Stable Ischemic Heart Disease

2016

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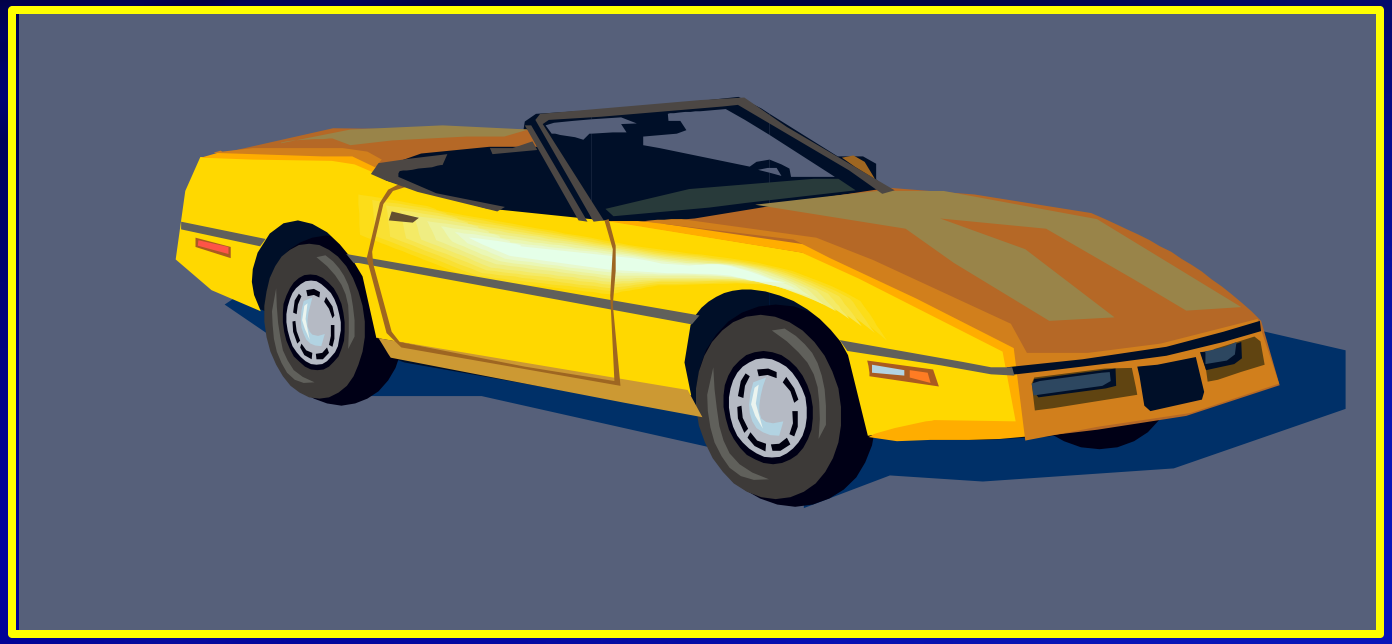
NO DISCLOSURES



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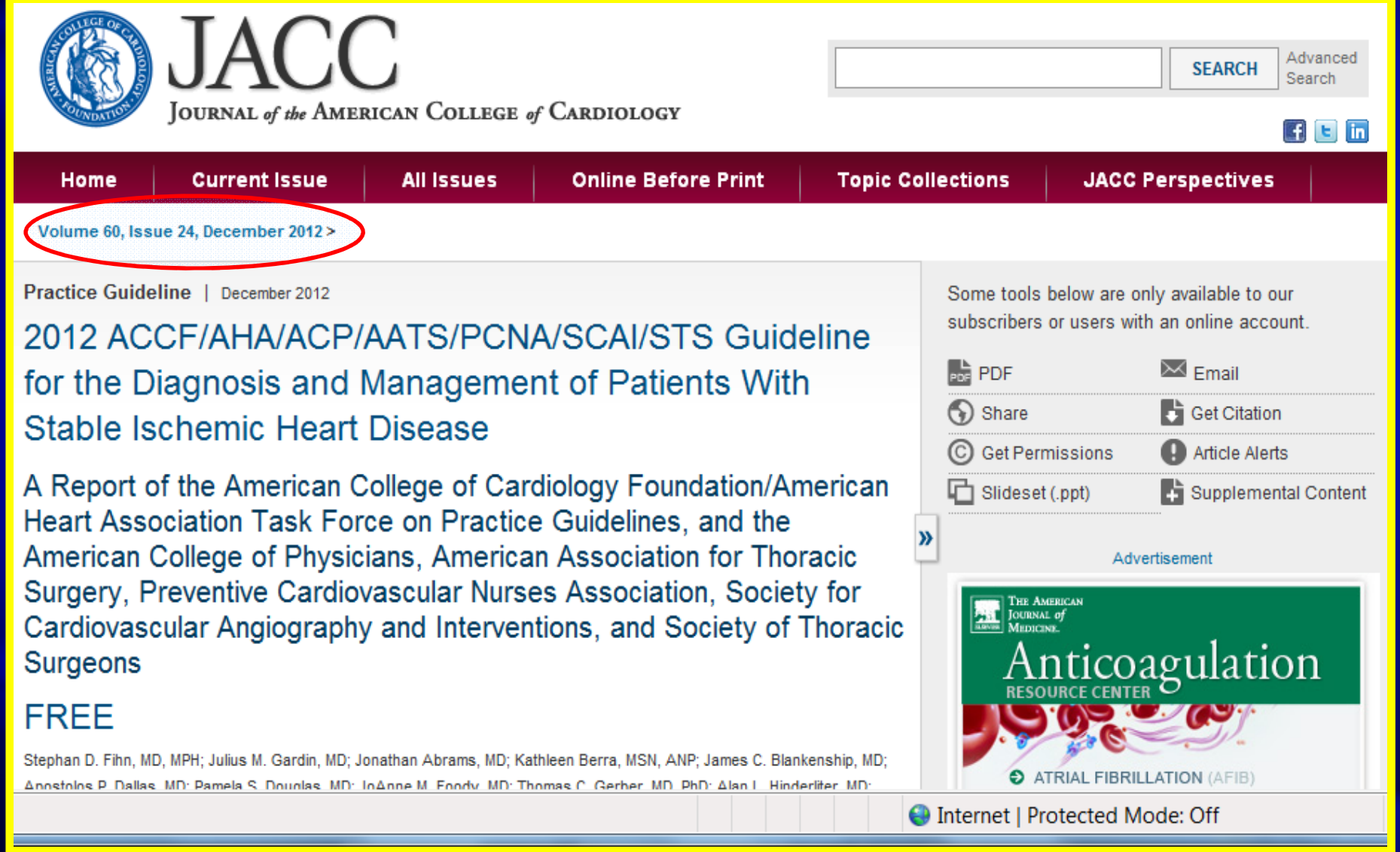
Stable Ischemic Heart Disease Objectives

1. Identify guideline recommendations for the treatment of SIHD
2. Describe the optimal medical management for patients with SIHD
3. Define optimal therapies for special groups of patients with SIHD

Scope of the problem….
Ischemic Heart Disease

- Over 17 million people in the United States have IHD
- Up to 20% of patients with stable angina become unstable within one year
- IHD is the number one cause of death in both men and women - - over 400,000 deaths in the US annually

2012 ACC AHA Guidelines



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Practice Guideline | December 2012

2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, and the American College of Physicians, American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons

