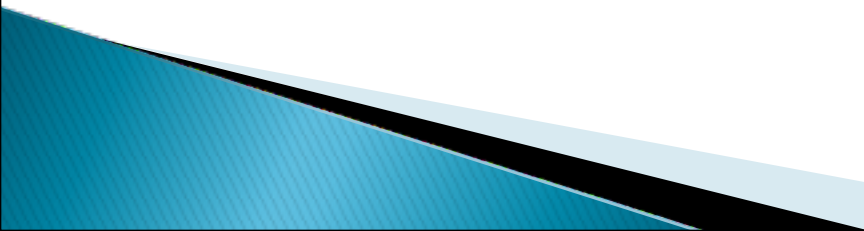
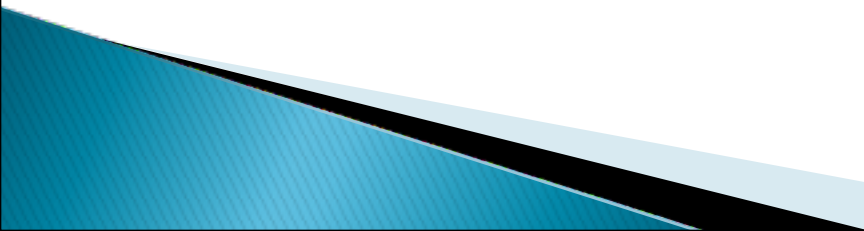



PBL-Third Year Medical Students


Tareq Yousef Goussous, MD, FACC
9-11-2016

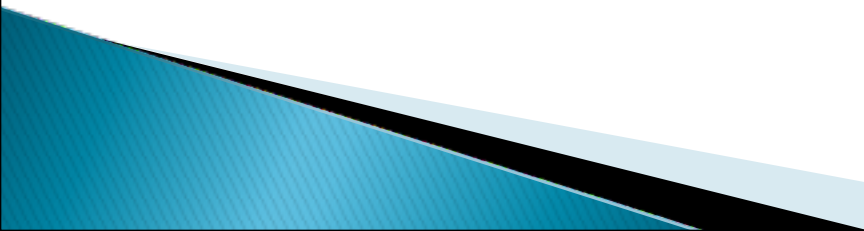
- ▶ A 42-year old male patient, smoker presented to the emergency department with a complaint of severe central chest pain associated with sweating, nausea and sweating.

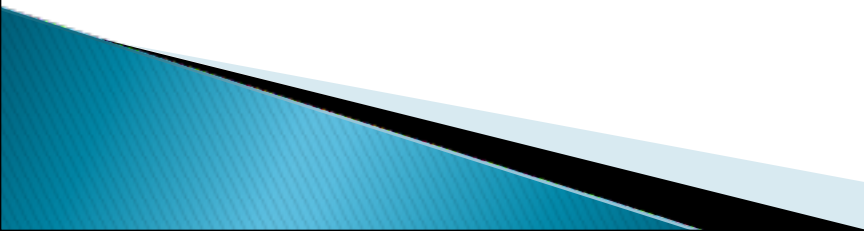
- ▶ Cardiovascular diseases (CVDs) are the number one cause of death globally: more people die annually from CVDs than from any other cause.
 - ▶ An estimated 17.5 million people died from CVDs in 2012, **representing 31% of all global deaths.**
- 

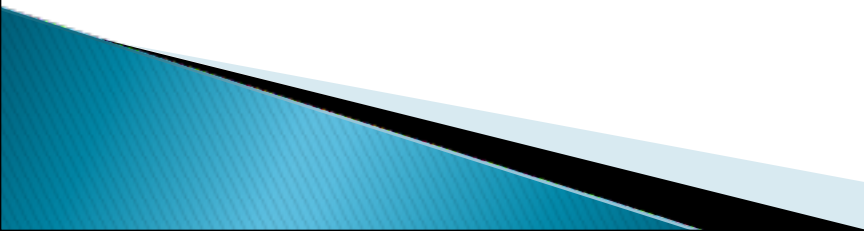
- ▶ Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke.
 - ▶ *Low- and middle-income countries* are disproportionately affected: over 80% of CVD deaths take place in low- and middle-income countries and occur almost equally in men and women.
- 

- ▶ The number of people who die from CVDs, mainly from heart disease and stroke, will increase to reach 23.3 million by 2030.
 - ▶ ***CVDs are projected to remain the single leading cause of death.***
- 

