Chronic Stable Angina

Objectives

- Describe the pathophysiology of Chronic Stable Angina.
- Review risk factors for Chronic Stable Angina.
- Review Clinical Manifestations of Chronic Stable Angina.
- Discuss diagnostic studies for Chronic Stable Angina.
- Discuss medical treatments for Chronic stable Angina.
- Describe an assessment of Chronic Stable Angina.
- Discuss client teaching methods for Chronic Stable

Poll Question

I know _____ for Chronic Stable Angina.

1. the pathophysiology
2. the treatment
3. the diagnostic test
4. all the above

Myocardial Ischemia Pathophysiology

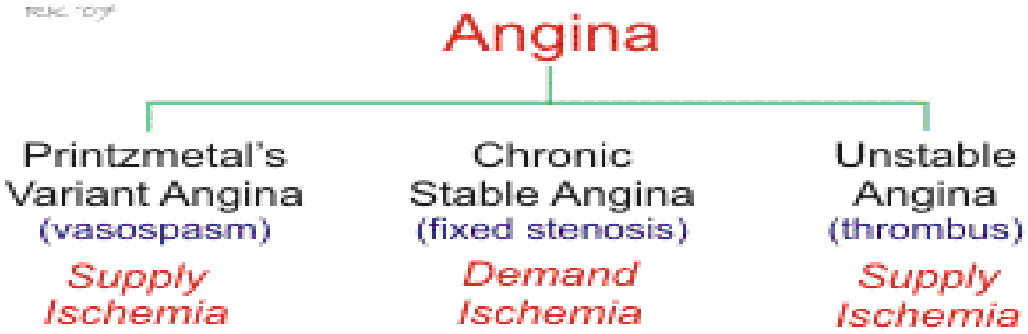
- When the demand for myocardial oxygen exceeds the ability of the coronary arteries to supply the heart with oxygen, this is when myocardial ischemia occurs.
- **Angina(chest pain)** is the clinical manifestation of myocardial ischemia.

Common conditions that influence myocardial oxygen supply

Common conditions that influence myocardial oxygen demand

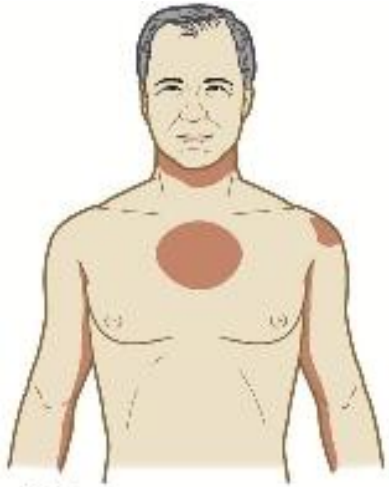
Clinical Manisfestatons

Chronic Stable Angina



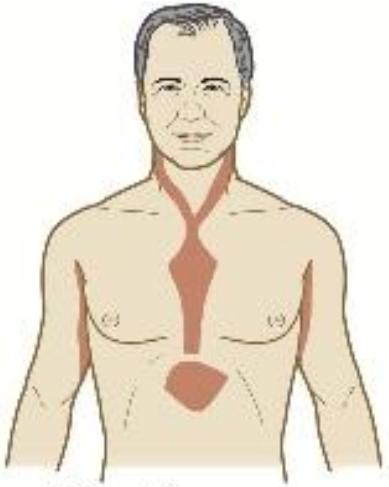
- Episodic Pain lasting a few minutes.
- Provoked by physical exertion, emotional upset or stress.
- Relieved by rest or Nitroglycerin.

