Coronary Ischemic Disease. Comprehensive Overview

Biomedical Engineering - URJC

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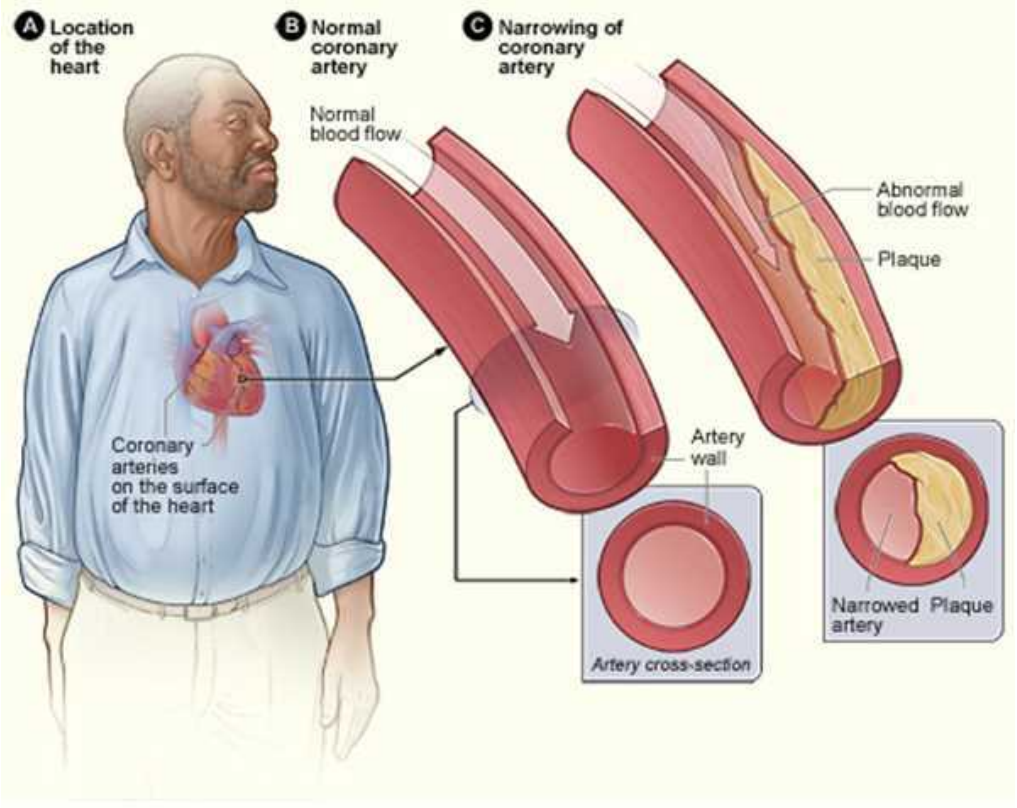
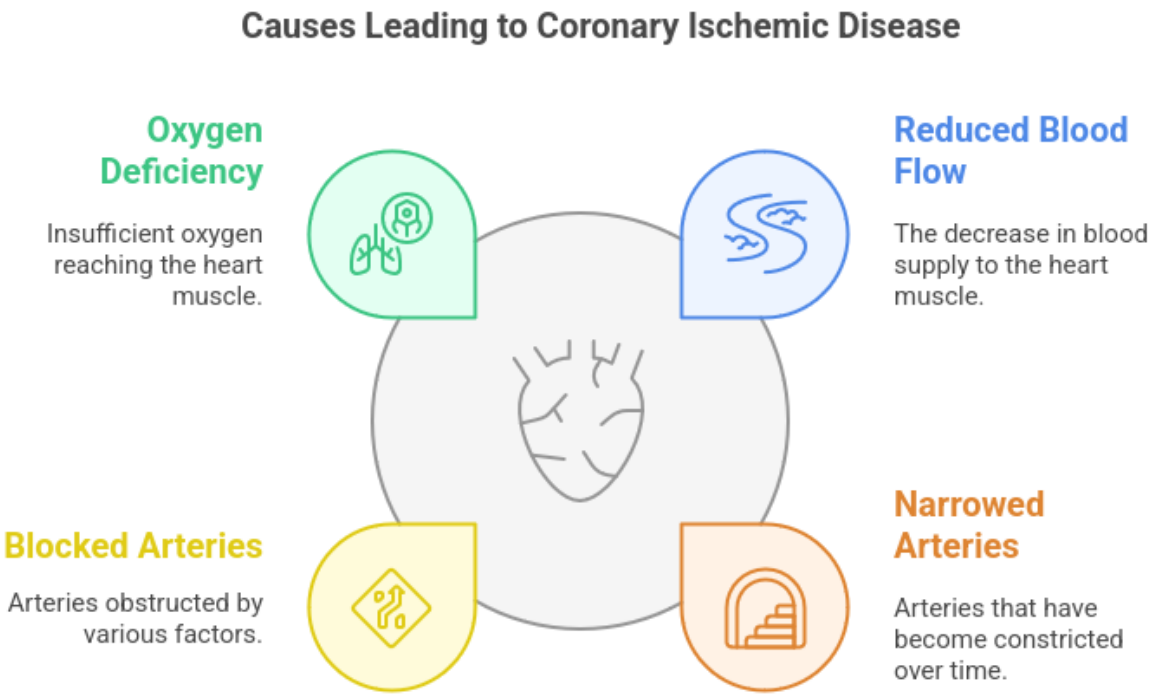
Introduction