- ▶ **Risk factors for CVDs:**
 - ▶ Age.
 - ▶ Family history.
 - ▶ Hypertension (HTN).
 - ▶ Smoking.
 - ▶ Diabetes Mellitus.
 - ▶ Dyslipidemia.
 - ▶ Physical inactivity and obesity.
- 

- ▶ Tobacco kills up to half of its users.
 - ▶ Tobacco kills nearly **6 million people** each year. More than five million of those deaths are the result of direct tobacco use while more than **600,000** are the result of non-smokers being exposed to **second-hand smoke**.
- 

- ▶ Unless urgent action is taken, the annual death toll could rise to more than eight million by 2030.
 - ▶ Nearly 80% of the world's one billion smokers live in low- and middle-income countries.
- 

- ▶ 347 million people worldwide have diabetes.
 - ▶ In 2004, an estimated 3.4 million people died from consequences of high fasting blood sugar.
 - ▶ More than 80% of diabetes deaths occur in low- and middle-income countries.
- 

CLASSIFICATION OF BLOOD PRESSURE (BP)*

CATEGORY	SBP mmHg		DBP mmHg
Normal	<120	and	<80
Prehypertension	120–139	or	80–89
Hypertension, Stage 1	140–159	or	90–99
Hypertension, Stage 2	≥160	or	≥100

KNOW YOUR BLOOD PRESSURE

—AND WHAT TO DO ABOUT IT

By AMERICAN HEART ASSOCIATION NEWS



The newest guidelines for hypertension:

NORMAL BLOOD PRESSURE

*Recommendations: Healthy lifestyle choices and yearly checks.

ELEVATED BLOOD PRESSURE

*Recommendations: Healthy lifestyle changes, reassessed in 3-6 months.

HIGH BLOOD PRESSURE / STAGE 1

*Recommendations: 10-year heart disease and stroke risk assessment. If less than 10% risk, lifestyle changes, reassessed in 3-6 months. If higher, lifestyle changes and medication with monthly follow-ups until BP controlled.

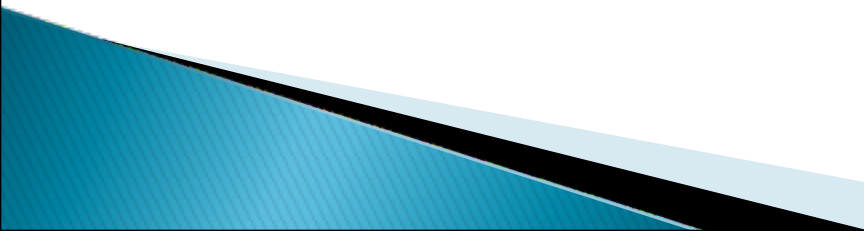
HIGH BLOOD PRESSURE / STAGE 2


*Recommendations: Lifestyle changes and 2 different classes of medicine, with monthly follow-ups until BP is controlled.

**Individual recommendations need to come from your doctor.*

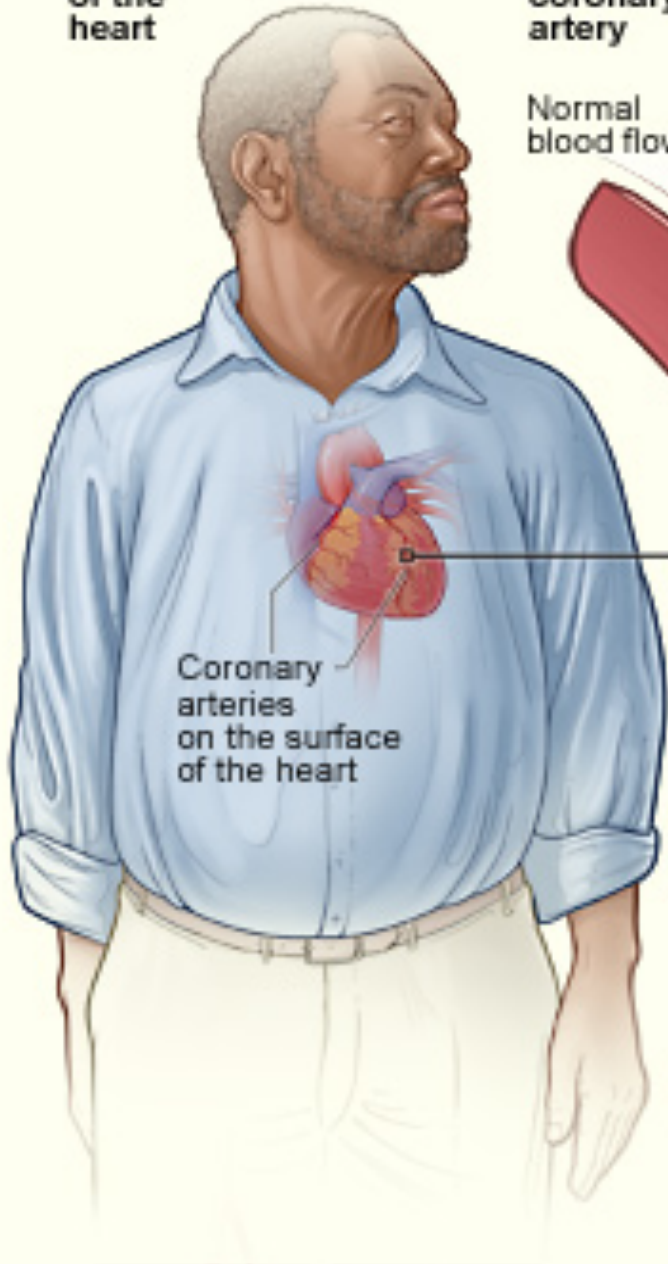
Source: American Heart Association's journal Hypertension