Stable Angina Vs Unstable Angina

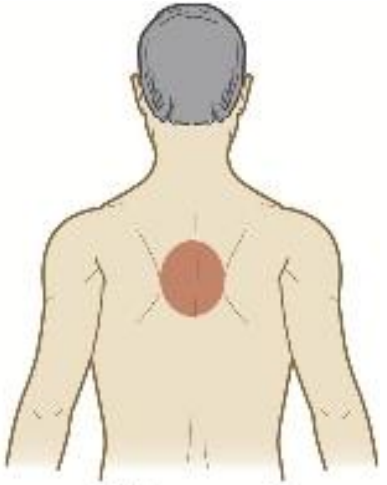


- Mid sternum
- Left shoulder and down both arms
- Neck and arms

- Substernal radiating to neck and jaw
- Substernal radiating down left arm



- Epigastric
- Epigastric radiating to neck, jaw, and arms



- Intrascapular

Common locations and patterns of pain

Chronic Stable Angina

Assessing Chest Pain

P- Precipitating events

Q- Quality of pain

R- Region (location) and radiation of pain

S- Severity of pain

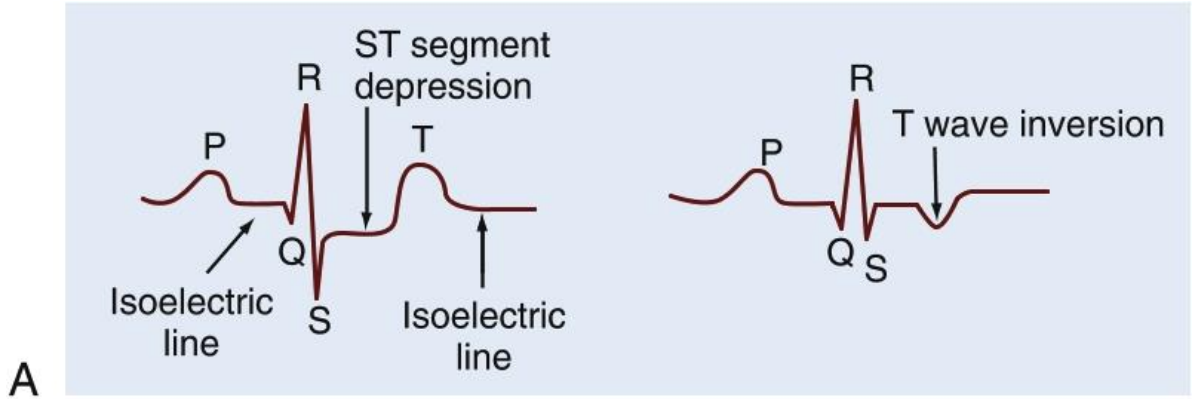
T-Timing

Diagnostic Procedures

Chronic Stable Angina

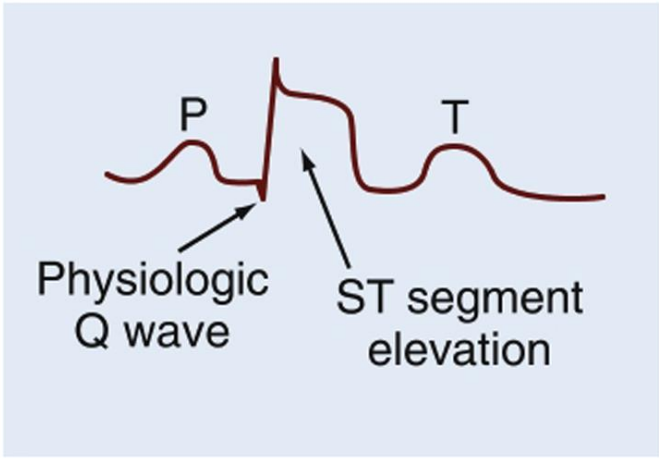
- History and Physical exam
- 12-lead ECG
- Laboratory studies: cardiac biomarkers, lipid profile, CRP, CBC,CMP, Myoglobin and Homocysteine
- Chest x-ray
- Echocardiogram
- Exercise stress test
- Cardiac CT scan (Photon-Counting CT)
- Coronary angiography

EKG Changes with ischemia and myocardial infarction



A

(From Bucher L, Melander S: *Critical care nursing*, Philadelphia, 1999, Saunders.)



