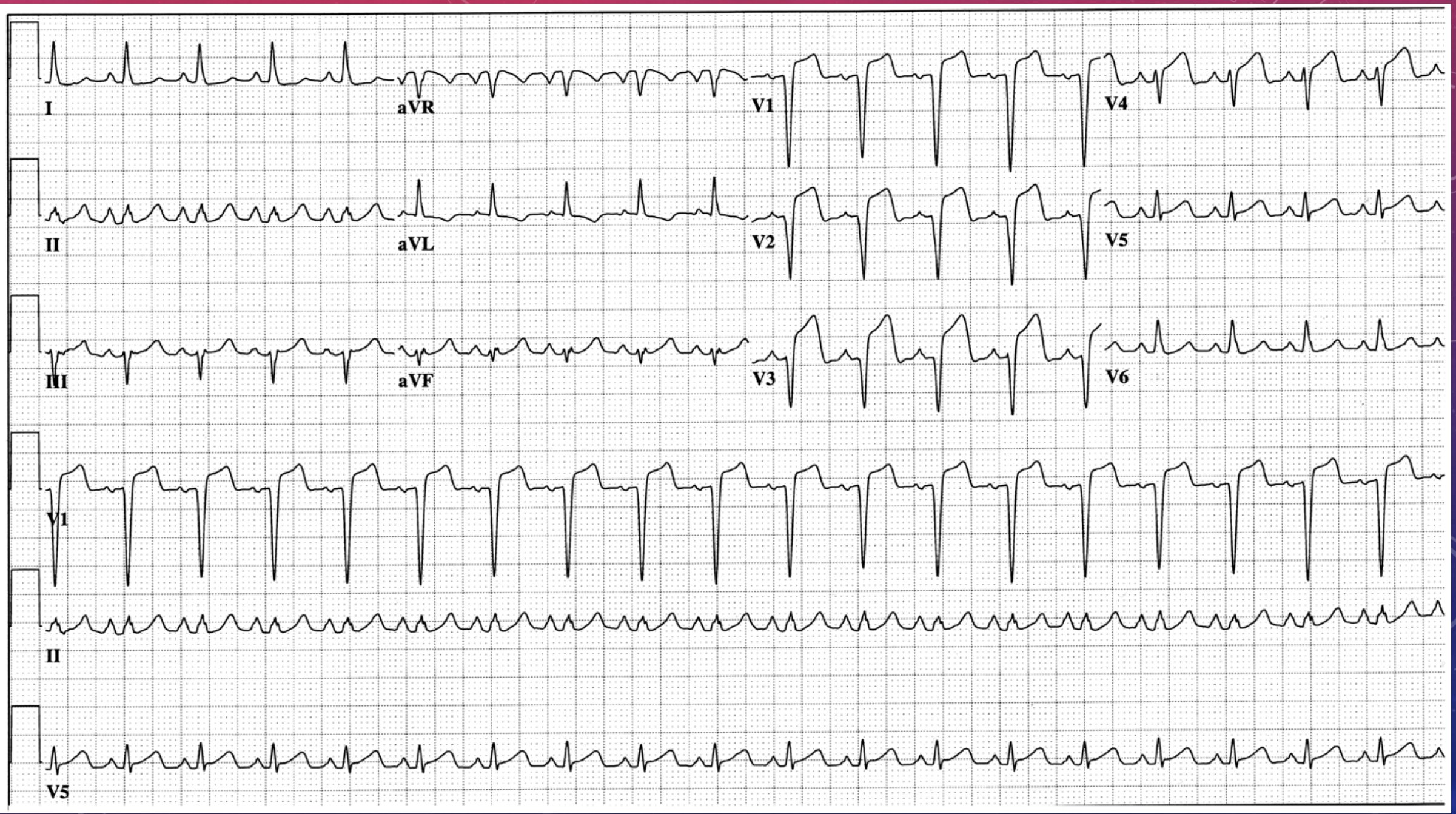
ALWAYS ORDER THE ECG **FIRST** FOR ANYONE WITH ONGOING CHEST PAIN

- ST depression => ischemia
- ST elevation => injury
- Q waves => infarction

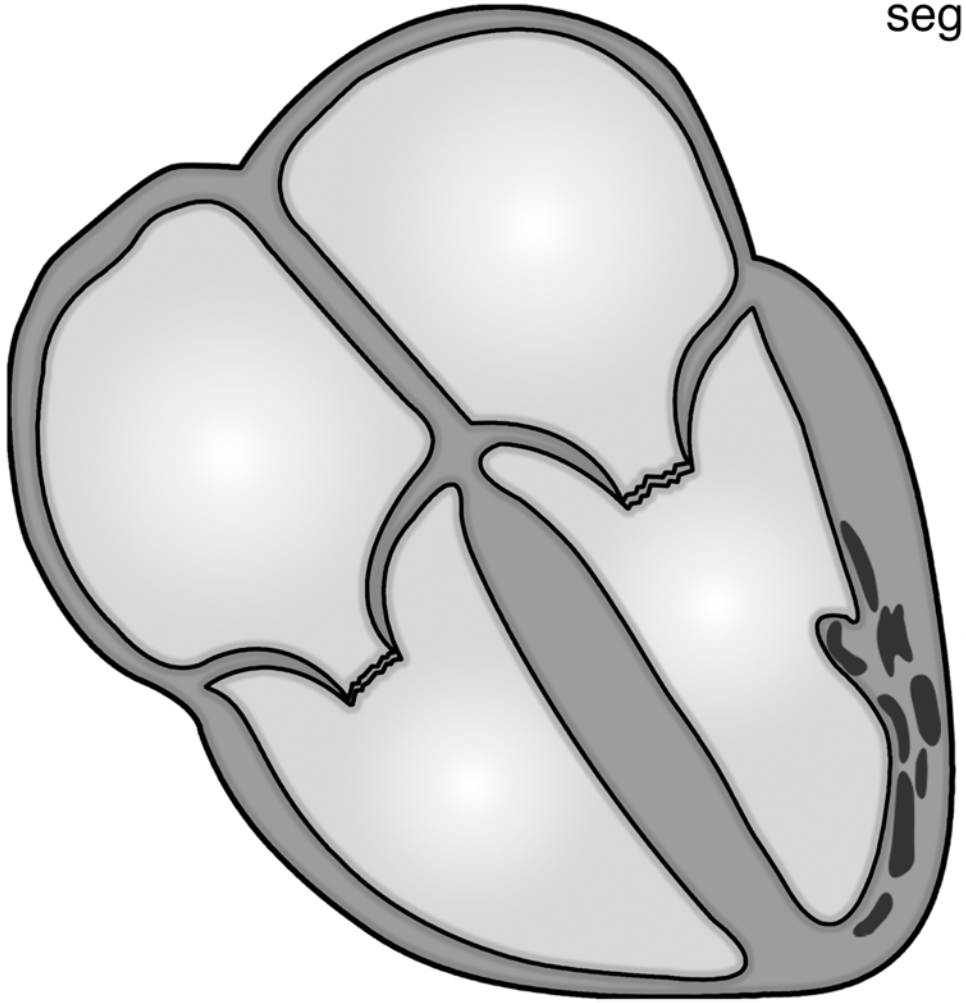