Definition

Coronary ischemic disease (CID) is characterized by reduced blood flow to the heart muscle due to narrowed or blocked coronary arteries.



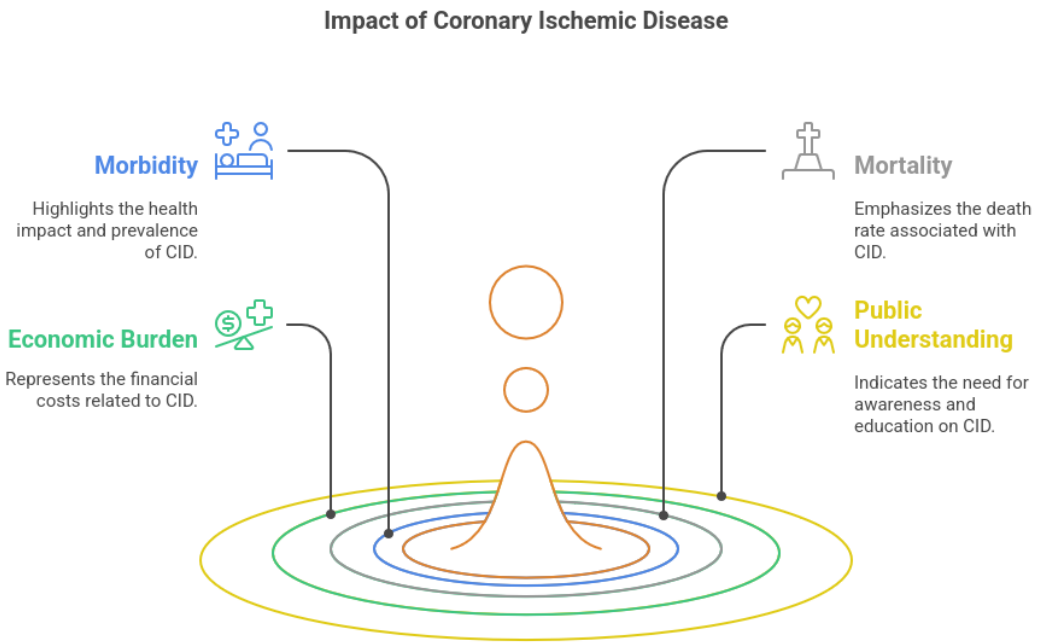
Introduction



Global Health

Global Health

- Leading cause of morbidity and mortality worldwide.
- Key focus: Prevention, early diagnosis, and effective management.