Published Nov. 13, 2017

- ▶ The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014.
 - ▶ The global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014
 - ▶ Diabetes prevalence has been rising more rapidly in middle- and low-income countries
- 

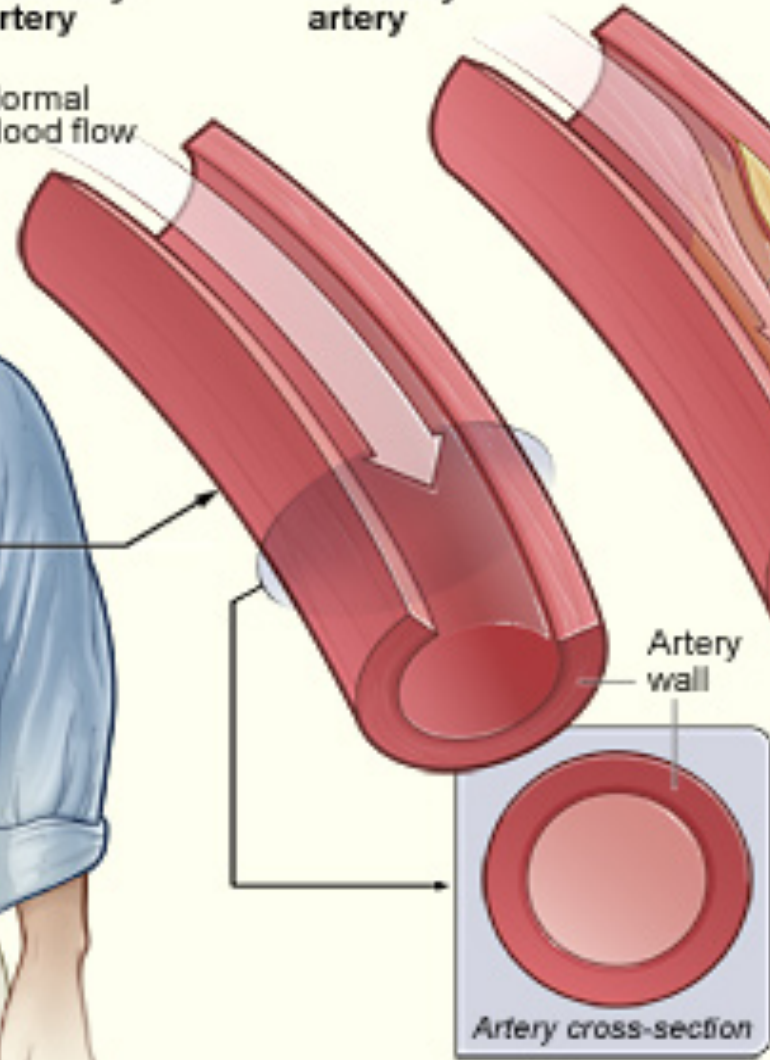
- ▶ Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation.
 - ▶ In 2012, an estimated 1.5 million deaths were directly caused by diabetes and another 2.2 million deaths were attributable to high blood glucose.
- 

