



ANGINA PECTORIS



AP is chest discomfort caused by temporary myocardial ischemia. It occurs when the oxygen supply to the heart is not enough to meet the heart's oxygen demand.

Remember: The most common cause of AP and MI is coronary artery disease (CAD) due to atherosclerosis. (See *separate cheat sheet for atherosclerosis*)

Angina = ischemia WITHOUT myocardial necrosis.

The ischemia is usually reversible when blood flow and oxygen supply improve.

Risk Factors/Causes

- Hypertension
- Smoking
- High LDL cholesterol
- Diabetes mellitus
- Obesity
- Physical inactivity
- Unhealthy diet
- Increasing age (men >45, women >55)
- Family history of CAD
- Psychological stress

Conditions That Can Trigger Angina (3 E's of Angina)

1. Excessive eating- Blood flow directed towards GIT
2. Emotional Stress- ↑ HR and BP raise myocardial O₂ demand
3. Excessive activity- Blood flow towards the muscles



Diagnostic Procedures

A. 12-Lead ECG

ST-segment depression
T-wave inversion

Remember: A resting ECG may be normal if the client is not experiencing ischemia.

B. Exercise Stress Test (Treadmill Test)

Evaluates the heart during increased workload. (e.g., let a client walk on a treadmill)

Monitor:

- Chest pain
- ECG changes
- HR
- BP
- Exercise tolerance

STOP IF CLIENT EXPERIENCES:

sudden severe chest pain, shortness of breath, dyspnea, palpitations

C. Pharmacologic Stress Test

Used when the client cannot exercise adequately. (e.g., ADENOSINE).

D. Echocardiogram

E. Coronary Angiography (Confirmatory Test)



Signs and Symptoms

"H-E-A-R-T-S"

Hurts: Chest pressure, squeezing, or heaviness

Extends: Pain may radiate to arm, jaw, neck, back

Airless: Dyspnea

Racing: Palpitations, tachycardia

Terrified: Anxiety, feeling of impending doom

Sweaty: Diaphoresis, pallor, nausea/vomiting

Other: Weakness, fatigue, dizziness, syncope



Types of Angina

Stable Angina

- Predictable and short duration
- Usually occurs with exertion or stress
- Relieved by rest or nitroglycerin

Unstable Angina

- New, worsening, prolonged, or occurs at rest
- May not respond to rest or nitroglycerin
- Medical emergency

Variant/Prinzmetal Angina

- Caused by coronary artery vasospasm
- Often occurs at rest
- Reversible ST elevation



Nursing Interventions

1. Stop activity and provide rest.

- Place the client in a comfortable position.
- Rest decreases myocardial oxygen demand.

2. Assess chest pain using PQRST.

P Provocation/Palliation: What makes the pain better or worse?

Q Quality: What does the pain feel like?

R Region/Radiation: Where is the pain? Does it spread?

S Severity: Rate the pain from 0–10.

T Timing: When did it start? How long does it last?

3. Monitor vital signs and SpO₂.

- Check BP, HR, RR, and SpO₂.
- Watch for hypotension and dysrhythmias.

4. Administer oxygen when indicated.

- Routine oxygen is not needed when oxygenation is adequate.

5. Obtain a 12-lead ECG.

- Especially with new, severe, prolonged, or unusual chest pain.

- Monitor for ischemic changes such as ST-segment depression.

6. Administer prescribed sublingual nitroglycerin.

- Check BP before administration.
- Reassess chest pain after 5 minutes.
- Additional doses may be taken every 5 minutes, up to 3 doses. If pain is unrelieved 5 minutes after the first dose, call EMS. Hold if SBP <90 mmHg.
- Monitor for headache, dizziness, and hypotension.

Recognize Possible MI/ACS

- New, worsening, prolonged, or rest-related chest pain
- Pain not relieved by rest or nitroglycerin
- May be accompanied by dyspnea, diaphoresis, nausea, weakness, or syncope



MYOCARDIAL INFARCTION



MI is the death of myocardial tissue caused by prolonged inadequate blood flow and oxygen supply to the heart muscle.

Remember: MI = prolonged ischemia + myocardial injury/necrosis

TIME IS MUSCLE: The longer the coronary artery remains blocked, the more heart muscle is damaged.