Zone of myocardial ischemia
Zone of injury
Zone of infarction

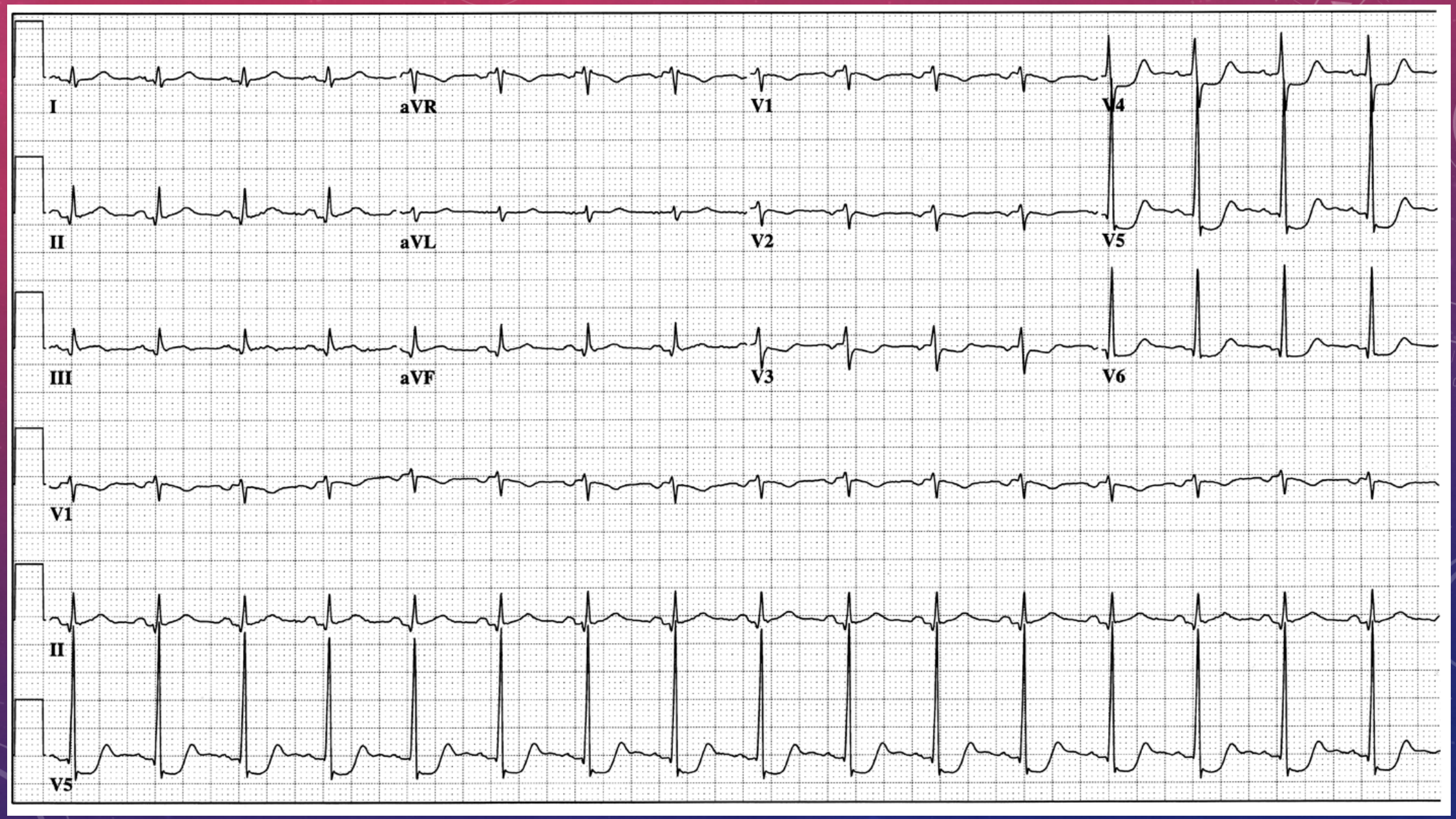

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5

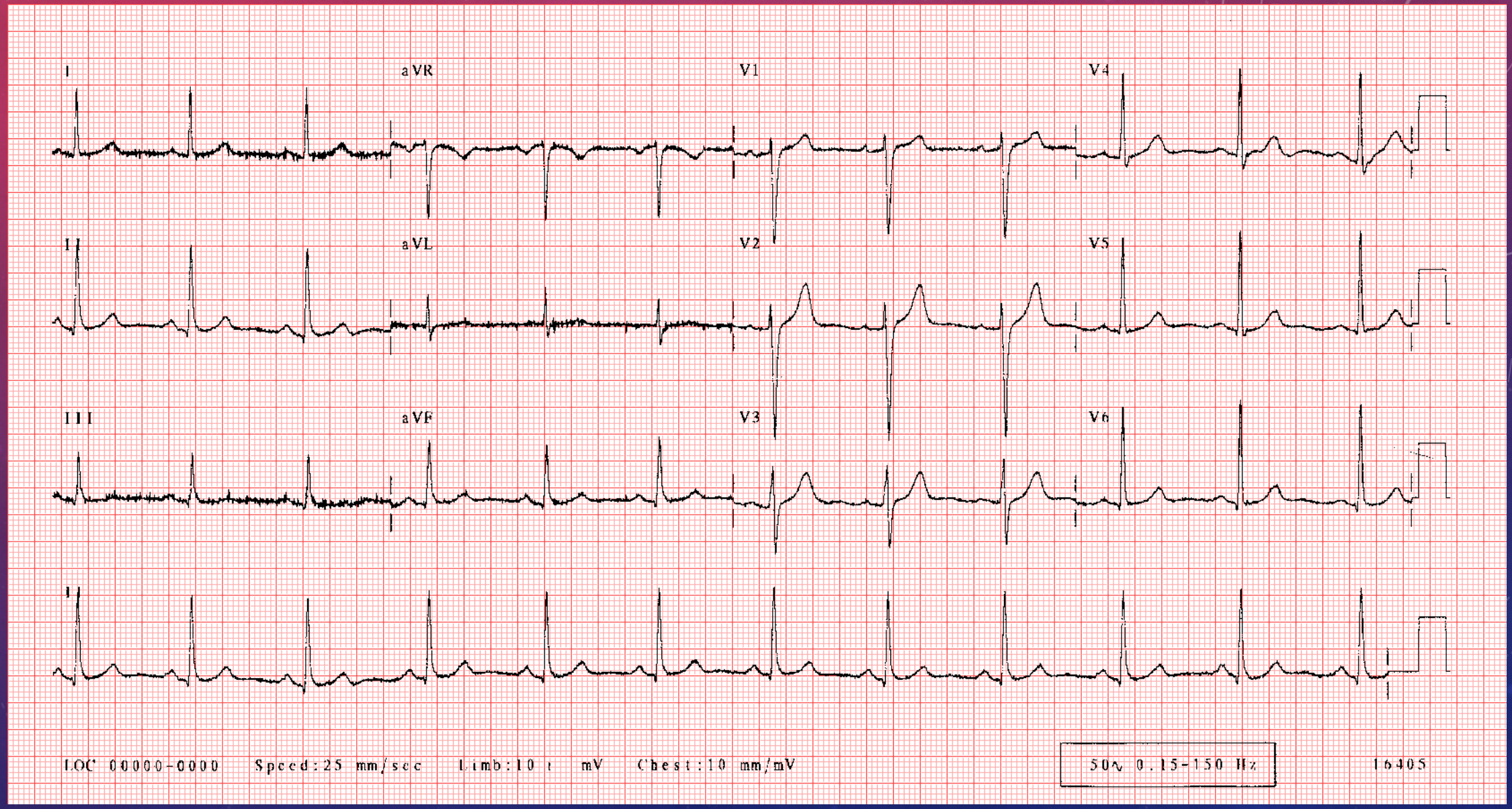

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5

Patchy necrosis, mainly confined to the subendocardial region, typical of a non-ST segment elevation MI (NSTEMI)




I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5

CASE – MR. PHIRI



QUESTION: WHAT DO YOU ORDER NEXT?

A. CK, CKMB, troponin
B. Chem 13, CBC
C. Chest x-ray
D. ECG
E. Echocardiogram
F. Stress test
G. Upper Endoscopy
H. Psych consult

QUESTION 4: WHAT DO YOU ORDER NEXT?