FREE

Stephan D. Fihn, MD, MPH; Julius M. Gardin, MD; Jonathan Abrams, MD; Kathleen Berra, MSN, ANP; James C. Blankenship, MD; Apostolos P. Dallas, MD; Pamela S. Douglas, MD; JoAnne M. Foody, MD; Thomas C. Gerber, MD, PhD; Alan L. Hinderliter, MD;

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The American Journal of Medicine
Anticoagulation
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Stable

Chronic

- Precipitating event
- Predictable
- Reproducible
- Unchanged

Unstable

Rest, crescendo, ACS

- Abrupt onset
- Unpredictable
- Unstable intensity
- New or changed in characteristics

Old Cart

Onset
Location
Duration

Characteristics
Aggravating
Relieving
Treatment

Stable Angina Gone Wrong
Exacerbating Factors

- **Fever**
- **Infection**
- **Anemia**
- **Thyrotoxicosis**
- **Tachycardia**
- **Drugs that activate the Sympathetic Nervous System (↑O2 Demand)**

CCS Angina Classification

Canadian Cardiovascular Society

- Class I – angina with unusually strenuous activity (>7 mets)
  (no symptoms with normal activities)

- Class II – angina with prolonged, activity more than norm, after meals (>5 mets)
  (walking uphill, rapid stairs, emotional or cold exacerbates)

- Class III – angina with normal activities of daily living (2 mets)
  (1-2 blocks on level, steady pace in normal conditions)

- Class IV – rest angina (<2 mets)
  (symptoms with any activity, and sometimes rest)

Spectrum of Angina

Stable Angina **Unstable Angina** **NSTEMI** **STEMI**

Outpatient Management

Evaluation and Urgent / Emergent Treatment

52 y/o man – exercise program

52 y/o man presents for a GME and describes a family history of coronary artery disease(CAD). He has no personal history of CAD, but has HTN

His exam is normal

He wants to start an exercise program and underwent a TMET - 10 minutes (100% FAC), 1 mm ST depression at peak exercise

TTE - normal LV size and function (outside)

What is the next step in management?

A. Coronary angiography followed by PCI
B. Exercise sestamibi scan
C. Aggressive modification of risk factors
D. Computerized tomography angiography (CTA)

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Noninvasive Risk Stratification

High Risk (>3% annual mortality rate)
1. Severe resting LV dysfunction (LVEF <35%)
2. High-risk Duke treadmill score (score ≤ -11)
3. Severe exercise-induced LV dysfunction (exercise LVEF <35%)
4. Stress-induced large perfusion defect (particularly if anterior)
5. Stress-induced multiple perfusion defects of moderate size
6. Large, fixed perfusion defect with LV dilation or increased lung uptake (thallium-201)
7. Stress-induced moderate perfusion defect with LV dilation or increased lung uptake (thallium-201)
8. Echocardiographic wall-motion abnormality (involving >2 segments) developing at a low dose of dobutamine (≤10 mg/kg/min) or at a low heart rate (<120 bpm)
9. Stress echocardiographic evidence of extensive ischemia
Intermediate Risk (1-3% annual mortality rate)
1. Mild/moderate resting LV dysfunction (LVEF 35-49%)
2. Intermediate-risk Duke treadmill score (-11 < score < 5)
3. Stress-induced moderate perfusion defect without LV dilation or increased lung intake (thallium-201)
4. Limited stress echocardiographic ischemia with a wall-motion abnormality only at higher doses of dobutamine involving ≤2 segments
Low Risk (<1% annual mortality rate)
1. Low-risk Duke treadmill score (score ≥5)
2. Normal or small myocardial perfusion defect at rest or with stress[a]
3. Normal stress echocardiographic wall motion or no change of limited resting wall motion abnormalities during stress[a]

SIHD

Key Points – Testing / Decisions

Normal exercise test (nuclear or a normal exercise stress) is associated with a very low annual risk of cardiac death and MI

Activity 30-60 minutes of moderate-intensity aerobic activity, 5-7 days per week always and forever

Shared decision making - Patient Centered Care!

SIHD

Key Points – Coronary CT

Coronary CT(CTA) is reasonable for patients with an intermediate pretest probability and:

- symptoms with prior normal test findings
- inconclusive ex/stress testing, or unable to ex/stress

Coronary CTA should not be performed for assessment of native coronary arteries with known moderate or severe calcification, or with coronary stents <3 mm in diameter in patients with known SIHD who have new or worsening symptoms not consistent with unstable angina, irrespective of ability to exercise.

Intermediate Pretest Probabiity

Who are they?

We need to know…..

Noninvasive Risk Stratification

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SIHD 2013
Key Points - Treatment

CABG vs PCI complete revascularization is accomplished less often in patients receiving PCI than CABG, later outcomes thereafter remain unclear

Coronary artery bypass grafting (CABG) surgery is probably recommended in preference to percutaneous coronary intervention (PCI) to improve survival in some patients.

Medications SIHD

Question: What is recommended medical therapy for stable angina?

A. ACE-I, Dig and beta blocker

B. ASA, Dig and beta blocker

C. ASA, nitrates, beta blocker, lipid agent

D. Risk factor modification and close f/u with Primary Care Provider

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Medication - Key Points for practice

Aspirin 75-162 mg daily forever

Beta-blocker therapy started and continued for 3 years* in all patients with normal left ventricular function after MI or acute coronary syndrome

***Bangalore, Circ CV Outcomes Nov 2014**

AceI – all patients with SIHD who also have hypertension, diabetes mellitus, left ventricular ejection fraction of 40% or less, or chronic kidney disease, unless contraindicated

Ranolazine can be useful when prescribed as a substitute for beta-blockers.

Ranolazine

- Metabolic modulator exact mechanism remains unknown, but lesser effect on hemodynamics
- Can be used in conjunction with ACE I, BB, CCB, nitrates in patients with inadequate symptom control
- Diabetics, intolerant to BB
- May prolong QT http://www.crediblemeds.org/

A nitrate free interval is important for optimal medical management

A. True

B. False

A nitrate free interval is important for optimal medical management

A. True

10-12 hour nitrate-free interval should be implemented to prevent nitrate tolerance

B. False

Is it safe to stop statins in patients with SIHD?

A. Yes, you said they were stable..
B. No, never…
C. May stop for 30 days
D. May stop for 60-90 days

Is it safe to stop statins in patients with SIHD?