A Location of the heart



B Normal coronary artery

Normal blood flow



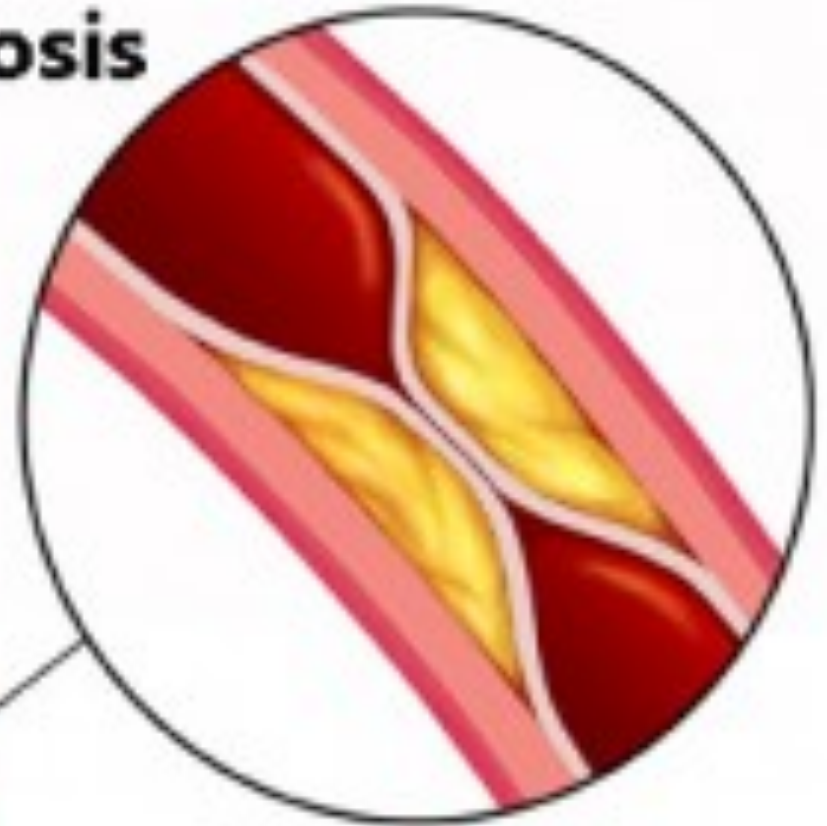
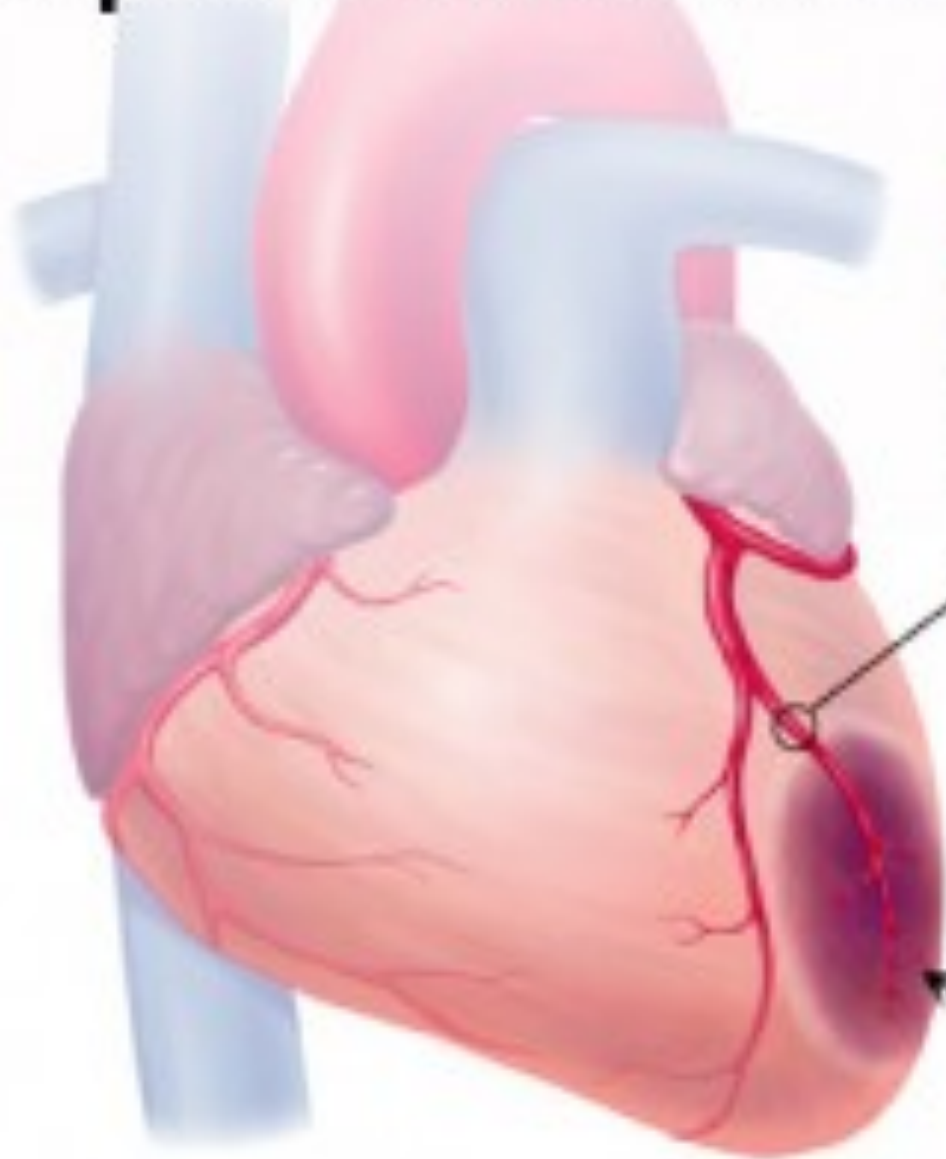
C Narrowing of coronary artery