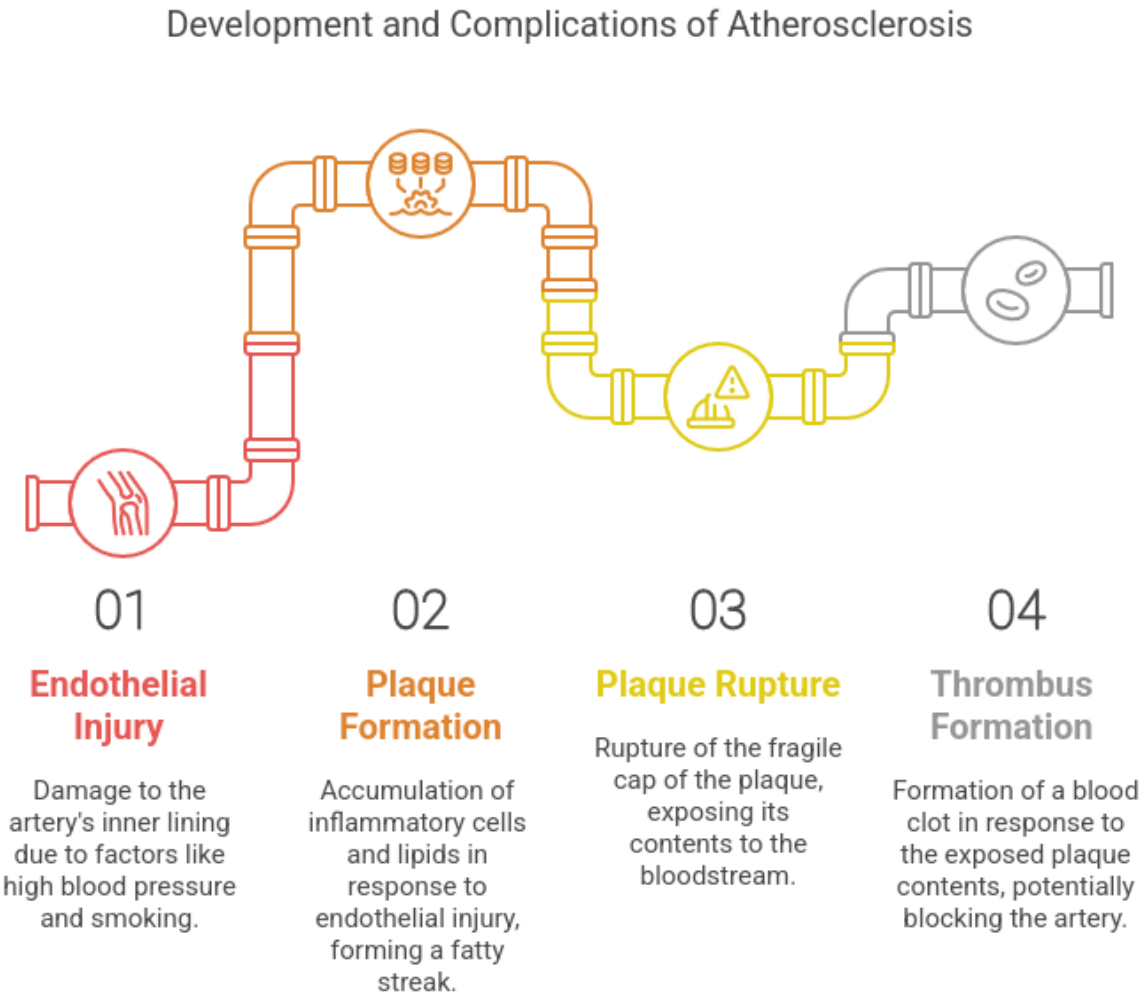


Pathophysiology

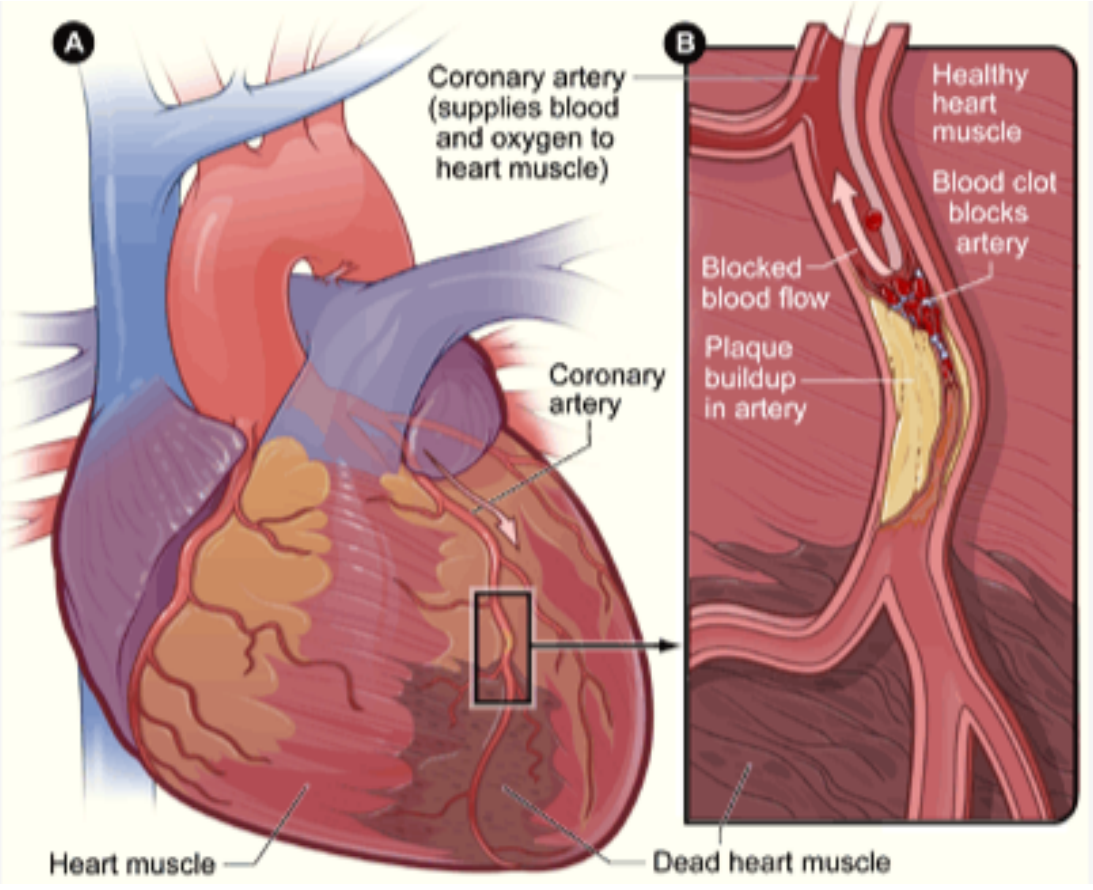
Key Concepts

- Atherosclerosis: Plaque buildup in coronary arteries.
- Plaque rupture leads to thrombosis and ischemia.
- Myocardial infarction: Death of heart tissue due to prolonged ischemia.