A. Yes, you said they were stable
B. No, never…
C. May stop for 30 days. Statins can be safely stopped for a defined period (30 d) on patients with stable angina, 0.3% risk of MI, stroke.
D. May stop for 60-90 days

Moderate dose statin therapy can lower LDL-C by approximately 30-50%

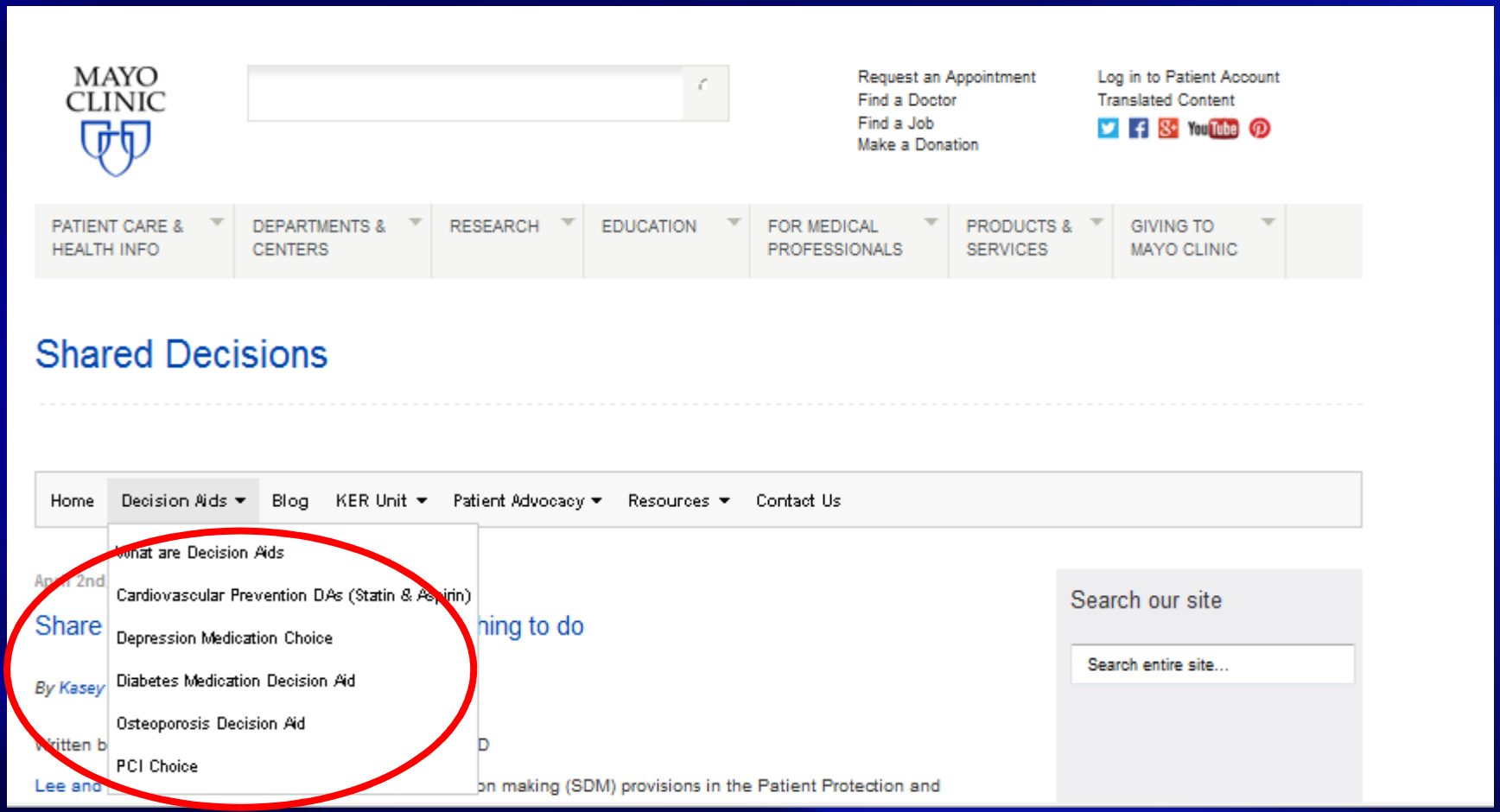
- Atorvastatin 10-20 mg
- Rosuvastatin 5-10 mg
- Simvastatin 20-40 mg
- Pravastatin 40-80 mg
- Lovastatin 40 mg
- Fluvastatin XL 80 mg
- Fluvastatin 40 mg bid

Key Points

- Review medication profile
- Monitor symptoms
- Stress test only as indicated by symptoms
- Modify risk factors (continue OMT)

Patient Decision Aids

http://shareddecisions.mayoclinic.org/



Practical Application

Optimal Medical Therapy (OMT) for SIHD

1. Lifestyle interventions
2. Pharmacologic therapy and secondary prevention
3. Treatment of ischemia and symptom control

Lifestyle/Risk Goals – What's it really mean?

Risk Factor	Goal
Smoking	Cessation
Total dietary fat / sat fat	<30% cals/ <7% cals
Dietary Cholesterol	<200 mg/day
Dietary sodium	<2000 mg/day (DASH)
Fish	3 serv/wk
BMI	BMI <25
Blood pressure	<140/90 mmHg
Lipids	Statins – mod/high (risk)
Non-HDL (secondary goal)	<100 mg/dl if TG ≥150
Diabetes	A1c <7%

72 y/o male with CAD, recent Afib

HPI 72 y/o gentleman presents with a known hx of CAD, recent TEE/DCCV for AF one month ago. He denies CP, SOB and continues to exercise regularly (swimming, walking, biking).