A. **CK, CKMB, troponin (alternates: AST/ALT)**
B. Chem 13, CBC
C. Chest x-ray
D. ECG
E. Echocardiogram
F. Stress test
G. Upper Endoscopy
H. Psych consult

CASE – MR. PHIRI

- All labs are normal
- It's now 11pm, you discuss the case with the consultant by phone and order another ECG and set of labs for 6am
- While you await those results, at 7am the consultant is ready to review the case with you…what is your plan? What is your working diagnosis? Did Mr. Phiri have a myocardial infarction? Can Mr. Phiri go home?
- Have you confidently excluded ACS?
  - Did Mr. Phiri have a myocardial infarction?
- What about the rest of his work up? Are you sure it's not his heart? If not, what is it?

CASE – MR. PHIRI

- Summary by 8am
  - Normal labs x 2
  - Normal ECG x 2
  - No acute pathology on CXR
  - Awaiting 3rd set of cardiac enzymes
- Plan - NPO:
  - If 3rd set positive => to ICU for management of heart attack
  - If negative => stress test if possible

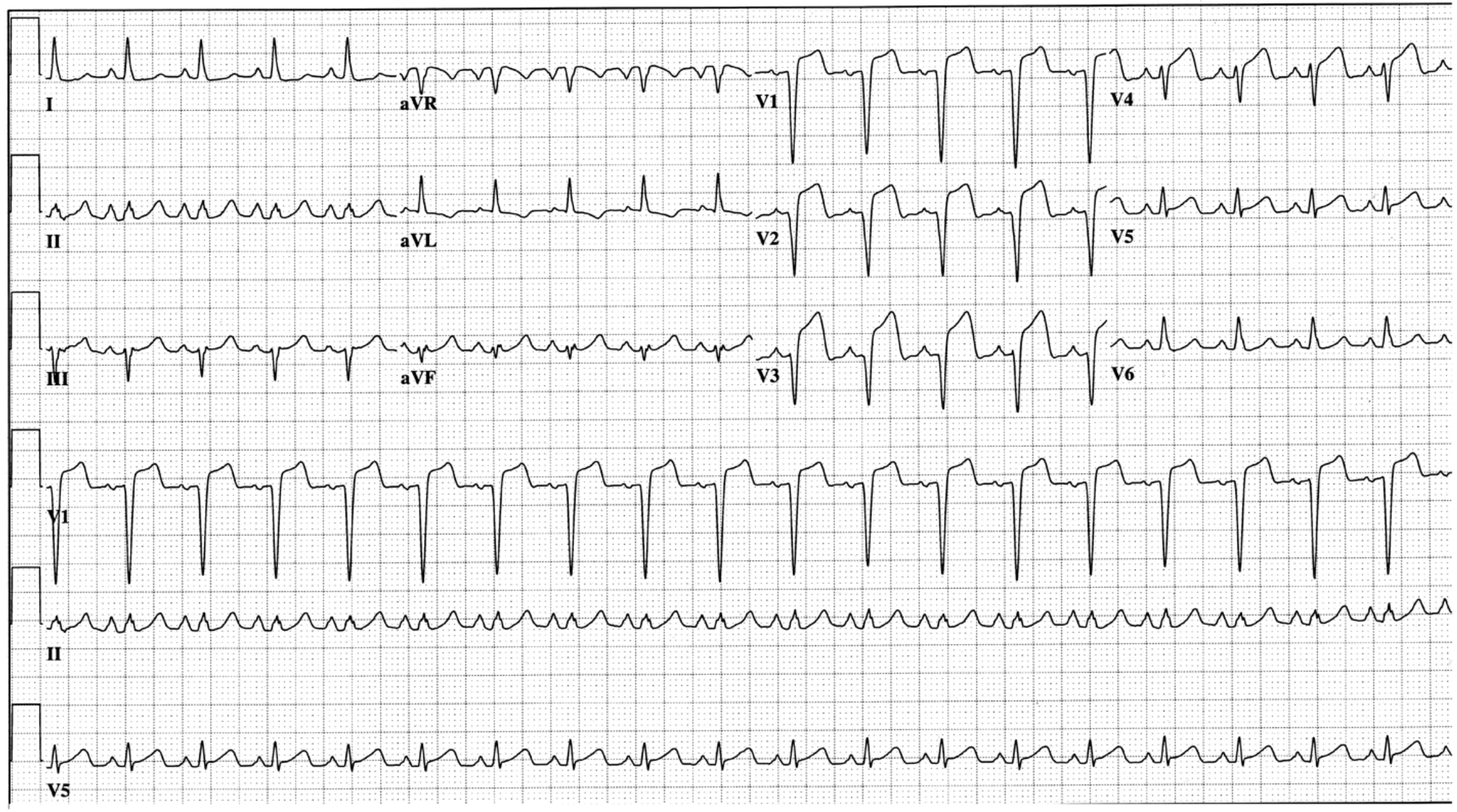
CARDIAC STRESS TESTING

		Stress		
		EKG	Echo	Nuclear (Technetium or Thallium)
Test	Treadmill	Treadmill EKG	Treadmill Echo	Treadmill Nuclear
	Chemical (Dobutamine, Persantine, Adenosine)		Chemical Echo	Chemical Nuclear*

*Most Common

CASE – MR. ISSA

- 67 yr old male with 3 hrs chest pressure, diaphoresis, dyspnea, comes to ER.
- Vitals: 130/84 HR 101, sat RR16 t37.7, sat 96% RA.
- Exam: no resp. distress. JVP 6 cm above sternal angle. regular rhythm, no murmurs, + s3, bibasilar crackles, warm extremities.
- PMH: DM2, HTN, GERD


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5

QUESTION 5: WHAT DO YOU DO NEXT?

A. Order CK, CKMB, troponin, Chem 13, CBC
B. Order Chest x-ray
C. Repeat ECG
D. Give STAT nitroglycerin & chewable aspirin and call the consultant on for ICU admission or transfer