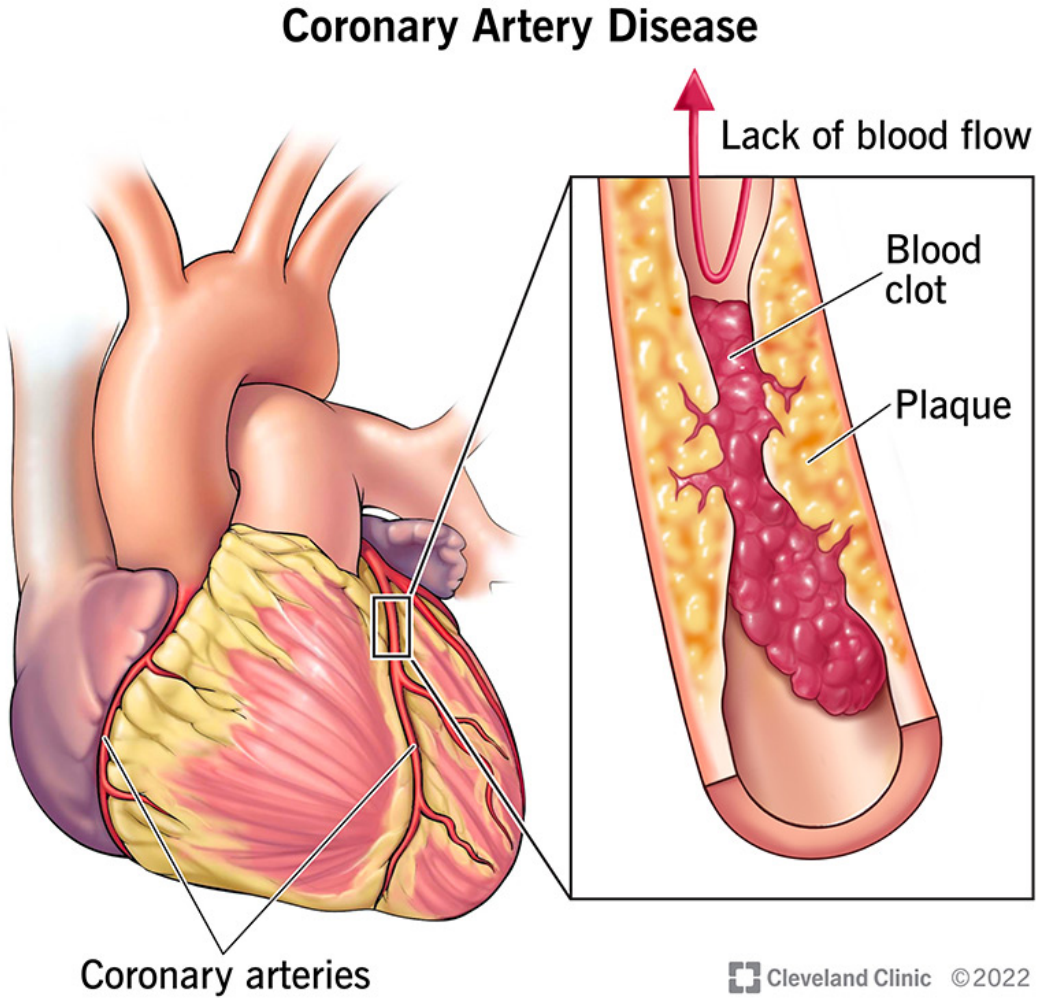
Pathophysiology



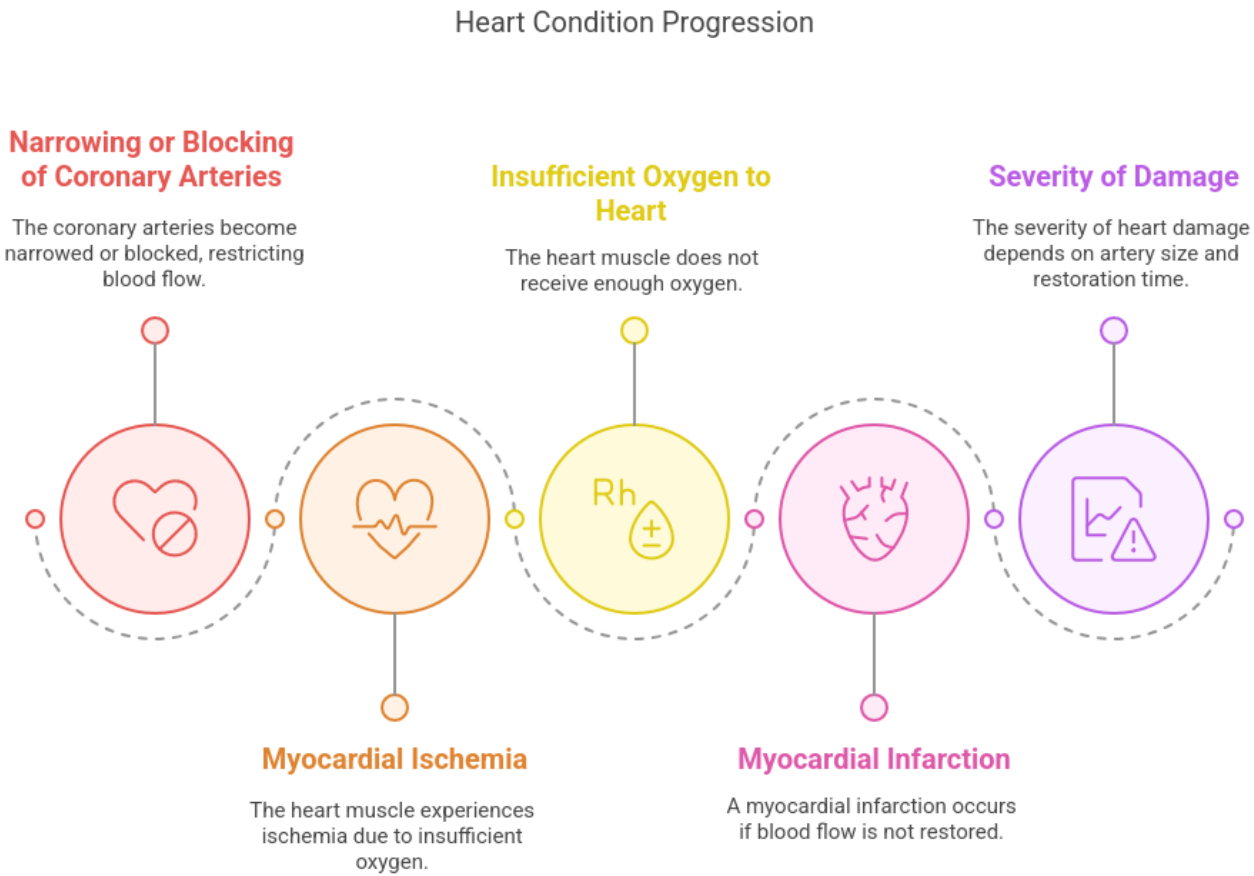
Pathophysiology



Pathophysiology



Pathophysiology