PMH CAD-NSTEMI six years ago, PCI LAD, GERD, DJD, BPH

72 y/o male with CAD, recent Afib

Medications

ASA 81mg, warfarin, simvastatin, metoprolol ER, omeprazole, proscar

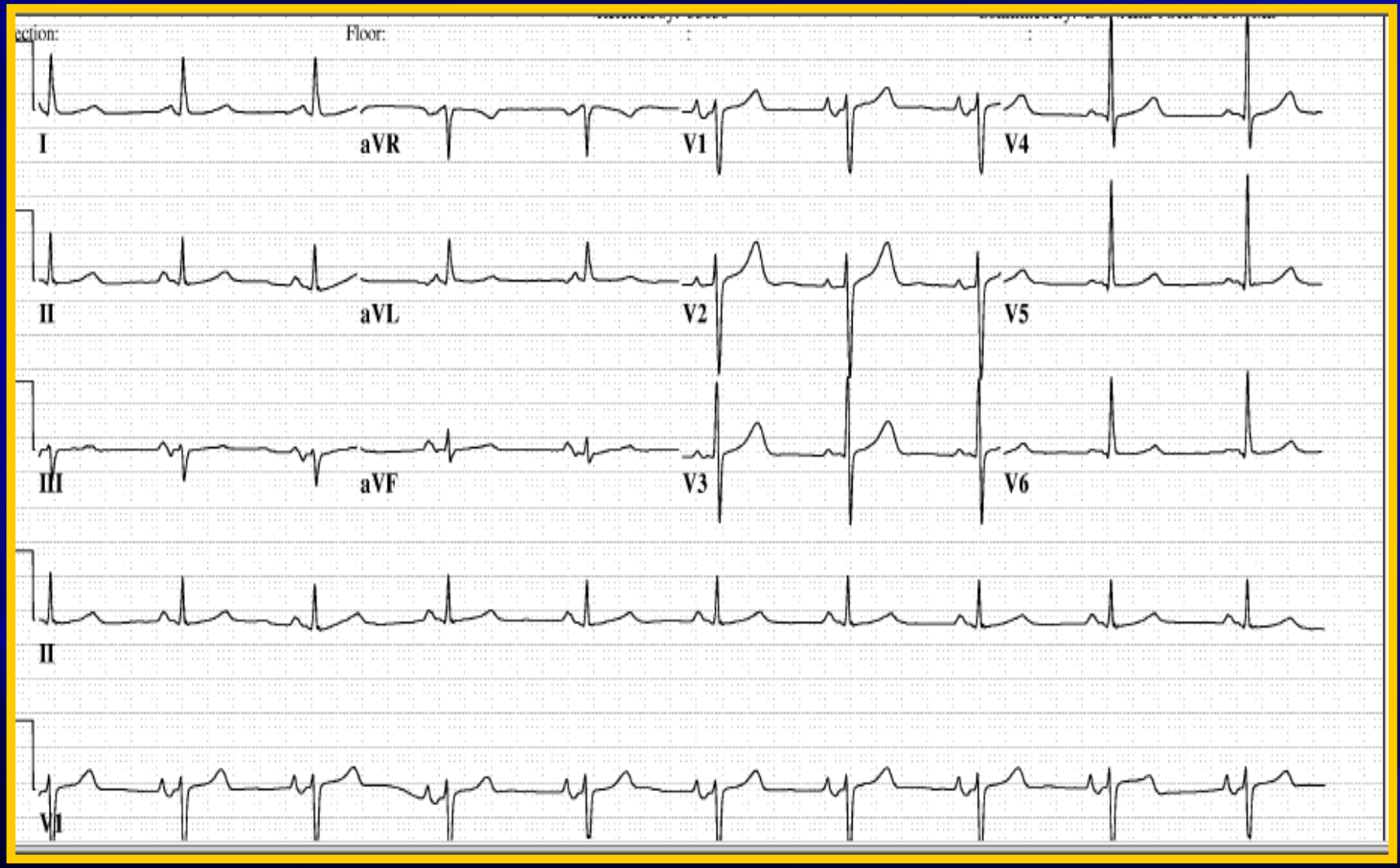
Physical Exam

HR 66 regular – 20 – 36.5 - 126/86, 132/74

CV – JVP-nl, No bruits, heart S1,S2, no S3

Lungs clear bilat Pulses full, no peripheral edema

72 y/o male with CAD, recent Afib
Presenting ECG



Spectrum of Angina

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Outpatient Management

Evaluation and Urgent / Emergent Treatment

Question: What is the indicated annual follow up for the patient?

A. Annual TMET

B. Exercise test with appropriate imaging modality

C. Coronary angiogram to define coronary anatomy

D. Risk factor modification, OMT and f/u with Primary Care Provider

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Key Points

- Review medication profile
- Monitor symptoms
- Stress test only as indicated by symptoms
- Modify risk factors (continue OMT)

60 year old female preop

60 y/o woman presents preop for hysterectomy. She has a hx of MI two years ago but is now asymptomatic walking 3 miles per day.

Exam: revealed 1+ tardus of her carotids, clear lungs, and an early peaking 2/6 SEM. S2 is normally split.

Echo: shows mild aortic stenosis with a mean gradient of 20 mmHg and a normal left ventricle.

What is the next step in management prior to planned noncardiac surgery?

A. Exercise thallium
B. Beta blockade and proceed with surgery
C. Angiography for PCI
D. CABG and AVR prior to noncardiac surgery

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Stable Angina Objectives
'*Need to Know Questions*'

- What are the contraindications for beta blockers?
- Which patients have improved survival with CABG vs. other treatment modalities?

Special groups

In which patients with stable coronary artery disease is coronary artery bypass grafting (CABG) the preferred form of revascularization?

A. Most patients with left main disease
B. 3-vessel and left ventricular dysfunction
C. Patients with diabetes
D. All of the above

Special groups

In which patients with stable coronary artery disease is coronary artery bypass grafting (CABG) the preferred form of revascularization?

A. Most patients with left main or disease
B. 3-vessel and left ventricular dysfunction
C. Patients with diabetes who are being considered for revascularization, particularly in the setting of multivessel, diffuse disease, have a survival advantage with CABG
D. All of the above

When is percutaneous coronary intervention (PCI) the preferred strategy for revascularization in stable coronary artery disease?

PCI is preferred for:

- Single-vessel disease if the morphology is suitable
- Patients (age <50 years) who are likely to need coronary artery bypass grafting at some time in the future
- Elderly patients with serious comorbid conditions, and those who are not surgical candidates
- Select patients with multivessel disease and preserved LVEF
- Select patients with left main disease

Coronary angiography and revascularization should be considered in patients with the following:

- Severe or progressive angina
- Angina that not adequately relieved by medical therapy
- Congestive heart failure
- Strongly positive stress test
- Recurrent symptoms (6 to 12 months) after percutaneous coronary intervention (PCI) in a coronary distribution supplying a moderate to large amount of myocardium

i.e. symptomatic patients

Special Groups Review

-Antiplatelet therapy (ie, ASA; if allergic to ASA, then clopidogrel)

-Beta-blockade in the presence of prior myocardial infarction or symptomatic or inducible ischemia

-Angiotensin-converting enzyme inhibitors in selected patients:

- CHF or EF less than 40%
- Diabetes
- Hypertension not controlled by other anti-anginal
- May be considered in any patient with documented coronary artery disease (class IIa)

-Nitrates for symptomatic ischemia

Practice Pearls Summary

Caution with aggressive BP management - excessive reduction in diastolic pressure has not been shown to improve outcomes and has been associated with an increase in mortality (reduced coronary perfusion?)

Caution with nicotine dependence therapy - worsening of existing depression and the risk for suicide with the use of varenicline (ChantexTM) FDA warning.

β-blockers caution in diabetics. The adverse event profile of β-blockers may limit their use. Avoid abrupt β-blocker withdrawal should be avoided – taper 1-3 weeks

- Absolute contraindications: severe bradycardia, pre-existing high degree of AVB, sick sinus syndrome, and refractory heart failure.
- Relative contraindications include bronchospastic disease or active peripheral arterial disease (β-blockers without vasodilating properties or selective agents at low doses may be considered).

Practical Pearls

Calcium-channel blockers should be used with caution in patients who are taking cyclosporine, carbamazepine, lithium carbonate, amiodarone, or digoxin because of potential drug/drug interactions.

Ranolazine helpful in diabetics, side effects are constipation, nausea, dizziness, and headache. The incidence of syncope is less than 1%. Ranolazine is contraindicated in combination with potent inhibitors of the CYP3A4 pathway, including ketoconazole and other azole antifungal agents, macrolide antibiotics, human immunodeficiency virus (HIV) protease inhibitors, grapefruit products or juice, and diltiazem.

Revascularization outcomes remain less favorable in women, in-hospital mortality after PCI also higher for women

Self Care Plan

Symptoms you may have
- Not feeling well.
- Shortness of breath.
- Feeling tired.
- Fast heartbeat or heart palpitations.
- Aching or pain in the chest that spreads to the neck, jaw, arms, shoulders, or back.
- Feeling fullness, pressure or tightness in your chest.
- Upset stomach or nausea, heartburn or indigestion, vomiting.

Know your medications
- Know what medications you are taking and know why you are taking them.
- Take your medications as you have been told.
- Do not stop any medication unless you talk to your health care provider.

Good health choices
- Do not smoke or use tobacco in any form.
- Avoid second-hand smoke.
- Choose food low in fat, cholesterol, sugar, and salt, also called sodium.
- Control your blood pressure.
- Go to cardiac rehabilitation regularly.
- Do regular exercise. Aim for 2½ hours each week.
- If you have diabetes, keep it under control.
- Identify stress in your life and get help to manage it.
- If you feel you are depressed, ask for help.
- Ask family and friends to support you. Stay in touch with them.
- If you drink alcohol, do it in moderation.
- Only use drugs or medications that your health care provider approves or prescribes for you.

Identify Your Zone

Green Zone
Stable

You are in the green zone when you:
- Feel well.
- Have no cardiac symptoms. See above for the list of cardiac symptoms.
- Are able to do your usual daily activities.
- Make good health choices. See above for the list of good health choices.