Risk Factors/ Causes

- Hypertension
- Smoking
- High LDL cholesterol
- Diabetes mellitus
- Obesity
- Physical inactivity
- Unhealthy diet
- Increasing age (men >45, women >55)
- Family history of CAD
- Psychological stress

REMEMBER: Low-Density Lipoprotein (LDL) must be **LOW**



Diagnostic Procedures

ECG sees it, Troponin proves it, Echo shows it, Angiography finds it.

1. 12-Lead ECG “See the ischemia.”

- First-line and done ASAP when MI is suspected.
- Identifies ischemic changes and helps classify STEMI vs NSTEMI.
 - May show ST elevation, ST depression, or T-wave inversion.

2. Cardiac Troponin I/T “Catch the injured heart.”

- Key biomarker of myocardial injury; rises 3–6 h, peaks 12–24 h, elevated 7–14 days (CK-MB normalizes in 48–72 h).
- Used with symptoms and ECG findings to support MI diagnosis.

3. CK-MB “Check if it happened again.”

- Returns to normal sooner, making it useful when reinfarction is suspected.

4. Echocardiogram “Watch how the heart moves.”

- Assesses ventricular function and wall motion.
- Can detect reduced ejection fraction and complications.

5. Coronary Angiography “Find the blockage.”

- Directly visualizes the coronary arteries.
- Identifies the location and severity of obstruction.
- May be followed immediately by PCI/stent placement.

Remember: “ANd BeCause (A-N-B-C)”

A Allergy: Check for contrast allergy (eg. allergy to iodine, prior contrast reaction)

N NPO: Keep NPO as ordered; check renal function

B Bleeding: Monitor puncture site for bleeding/hematoma

C Circulation: Check distal pulses, color, temperature, and sensation

Signs and Symptoms “HEARTS”

H Hurts: Chest pressure, squeezing, or heaviness

E Extends: Pain may radiate to arm, jaw, neck, back

A Airless: Dyspnea

R Racing: Palpitations, tachycardia

T Terrified: Anxiety, feeling of impending doom

S Sweaty: Diaphoresis, pallor, nausea/vomiting

Other: Weakness, fatigue, dizziness, syncope



Nursing Interventions

-Stop activity and provide a comfortable position to reduce myocardial oxygen demand. Provide supplemental oxygen if there are signs of hypoxemia/hypoxia or respiratory distress.

-Assess pain: Use PQRST; note onset, duration, severity, radiation, and associated symptoms.

-Monitor: Check BP, HR, RR, SpO₂, Cardiac markers and cardiac rhythm. Watch for dysrhythmias, heart failure, and cardiogenic shock.

-ECG: Obtain a 12-lead ECG ASAP and monitor for ischemic changes.

-Oxygen: Give oxygen only when hypoxemia or respiratory distress is present.

-IV access: Maintain IV access for medications and emergency treatment.

Remember: An initially normal troponin does not completely rule out early MI; serial levels may be needed.

-Monitor response to treatment: Reassess chest pain, vital signs, and cardiac rhythm after interventions.

-Watch for complications: Recurrent chest pain, dysrhythmias, pulmonary edema, cardiogenic shock.

Reperfusion and Surgical Management

1. Percutaneous Coronary Intervention (PCI)

- Preferred reperfusion method when timely PCI is available, especially for STEMI (goal: door-to-balloon ≤ 90 min).
- Balloon angioplasty may be performed, usually with stent placement.
- Restores blood flow through the blocked coronary artery.

Remember:

Before: Check contrast allergy, renal function, baseline vital signs, and prepare as ordered

After: Monitor the access site for bleeding/hematoma and assess distal pulses, color, temperature, and sensation.

2. Fibrinolytic Therapy

- Used for selected STEMI clients when timely PCI is unavailable (within 12 h of symptom onset; door-to-needle ≤ 30 min).
- Medications such as alteplase or tenecteplase help dissolve the thrombus.
- Major concern: bleeding.

3. Coronary Artery Bypass Grafting (CABG)

- Creates a new route for blood flow around severely blocked coronary arteries using either the Internal Mammary Artery or Great Saphenous Vein.

Remember: Monitor respiratory status and encourage coughing/deep breathing and incentive spirometry as appropriate. Gradually increase activity according to the recovery plan.