Abnormal blood flow

Plaque



Essay Help on Lipids to Atherosclerosis



Blocked Lumen in Branch
of Left Coronary Artery

Anterior Infarct

Cross section of healthy artery



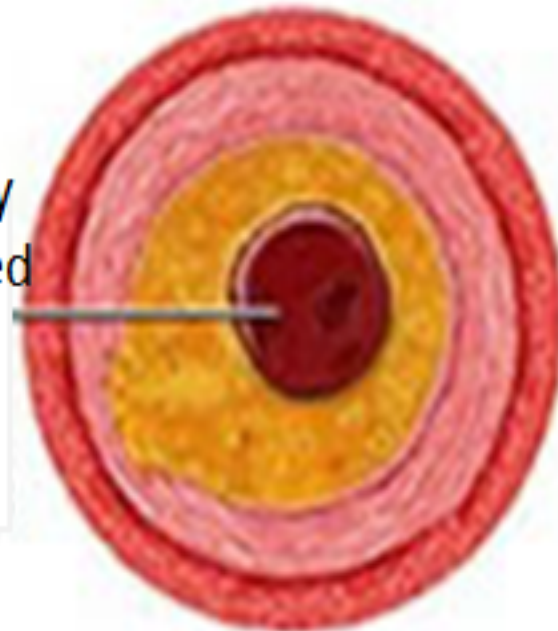
Tear in artery wall

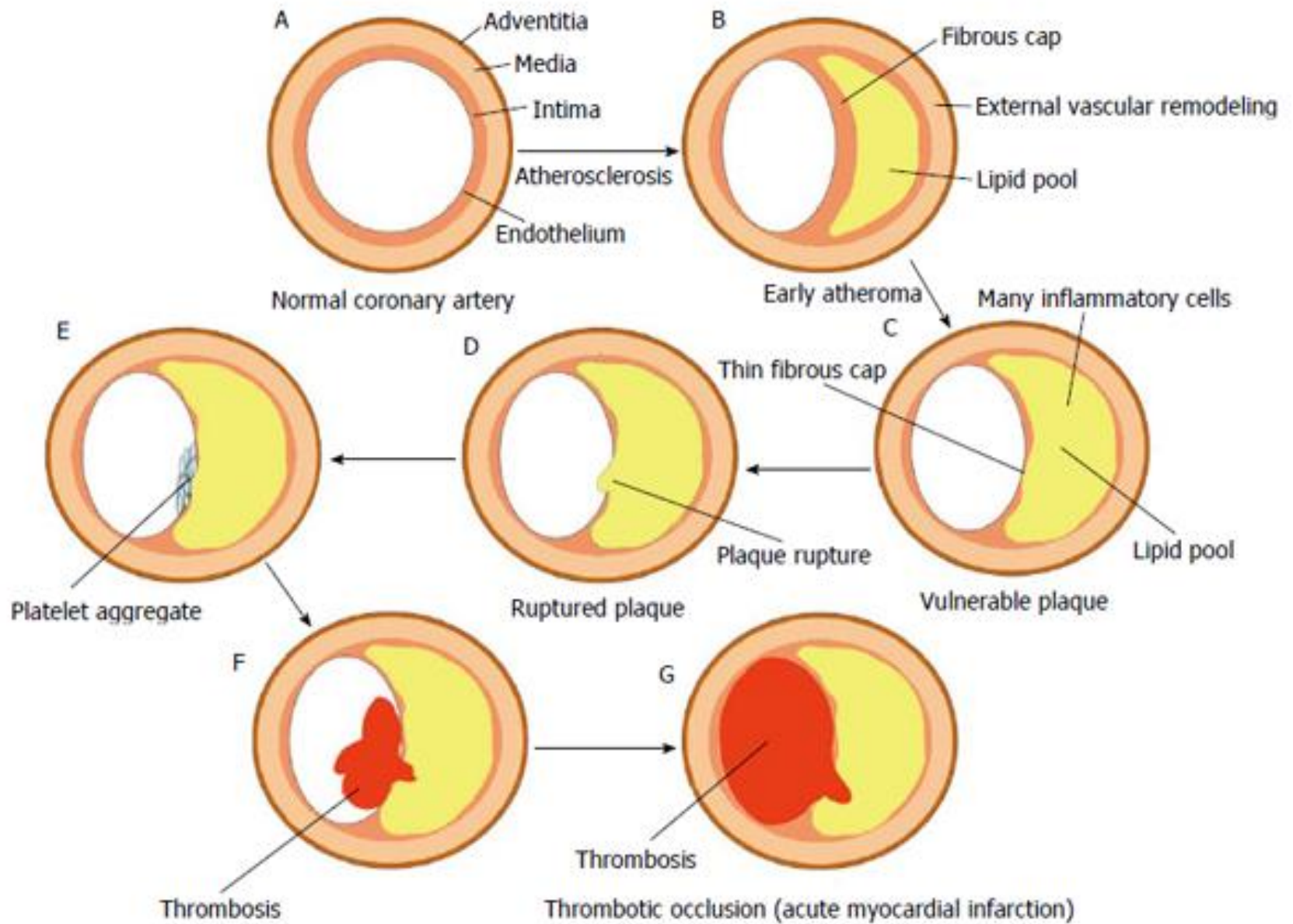


Fatty material is deposited on vessel wall



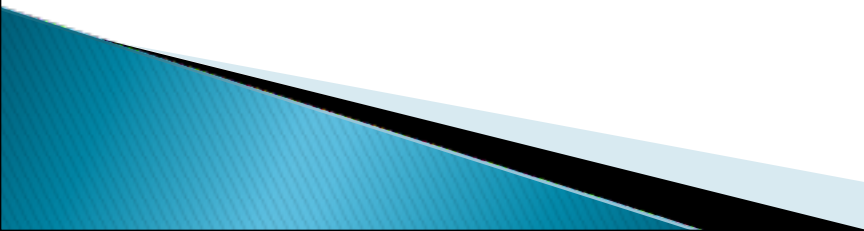
Narrowed artery becomes blocked by blood clot