Your plan:
- Continue to follow your treatment plan.

Yellow Zone
Caution

You are in the yellow zone when you:
- Don't feel well.
- Are short of breath.
- Feel tired.
- Have a fast heartbeat, chest pain or both.
- Are not able to do your usual daily activities.
- Have other symptoms that relate to your heart condition. See above for the list of symptoms.

Your plan:
- Stop what you are doing and rest.
- Take nitroglycerin as you have been told by your health care provider.
- Wait 10 to 15 minutes before you go back to your usual activities.
- Call your care provider if your symptoms happen more often or if you are worried about your symptoms.
- Be sure you make good health choices. See above for the list of good health choices.

Red Zone
Alert!

You are in the red zone when:
- You still have symptoms after you take nitroglycerin.

Your plan:
- Stop what you are doing.
- Call 9-1-1 or your local emergency room.
- Take a second dose of nitroglycerin.

Stable CAD Highlights

- **ASA** if no contraindications
- Treat **risk factors and involve the patient!**
- **Statins** regardless of lipid levels unless contraindicated (moderate dose)
- **Beta blockers** as first-line anginal treatment, followed by **nitrates** and **calcium channel blockers** as indicated*
- **Refer** high risk patients

- *Bangalore, Circ CV Outcomes Nov 2014

Stable Ischemic Heart Disease Objective Summary

1. Identify guideline recommendations for the treatment of SIHD

2. Describe the optimal medical management for patients with SIHD

3. Define optimal therapies for special groups of patients with SIHD

Thank you!

Find the guideline

Google SIHD guideline
acc.org
cardiosource.com

linderbaum.jane@mayo.edu

Resources

- http://www.acc.org/
- http://www.cardiosource.com/
- http://www.blaufuss.org/
- O'Rourke, R.A.; Fuster, V.; Alexander, R. W.; Roberts, R.; King III, S. B.; Prystowsky, E.N.; Nash, I. S. (2005). *11th Edition Hurst's The Heart Manual of Cardiology.* McGraw-Hill Medical Publishing Division.
- Anderson, JL; Adams, CD; Antman, EA; et al. *ACC/AHA 2007 Guidelines for the Management of Patients With Unstable Angina/Non ST-Elevation Myocardial Infarction: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines for the Management of Patients With Unstable Angina/Non ST-Elevation Myocardial Infarction).* Circulation. 2007;116:e148-304.

- Bangalore, Circ CV Outcomes, November 2014.

Stable Angina

Snapshot

Aspirin

Statin

Beta Blocker

Nitrate

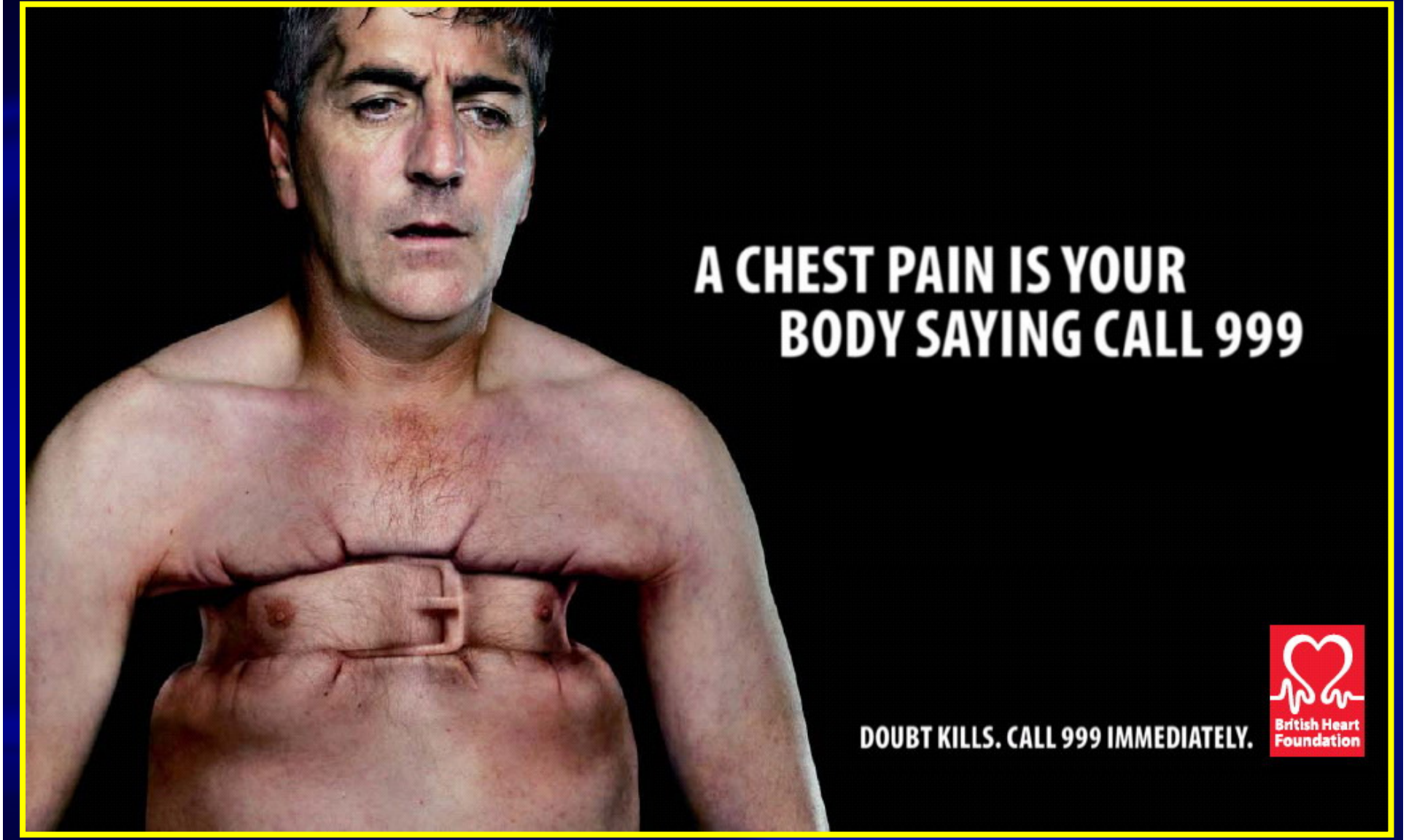
Ace Inhibitor

Calcium Channel Blocker

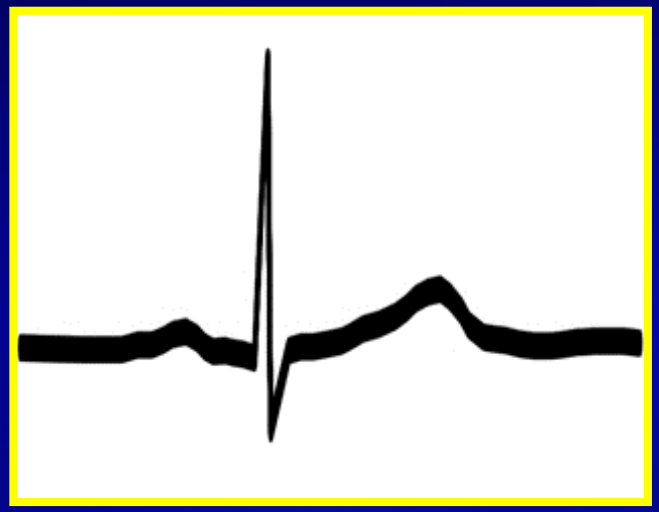
ACC/AHA/ACP Guidelines: Management of Stable Angina (LOE I)