Risk Factors

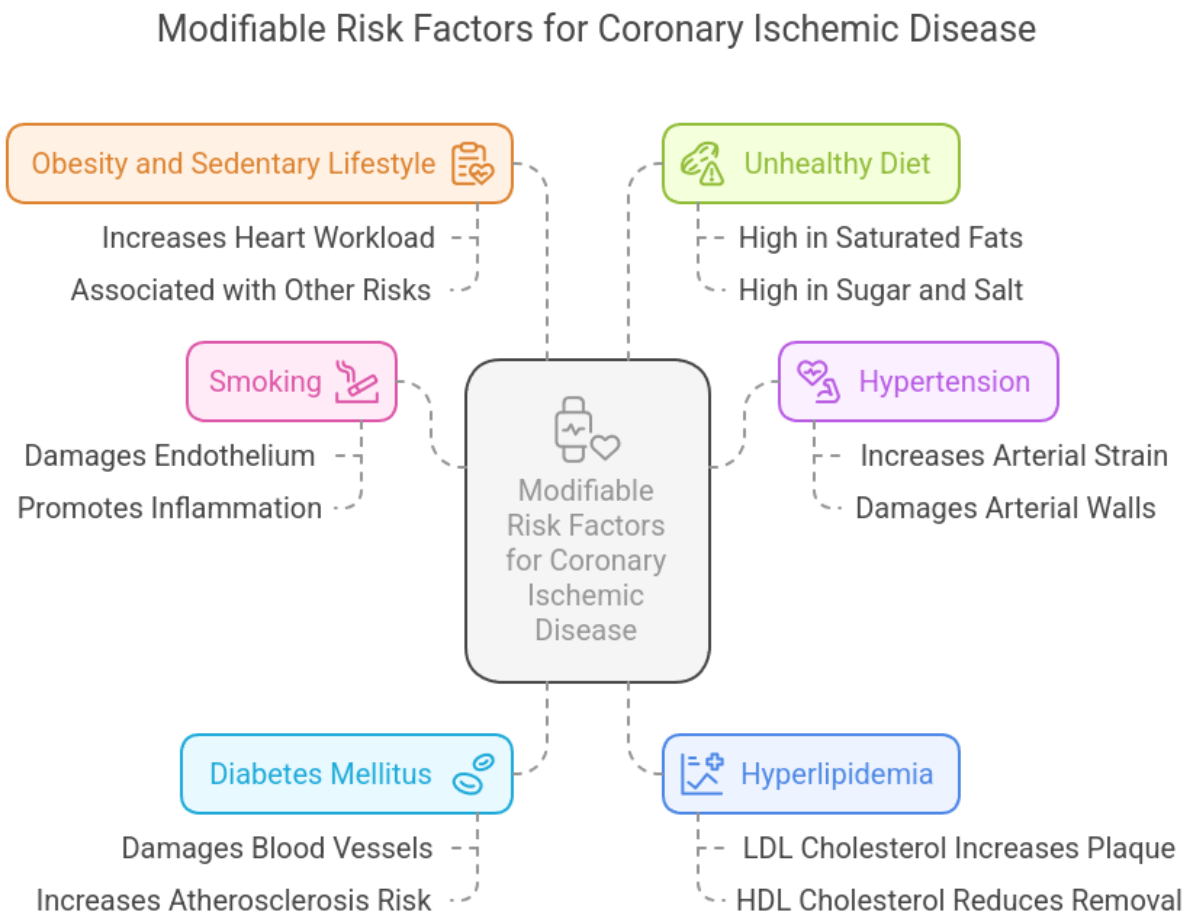
Modifiable

- Smoking, hypertension, diabetes, hyperlipidemia, obesity, sedentary lifestyle.