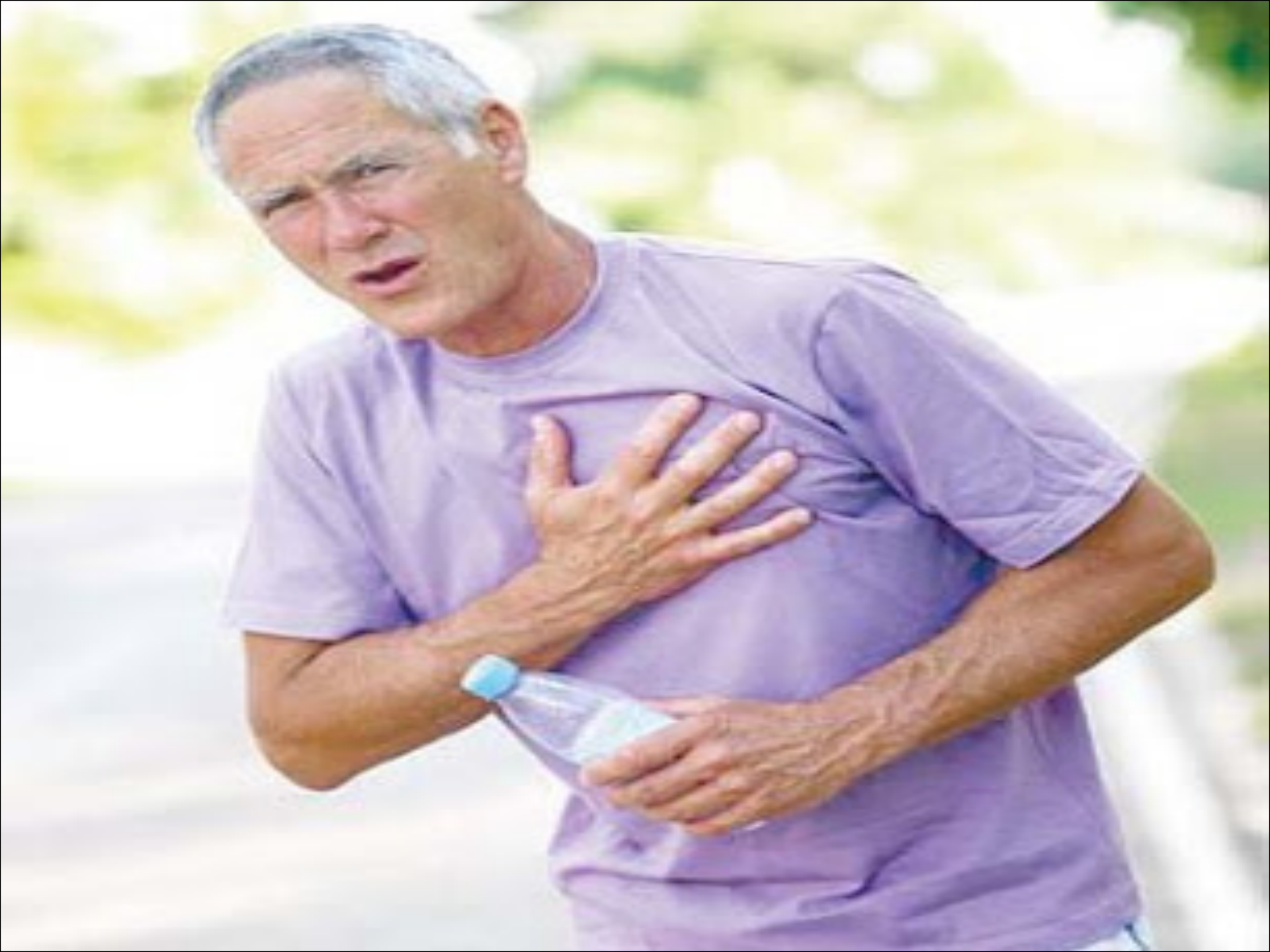
▶ Vulnerable plaque:

- ▶ 1- Thin fibrous cap.
- ▶ 2 Lipid core.
- ▶ 3- Smooth muscles.
- ▶ 4- Macrophages

- ▶ Acute coronary syndromes:
 - ▶ 1- Unstable angina.
 - ▶ 2- Non-ST segment elevation myocardial infarction.
 - ▶ 3- ST segment myocardial infarction.
- 

▶ **Symptoms of MI:**

- ▶ Retrosternal (central) chest pain (tightness, pressure) radiation to left shoulder, arm, neck or jaw.