A	Aspirin Anti-anginals
B	Beta-blockers Blood pressure control
C	Cholesterol management Cigarette/nicotine cessation
D	Diet Diabetes control
E	Education – risks Exercise

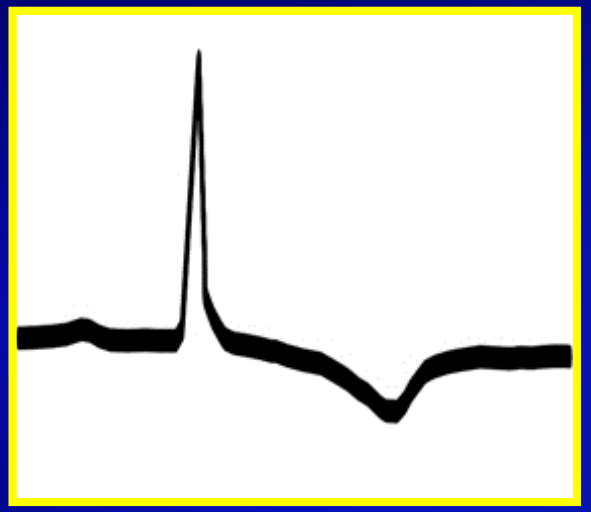
Understand indications for further testing of patients with known CAD	Pharmacological stress with either nuclear MPI or echocardiography is recommended for risk assessment in patients with SIHD who have left bundle-branch block on ECG, regardless of ability to exercise to an adequate workload	McCully - Risk Stratification	A 66 y/o woman presents with 6 months of chest discomfort, occurring with exertion but also has had fleeting chest pain. Each episode lasts several minutes and then spontaneously resolves. She is active and able to walk two flights of stairs The frequency and duration of pain have not changed. She has a history of DM on oral hypoglycemic agents but does not have a history of HTN, hyperlipidemia or tobacco use. Her examination is normal aside from a paradoxical split S2. Her EKG shows NSR with a LBBB. A rest echo showed an EF 66% without regional wall motion abnormalties aside from the paradoxical septal motion	Adenosine sestamibi	EKG TMET	Exercise echocardiogram	CT angiogram	Patients with a LBBB can have a false positive result with exercise imaging test due to the dyssynchronous contraction of the septum. Pharmacological stress with either nuclear MPI or echocardiography is recommended for risk assessment in patients with SIHD who have left bundle-branch block on ECG, regardless of ability to exercise to an adequate workload.	2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease: Executive Summary: A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, and the American College of Physicians, American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons Stephan D. Fihn, MD, MPH;et al. : J Am Coll Cardiol 2012;60:e44–164;	Pharmacological stress with either nuclear MPI or echocardiography is recommended for risk assessment in patients with SIHD who have left bundle-branch block on ECG, regardless of ability to exercise to an adequate workload . (Level of Evidence: B)


A CHEST PAIN IS YOUR
BODY SAYING CALL 999
DOUBT KILLS. CALL 999 IMMEDIATELY.
British Heart
Foundation

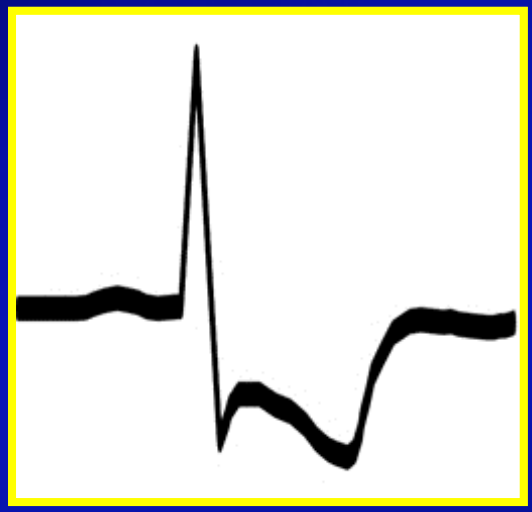
Non-ST-Elevation MI (NSTEMI)



Normal

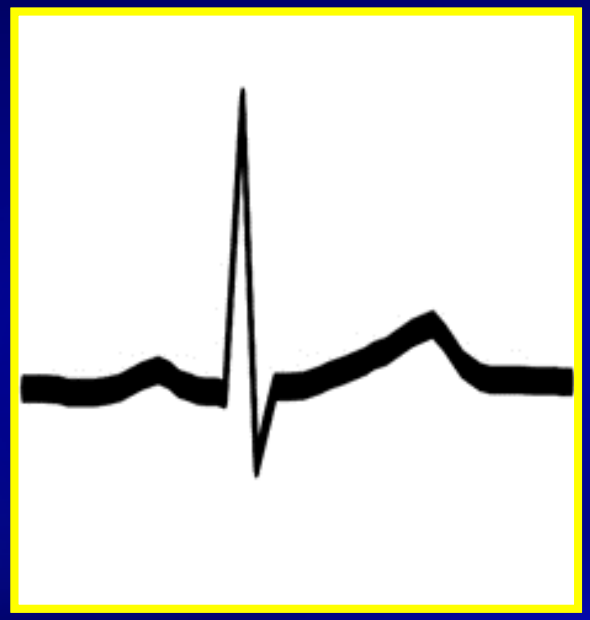


T-wave inversion

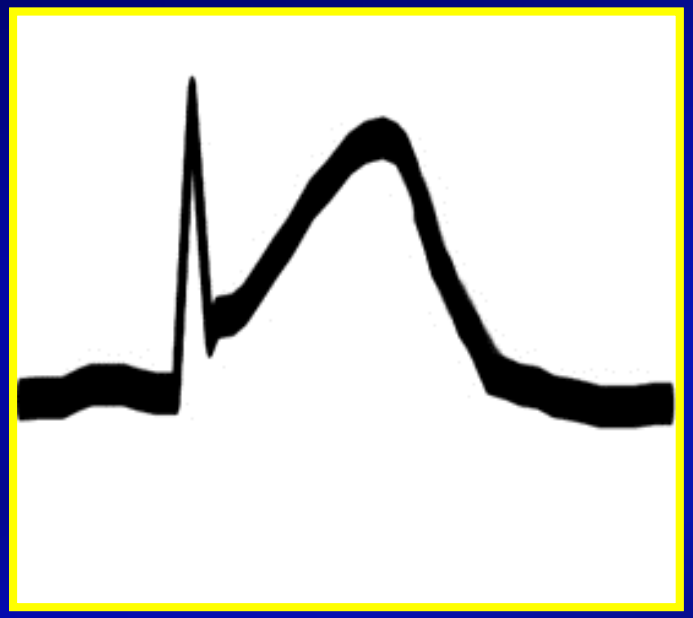


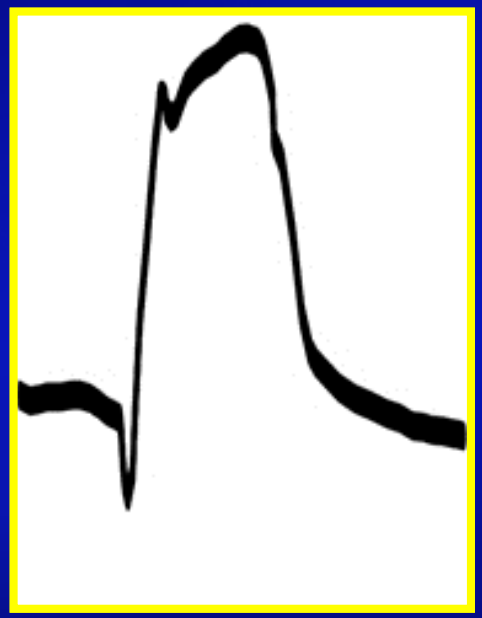
ST - depression

ST-Elevation MI (STEMI)