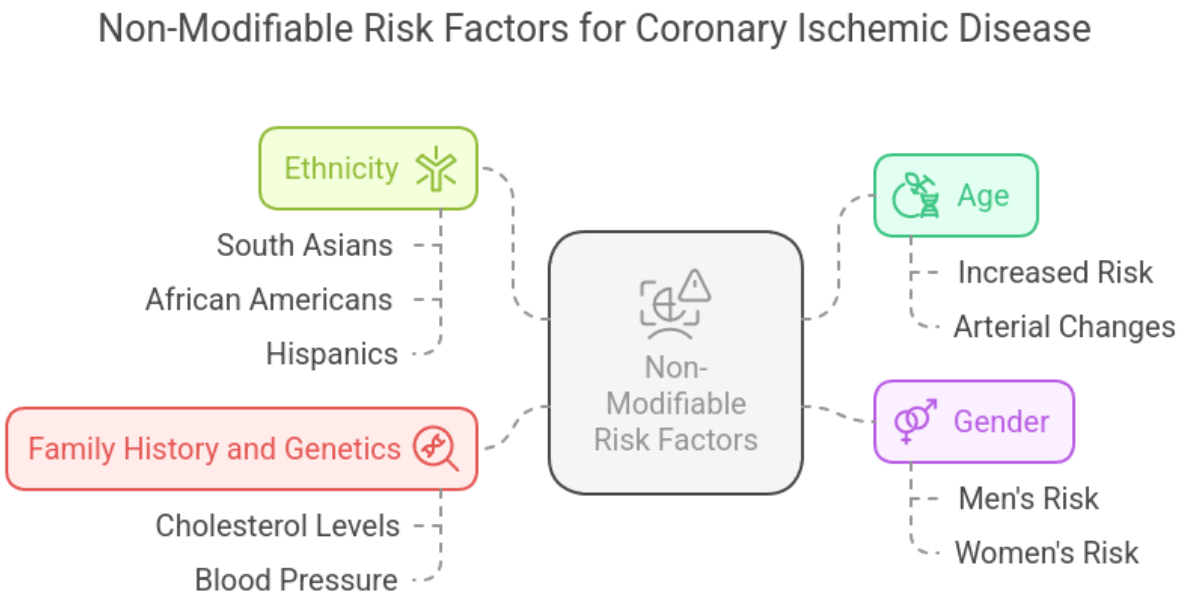
Non-Modifiable

- Age, gender, family history, genetics.