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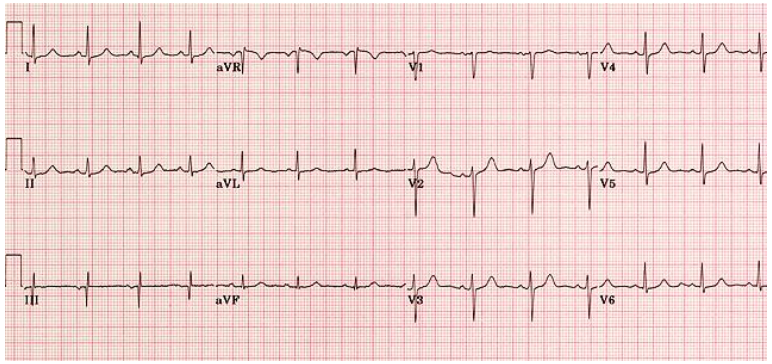
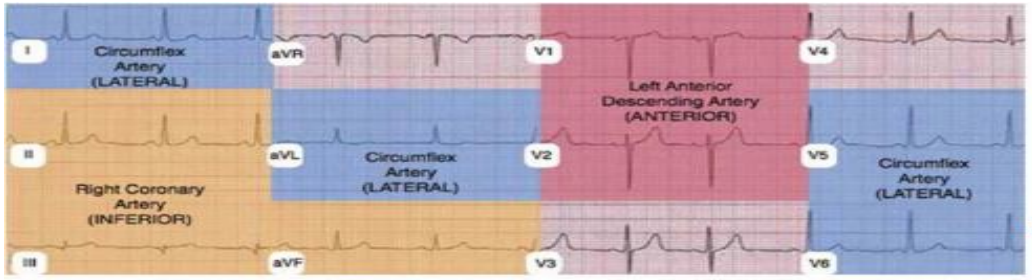
(From Bucher L, Melander S: *Critical care nursing*, Philadelphia, 1999, Saunders.)

EKG Interpretation Regarding coronary artery circulation

NORMAL EKG



EKG AND CORONARY CIRCULATION



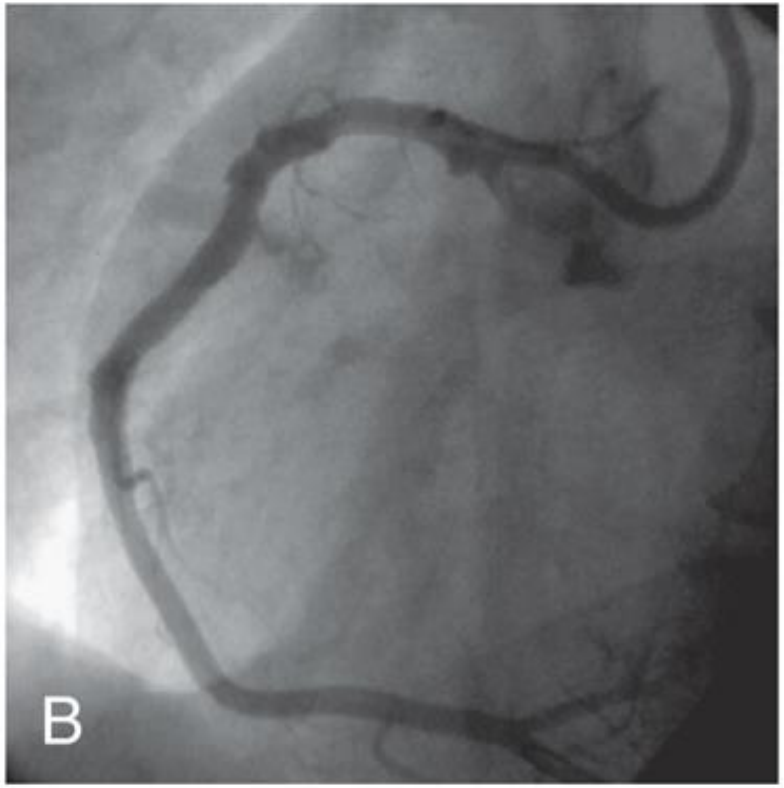
Description	ECG Leads With Changes	Artery Occluded
Inferior	II, III and aVF	RCA
Anteroapical	V3 and V4	Distal LAD
Anteroseptal	V1 and V2	LAD
Anterolateral	I, aVL, V5 and V6	Circumflex Artery
Extensive Anterior	I, aVL and V2-V6	Proximal LCA
True Posterior	Tall R in V1	RCA