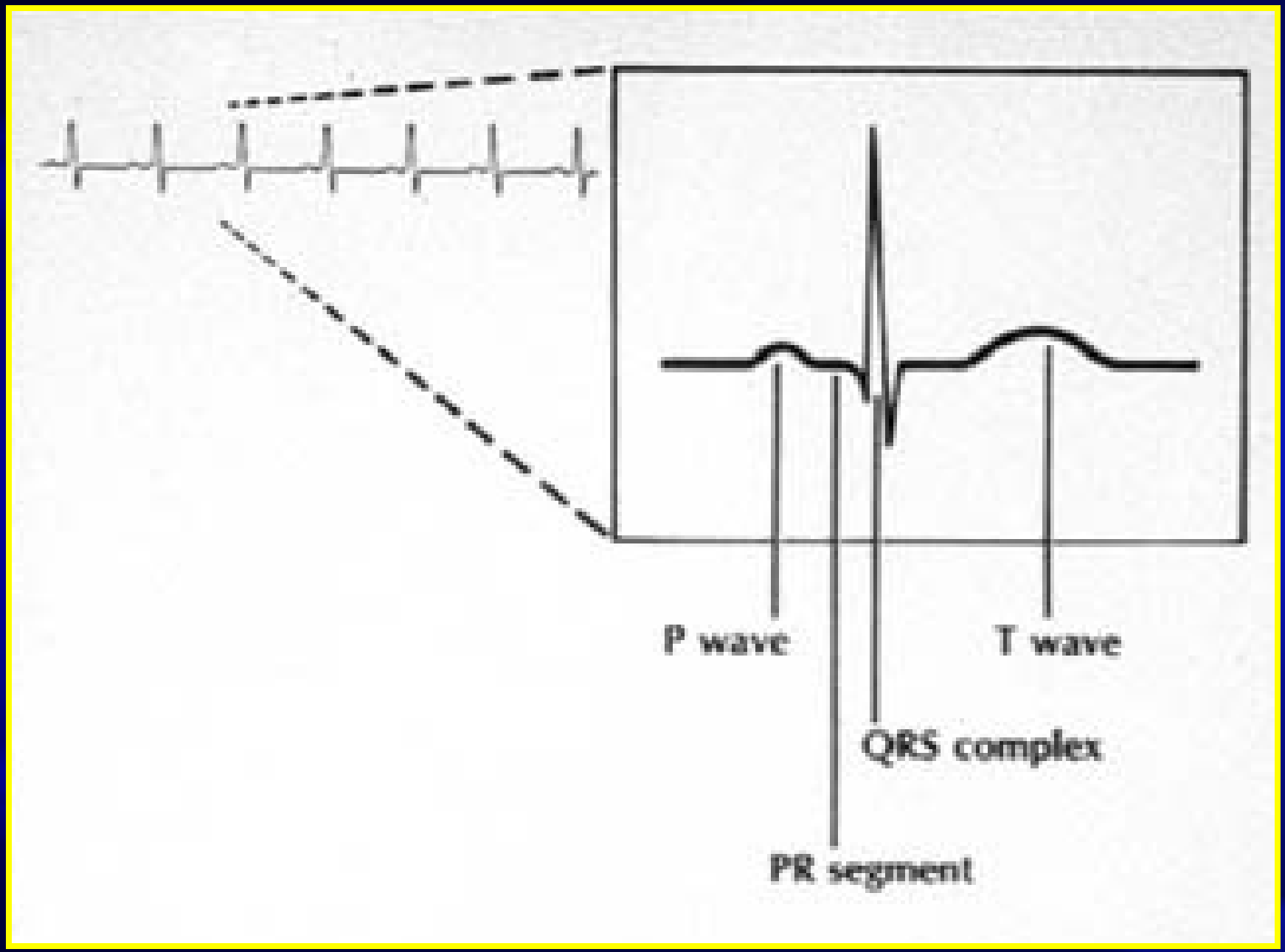


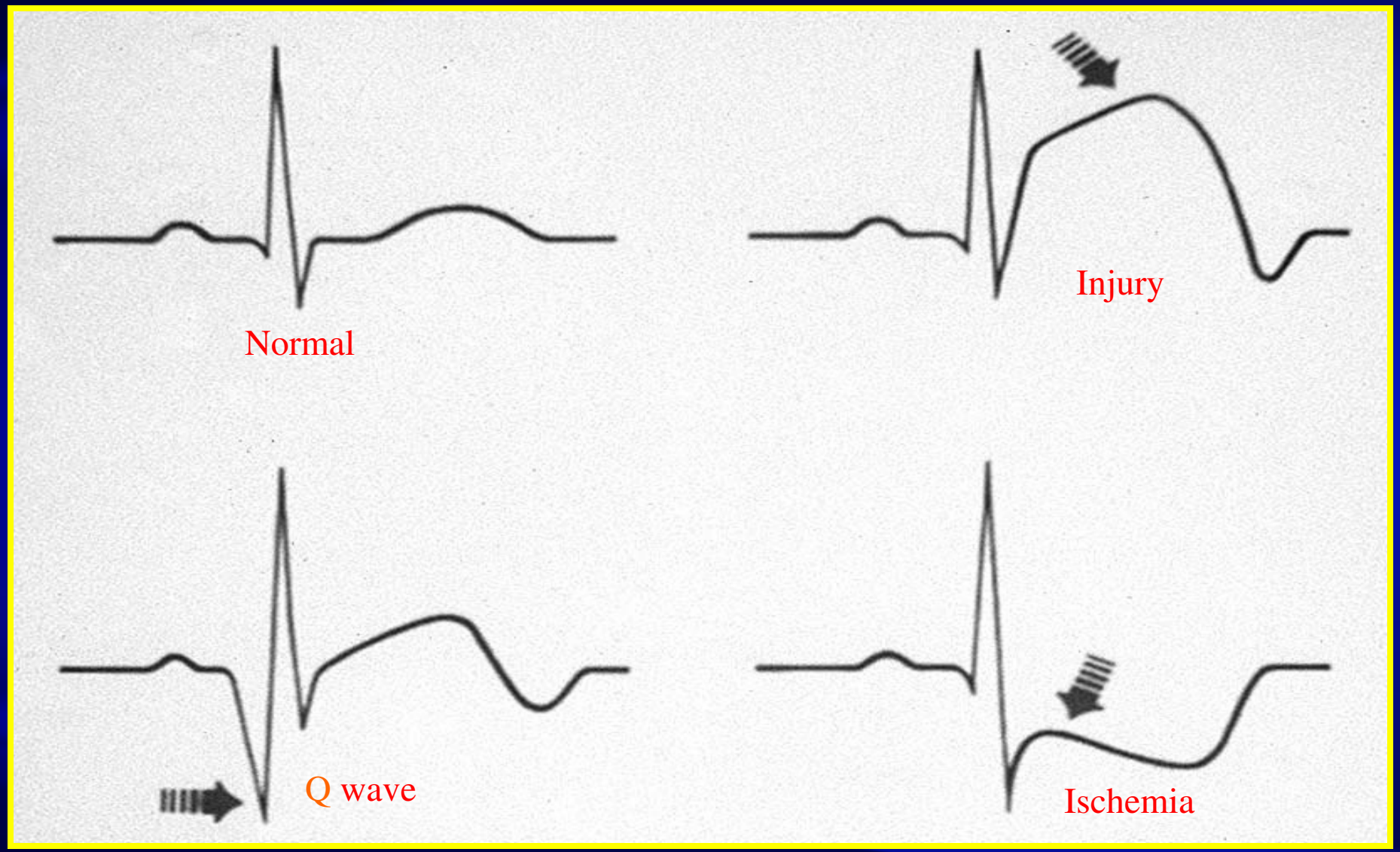
Normal





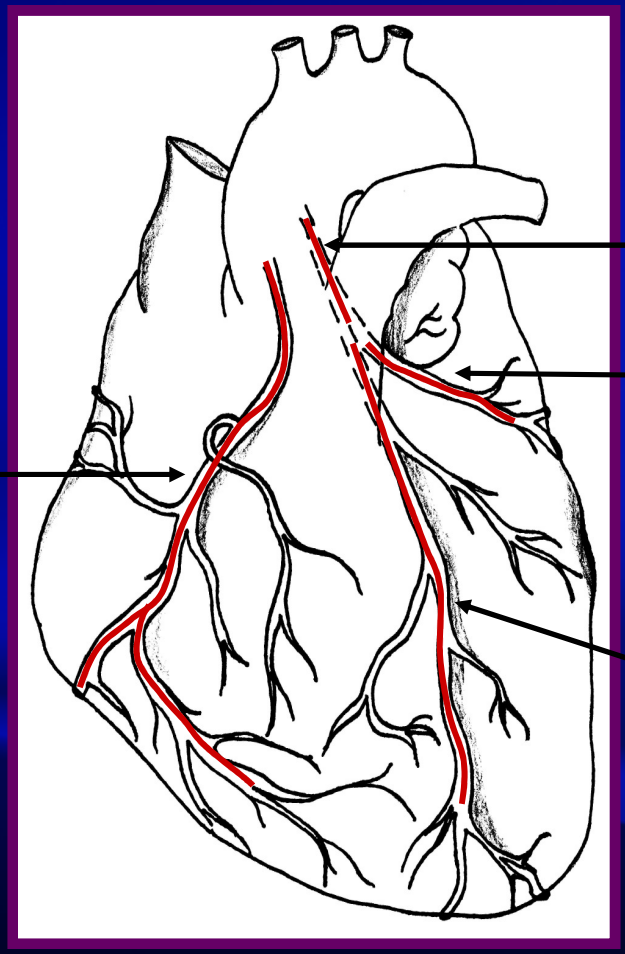
ST elevation


P wave
T wave
QRS complex
PR segment


Normal
Injury
Q wave
Ischemia

Normal Cardiac Cycle

Coronary Artery Anatomy



Left Main

Circumflex Branch