Risk Factors



Risk Factors



Clinical Presentation

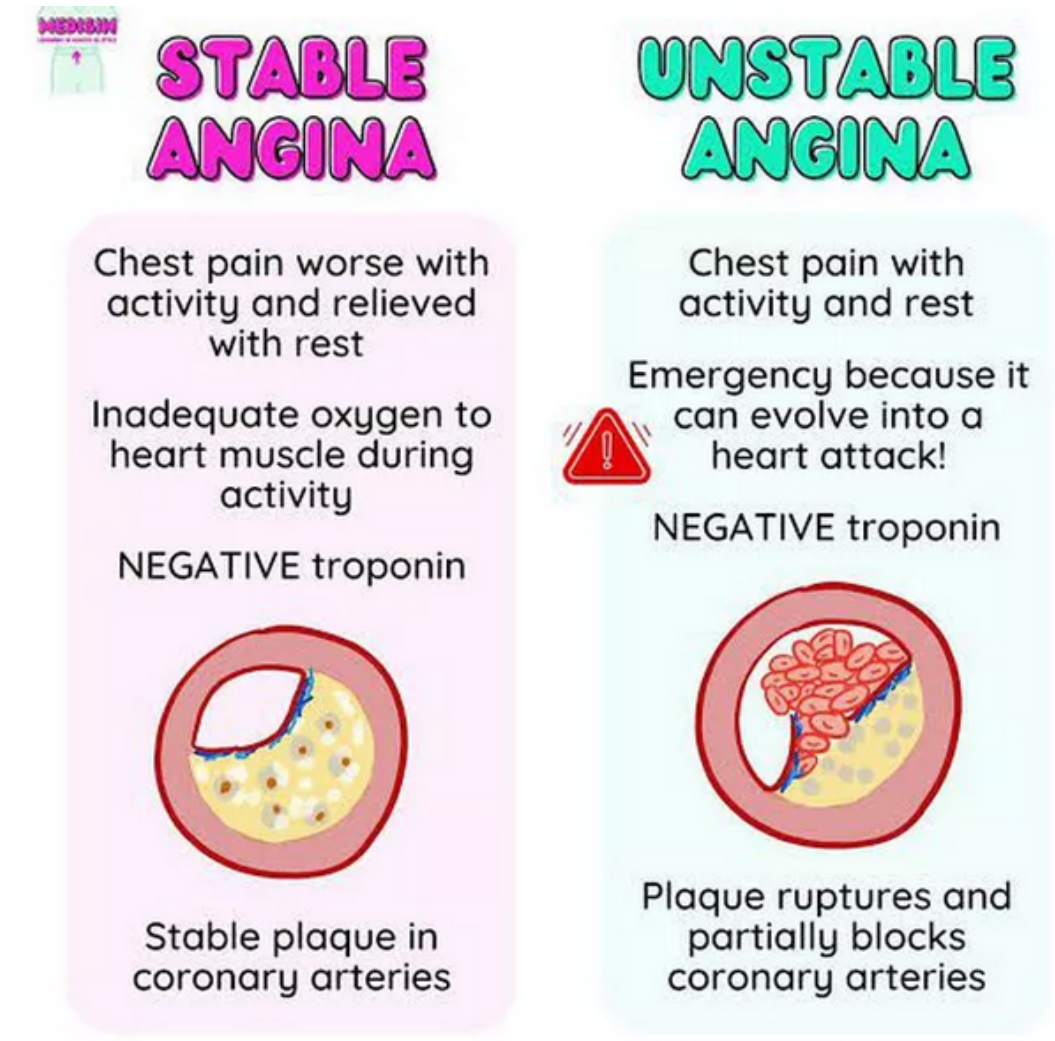
Stable Angina

- Predictable chest pain during exertion.
- Relieved by rest or nitroglycerin.

Acute Coronary Syndromes (ACS)

- Unstable angina: Pain at rest, unpredictable.
- Myocardial infarction: Severe, crushing chest pain.

Clinical Presentation

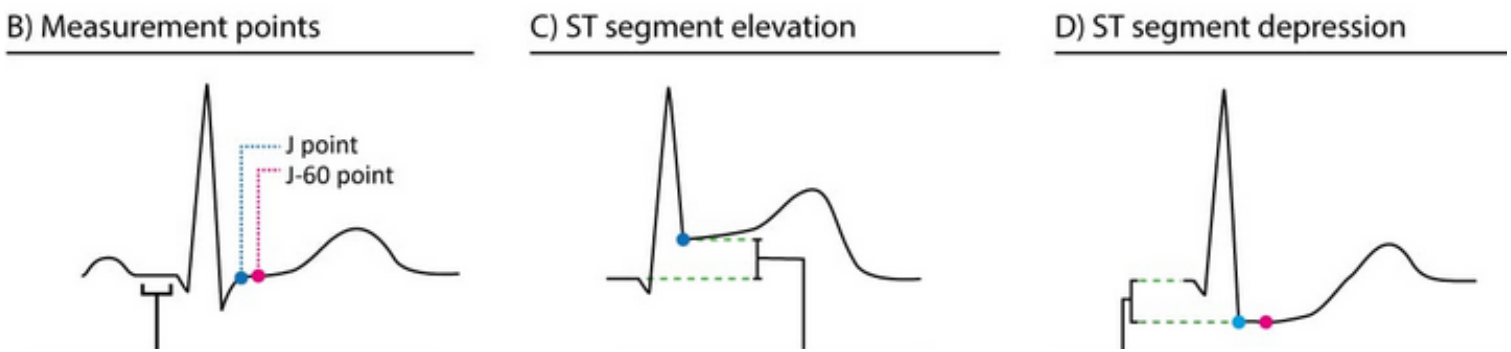


Stable and Unstable Angina

Diagnosis

Key Tools

- ECG: ST-segment elevation (infarction), ST depression (ischemic).
- Cardiac biomarkers: Troponins, CK-MB.
- Imaging: Echocardiography, coronary angiography.



Management

Acute Management

- MONA: Morphine, Oxygen, Nitroglycerin, Aspirin.
- Reperfusion: PCI or thrombolysis.

Long-Term Management

- Medications: Statins, beta-blockers, ACE inhibitors.
- Lifestyle changes: Diet, exercise, smoking cessation.

Complications

Common Complications

- Heart failure: Reduced pumping ability.
- Arrhythmias: Abnormal heart rhythms.
- Cardiogenic shock: Severe pump failure.

Prevention

Primary Prevention

- Healthy diet, regular exercise, smoking cessation.
- Control of hypertension, diabetes, and cholesterol.

Secondary Prevention

- Medications: Aspirin, statins, beta-blockers.
- Cardiac rehabilitation programs.

Conclusion

Key Takeaways

- Early diagnosis and treatment are critical.
- Lifestyle changes and adherence to medications improve outcomes.
- Public health initiatives can reduce the global burden of CID.