Stress Test

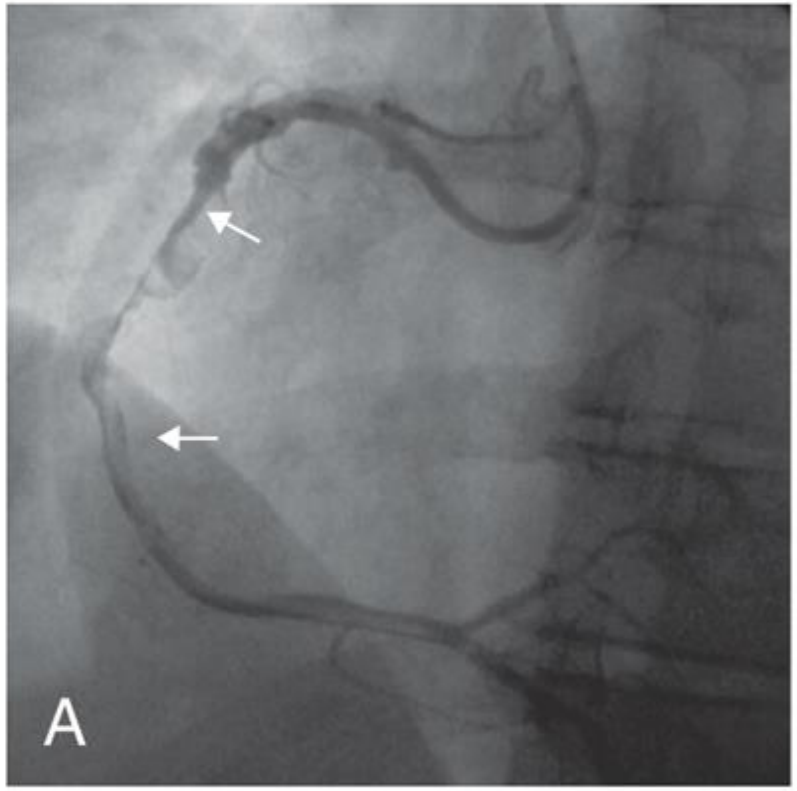
Cardiac catheterization

- —“gold standard” to identify and localize CAD
  - Visualize blockages (diagnostic)
  - Open blockages (interventional)
  - Percutaneous coronary intervention (PCI)

Heart Catherization



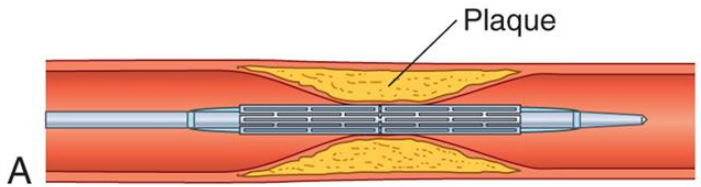
From Zipes DB, Libby P, Bonow RO, Braunwald E: *Braunwald's heart disease: a textbook of cardiovascular medicine*, ed 7, St Louis, 2005, Saunders.

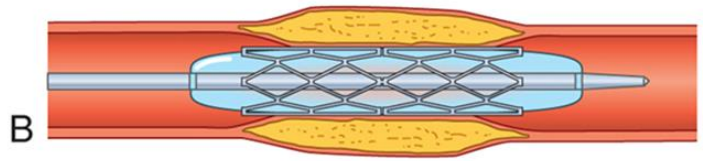


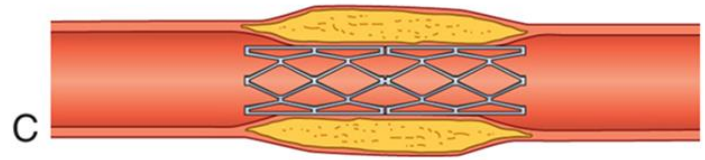
From Zipes DB, Libby P, Bonow RO, Braunwald E: *Braunwald's heart disease: a textbook of cardiovascular*