Leads I, aVL, V_4-V_6

Anterior/Lateral Wall

Right Coronary Artery

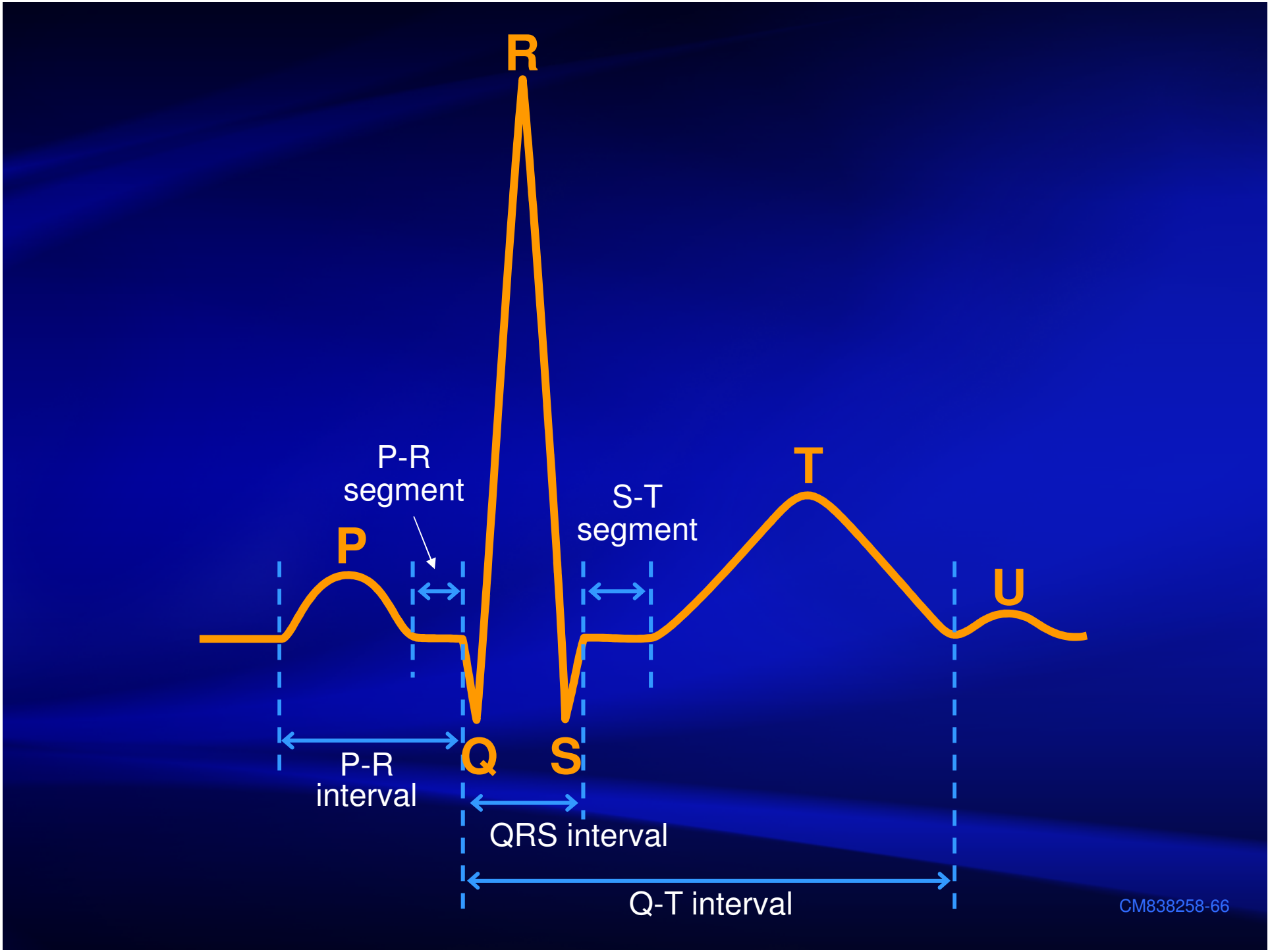
Leads II,III, aVF

Inferior Wall

Left Anterior Descending Branch

Leads V_1 - V_4

Anterior Wall


R
P-R
segment
S-T
segment
T
P
U
P-R
interval
Q
S
QRS interval
Q-T interval
CM838258-66