E. Finish your history and physical exam then call the consultant to present the case
F. Show the ECG to the other GPs and discuss the case with them first
G. Tell the family to take them to a specialist

QUESTION 5: WHAT DO YOU DO NEXT?

A. Order CK, CKMB, troponin, Chem 13, CBC
B. Order Chest x-ray
C. Repeat ECG
D. Give STAT nitroglycerin & chewable aspirin and call the consultant on for ICU admission or transfer
E. Finish your history and physical exam then call the consultant to present the case
F. Show the ECG to the other GPs and discuss the case with them first
G. Tell the family to take them to a specialist

INITIAL MANAGEMENT?

- This is an EMERGENCY, first steps?
  - Call consultant, alert HDU/ICU team, apply a patient monitor
  - Stabilize the patient prior to transfer
- MONA
  - Morphine
  - Oxygen
  - Nitroglycerin
  - Aspirin
- Thrombolytics – tenektaplase in select cases
- Anticoagulation – enoxaparin
- High dose statin (atorvastatin 80mg or rosuvastatin 20mg)
- Anti-platelet (clopidogrel) in appropriate cases

ISCHEMIC HEART DISEASE

- Uncomplicated myocardial infarction
  - 2-4 days in HDU with cardiac monitoring
  - Aspirin, statin, beta blocker at discharge
  - HgbA1c and fasting cholesterol profile
  - Optimize BP
  - Echocardiogram
  - Referral out for coronary angiography if feasible, if not then risk stratification with stress test when available
- Complicated by heart failure
  - Avoid beta blockers (ace-I instead if BP will tolerate it)
  - Diuretics (furosemide + spironolactone)
  - Digoxin for moderate heart failure
  - Dobutamine infusion for severe heart failure or shock

COMPLEX MI

- High Risk MI – consider transfer / evacuation
  - Hemodynamic instability
  - Large territory
  - Ongoing angina at rest
- Supportive care, updates to family on poor prognosis