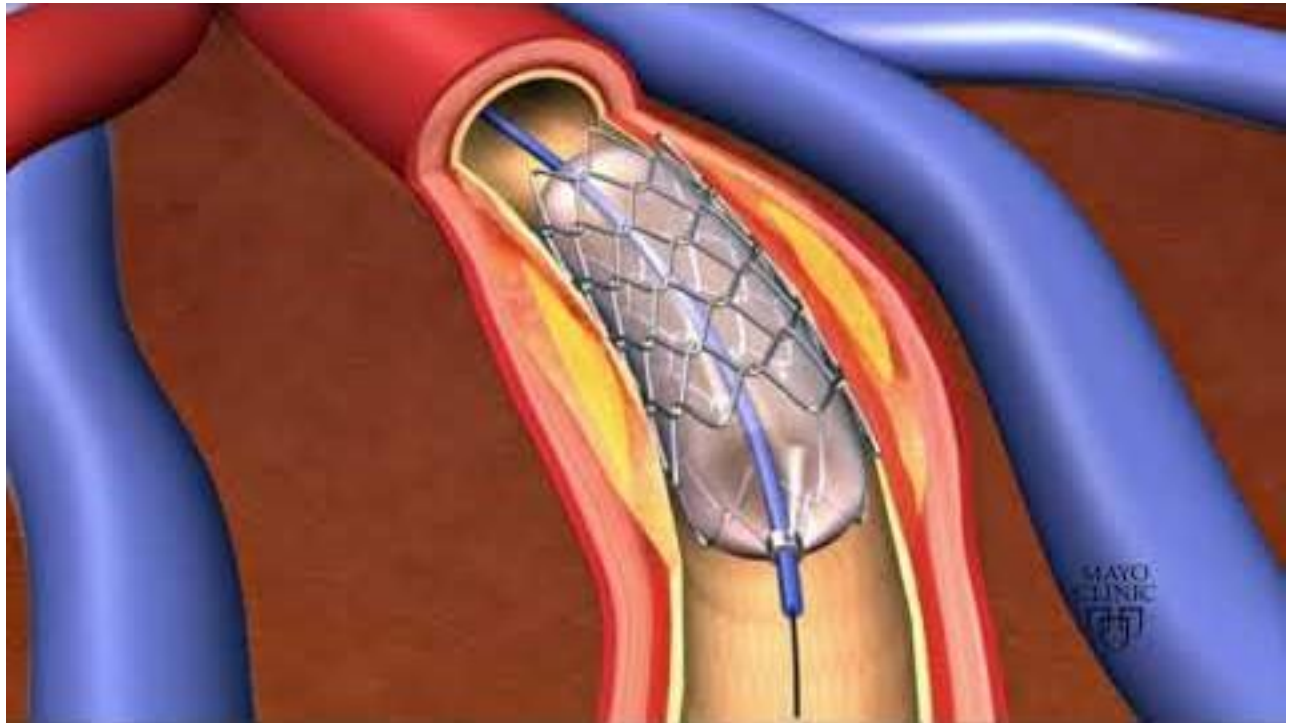
Right Coronary Artery Thrombotic Occlusion and Angioplasty

- **A,** An occluded coronary artery is shown;
- **B,** The same artery (now open) after PCI and stent placement.








MAYO
CLINIC

Medical Management

Goal: reduce O2 demand and/or increase O2 supply

- Management of Modifiable Risk Factors for CAD
- Drug Therapy- Antiplatelet, Nitrates, ACE Inhibitors, ARB's, Beta Blockers, Calcium Channel blockers and Lipid lowering drugs.
- Coronary Revascularization.