- ▶ Dyspnea (shortness of breath).
- ▶ Nausea or vomiting.
- ▶ Diaphoresis (sweating).
- ▶ Palpitations or lightheadedness.





Call 9-1-1
Call fast



Onset of symptoms of STEMI

9-1-1 EMS Dispatch

EMS on-scene
• Encourage 12-lead ECGs
• Consider prehospital fibrinolytic if capable and EMS-to-needle within 30 min

EMS Triage Plan

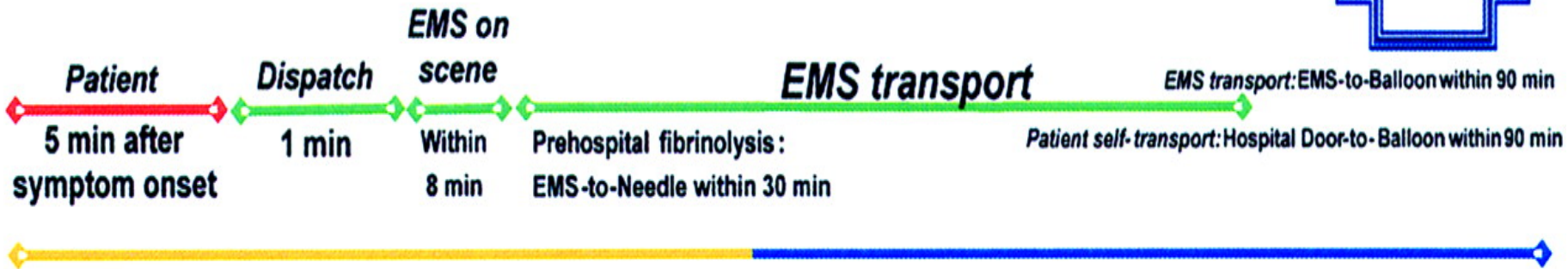
Hospital fibrinolysis:
Door-to-Needle within 30 min