CARDIOLOGY OVERVIEW

- Basic arrhythmias: diagnosis and management
- Heart failure: diagnosis and acute/chronic treatment goals
- **Ischemic heart disease:**
  - **the acute coronary syndrome spectrum**
  - **management of stable coronary artery disease**
  - **Coronary disease equivalent: vascular disease, diabetes**
- Anticoagulation: warfarin adjustment
- Rheumatic heart disease: medical management
- Don’t forget pulmonary diseases

CHRONIC ISCHEMIC DISEASE

- Known history of CAD or PAD or DM: Hx stent, MI, CABG, CVA, carotid stenosis, claudication, vascular erectile dysfunction
  - **All** get asa, statin, beta blocker
  - Routine stress tests if asymptomatic NOT needed
  - At least annual lipid profile, FBS, ECG
  - Echo only if signs/symptoms of CCF or valve disease or for baseline prior to major surgery
  - Stress test for high risk patients, exertional symptoms, and pre-exercise regimen for sedentary patients
- Chronic stable angina
  - Not urgent
  - Maximize doses of beta-blockers, calcium channel blockers, nitrates
  - Always asa, statin

CARDIOLOGY OVERVIEW

- Basic arrhythmias: diagnosis and management
- Heart failure: diagnosis and acute/chronic treatment goals
- Ischemic heart disease:
  - the acute coronary syndrome spectrum
  - management of stable coronary artery disease
  - Coronary disease equivalent: vascular disease, diabetes
- **Anticoagulation: warfarin adjustment**
- Rheumatic heart disease: medical management
- Don’t forget pulmonary diseases

WHEN TO TREAT?

- Atrial fibrillation
  - CHADS2 and CHADsVASC Scores
  - HAS BLED Scores
- Most acute and chronic thromboembolic disease if no contraindication
- High risk of thromboembolic event
  - Post op orthopedic surgery
  - Critically ill / immobile inpatients
  - Coagulopathy

- https://www.healthdecision.org/tool#/tool/afib

ORAL ANTICOAGULATION

- Most common is warfarin
- Rivaroxaban Apixaban Dabigatran are alternates
- Prior to initiation
  - Discussion of risks and benefits
  - Discussion of need for monthly INR
  - Consider any upcoming need of surgery/procedures

STROKE RISK IN A FIB

ACCP 2012 Guidelines for A Fib

$CHADS_2$ score	Score	Therapy
One point each for: - **C**HF - **H**ypertension - **A**ge ≥75 - **D**iabetes mellitus - **S**troke/TIA history (2 pts)	0	Nothing *or* ASA 75-325 mg
	≥1	Oral anticoagulant (OAC) *or* ASA+clopidogrel (if not OAC candidate)

If OAC: favor dabigatran over warfarin

Rivaroxaban or apixaban instead of warfarin?

You, *Chest* 141(Suppl):e531S, 2012

HASBLED

H = Hypertension – 1 point
A = Abnormal renal or hepatic function – 1 point each
S = Stroke – 1 point
B = Bleeding – 1 point
L = Labile INRs – 1 point
E = Elderly (Age > 65 years) – 1 point
D = Drug or alcohol – 1 point each

HAS-BLED score	Major Bleeds (%/yr)
0	1.13
1	1.02
2	1.88
3	3.74
4	8.70
5	12.50

WARFARIN

Dosing considerations

- Most common initiation dose is 5mg daily
  - Use 2.5mg daily if elderly or chronically ill
- Adjust to target INR (most commonly 2-3)
  - Adjust weekly dose; use easy to remember combinations like MWF/TTSS

WARFARIN

INR testing

- INR check prior to initiation and every 2-3 days until > 2
- INR check in 1-2 weeks after any outpatient adjustment
- INR check every 4-8 weeks once stable