Chronic Stable Angina: Drug Therapy

Aspirin

Short-acting nitrates

- Dilate peripheral and coronary arteries and collateral vessels

Sublingual nitroglycerin (SL NTG)

- Give 1 tablet or 1 to 2 metered sprays
- Relief in 5 minutes; duration 30 to 40 minutes
- May repeat every 5 minutes × 3 doses
- If no relief, call EMS
- May cause headache, dizziness, flushing, orthostatic hypotension
- Patient teaching: proper use and storage
- Prophylactic use

Chronic Stable Angina: Drug Therapy

Angiotensin-converting enzyme inhibitors (ACE) and angiotensin receptor blockers (ARBs)

- Vasodilation and reduced blood volume
- Prevent or reverse ventricular remodeling

β-Adrenergic blockers

- Reduced myocardial contractility, HR, SVR, and BP
- Side effects: bradycardia, hypotension, wheezing, GI effects; weight gain, depression, fatigue, and sexual dysfunction
- Contraindicated: severe bradycardia, acute decompensated HF
- Cautious use: asthma, diabetes

Chronic Stable Angina:
Drug Therapy

Calcium channel blockers (CCBs)

- Systemic vasodilation with reduced SVR, reduced myocardial contractility, coronary vasodilation, reduced HR
- Side effects: fatigue, headache, dizziness, flushing, peripheral edema

Lipid-lowering drugs

Interprofessional and Nursing Care: Chronic Stable Angina

Acute Care

- Stop patient's activity, have them rest and relax.
- Assess pain using PQRST assessment of angina.
- Assess VS, heart and breath sounds.
- Continuous ECG monitoring and obtain a 12-lead ECG.
- Provide Pain relief—NTG and then follow with IV opioid if needed if unrelieved by nitroglycerin.
- Provide oxygen if ordered.
- Obtain cardiac biomarkers.
- Obtain chest x-ray.
- Provide support and reduce anxiety.

The male client is diagnosed with Chronic Stable Angina and is prescribed sublingual nitroglycerin. Which statement indicates the client needs more teaching?

1. "I should keep the tablets in the dark-colored bottle they came in."
2. "If the tablets do not burn under my tongue, they are not effective."
3. " I should keep the bottle with me at all times."
4. "If my chest pain is not gone with one tablet, I will go to the ER."

If the tablets are not kept in a dark bottle, they will lose their potency. The tablets should burn or sting when put under the tongue. The client should keep the tablets with him in case of chest pain. The client should take one table every five minutes and of no relief after the third tablet, have someone drive him to the ER or call 911.

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The client with coronary artery disease asks the healthcare provider, "Why do I get chest pain?" Which statement would be the most appropriate response?

1. "Chest pain is caused by decreased oxygen to the heart muscle."
2. "There is ischemia to the myocardium as a result to hypoxemia."
3. "The heart muscle is unable to pump effectively to perfuse the body."
4. "Chest pain occurs when the lungs cannot adequately oxygenate the blood."

1. This is the correct statement presented in layman's terms. When coronary arteries cannot supply adequate oxygen to the heart muscle, chest pain occurs.

2. This explanation is in medical terms that should not be used when explaining medical conditions to a client.

3. This explains Congestive heart failure but does not explain why chest pain occurs.

4. Respiratory compromise occurs when the lungs cannot oxygenate the blood, such as occurs with altered level of consciousness, cyanosis, and increased respiratory rate.

- 1.”Chest pain is caused by decreased oxygen to the heart muscle.”
- 2. “There is ischemia to the myocardium as a result to hypoxemia.”
- 3. “The heart muscle is unable to pump effectively to perfuse the body.”
- 4. “Chest pain occurs when the lungs cannot adequately oxygenate the blood.”

The healthcare provider is discussing angina with a client who is diagnosed with coronary artery disease. Which action should the client take first when experiencing angina?

1. Put a nitroglycerin tablet under the tongue.
2. Stop the activity immediately and rest.
3. Document when and what activity caused the angina.
4. Notify the healthcare provider immediately.

The client should take the nitroglycerin sublingually, but it is not the first intervention. Stopping the activity decreases the hearts need for oxygen and may help decrease the angina (chest pain). The client should keep a diary of when angina occurs, what activity causes it, and how many nitroglycerin tablets are taken before chest pain is relieved but no first intervention. If the chest pain is not relieved with three nitroglycerin tablets, the client should call 911 or have someone take him to the ER. Notifying the healthcare provider may take too long.

1. Put a nitroglycerin tablet under the tongue.
2. Stop the activity immediately and rest.
3. Document when and what activity caused the angina.
4. Notify the healthcare provider immediately