ORAL ANTICOAGULATION

Drug and food interactions

- TEND TO DECREASE INR (need higher dose of warfarin):
  - Green leafy vegetables / vitamin K
  - Antiepileptics, phenobarb, OCP, Rifampacin
- TEND TO INCREASE INR (need lower dose of warfarin):
  - Alcohol, cranberry juice
  - allopurinol, aspirin, bactrim, brufen, cipro, clarithromycin, statins, fenofibrate, PCM, tramadol, thyroxin

CASE

- Mrs. Nyirenda is a 53 yo woman with HTN and DM who presents with palpitations. Her pulse is irregular and ECG shows atrial fibrillation with a heart rate of 106min and BP of 154/89mmHg.
  - Should you recommend warfarin for her?
  - What dose to start her on?
  - When should she return for INR testing?
- After 10 days her INR is 1.8
  - Adjust warfarin dose?
- She sees other GPs for a few months then returns when you are on duty. She is on warfarin 5mg Mon, Wed, Sat and 7.5mg Sun, Tues, Thur, Fri. INR 3.2
  - Adjust warfarin dose?

CARDIOLOGY OVERVIEW

- Basic arrhythmias: diagnosis and management
- Heart failure: diagnosis and acute/chronic treatment goals
- Ischemic heart disease:
  - the acute coronary syndrome spectrum
  - management of stable coronary artery disease
  - Coronary disease equivalent: vascular disease, diabetes
- Anticoagulation: warfarin adjustment
- **Rheumatic heart disease: medical management**
- Don’t forget pulmonary diseases

RHEUMATIC HEART DISEASE

- Rheumatic Fever: 0.3-3% of pharyngitis from group A streptococcal infection
  - Autoimmune response
  - Valve involvement = acute carditis
  - 50-80% of those with carditis -> chronic RHD
- Cardiac involvement
  - Under 15 yo usually regurgitation (mitral/aortic)
  - Over 15 yo usually stenosis (mitral)
- Can present during pregnancy (early 3rd trimester) – very high risk!

RHEUMATIC HEART DISEASE

- Lifelong penicillin
  - Monthly Benz PCN injection preferred over daily oral pen VK
  - Not for treatment, to avoid further damage
- Medical management of CCF and afib
  - Heart rate ideally 60 at rest for diastolic filling
  - Aspirin or warfarin if afib
  - Diuretics as needed
  - Valvuloplasty or replacement is select cases

CARDIOLOGY OVERVIEW

- Basic arrhythmias: diagnosis and management
- Heart failure: diagnosis and acute/chronic treatment goals
- Ischemic heart disease:
  - the acute coronary syndrome spectrum
  - management of stable coronary artery disease
  - Coronary disease equivalent: vascular disease, diabetes
- Anticoagulation: warfarin adjustment
- Rheumatic heart disease: medical management

CARDIOLOGY OVERVIEW

- Heart including chambers, valves, blood supply, automaticity
  - Congenital heart disease
  - CCF (systolic, diastolic, right-sided, valvular, shunts)
  - Ischemic heart diseases
  - Conduction diseases
  - Endocarditis/tumors/masses
- Aorta and major blood vessels
  - Vasculitis (cardio/rheum/heme-onc/ID)
  - Aneurysms (cardio, gen surg, thoracic surg, vascular surgery, neuro, neurosurg)
  - Hypertension (cardio, GP, renal)
  - PAD/PVD (GP, cardio, gen surg, vasc surg, heme-onc)
  - Arterial and venous thrombosis (cardio, GP, gen surg, vas surg, heme-onc, pulm)
  - Pulmonary hypertension (cardio, pulm)

MISCELLANEOUS

- Endocarditis -> 6 weeks IV antibiotics plus surgery
- Intracardiac tumor or thrombus -> warfarin anticoagulation
- Pulmonary embolism -> minimum 6 months anticoagulation
- Cor pulmonale / COPD / asthma / recurrent bronchitis / pulmonary fibrosis -> optimize pulmonary status

RESOURCE

- ECGlibrary.com