Not PCI capable

Inter-Hospital Transfer

PCI capable

Goals†

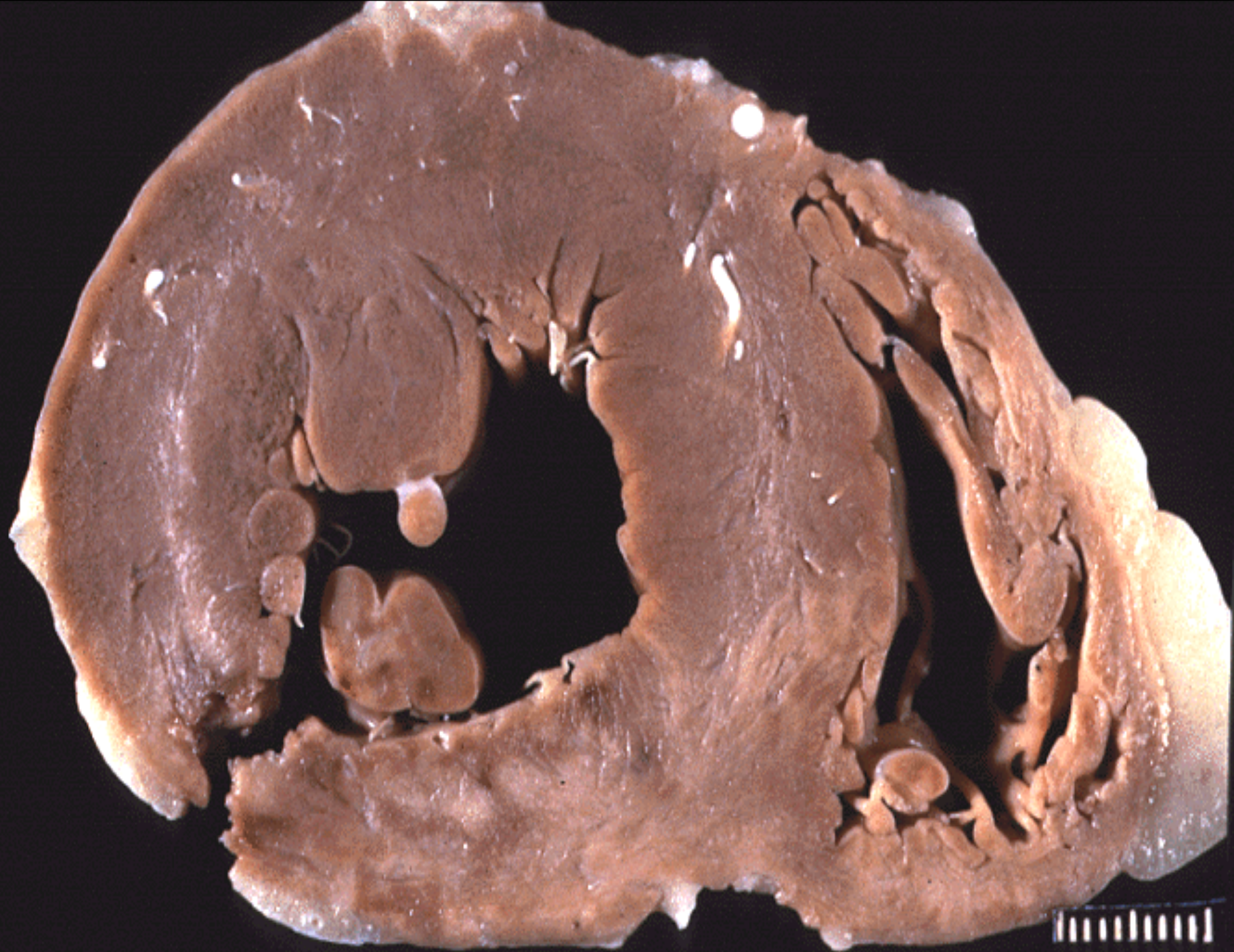


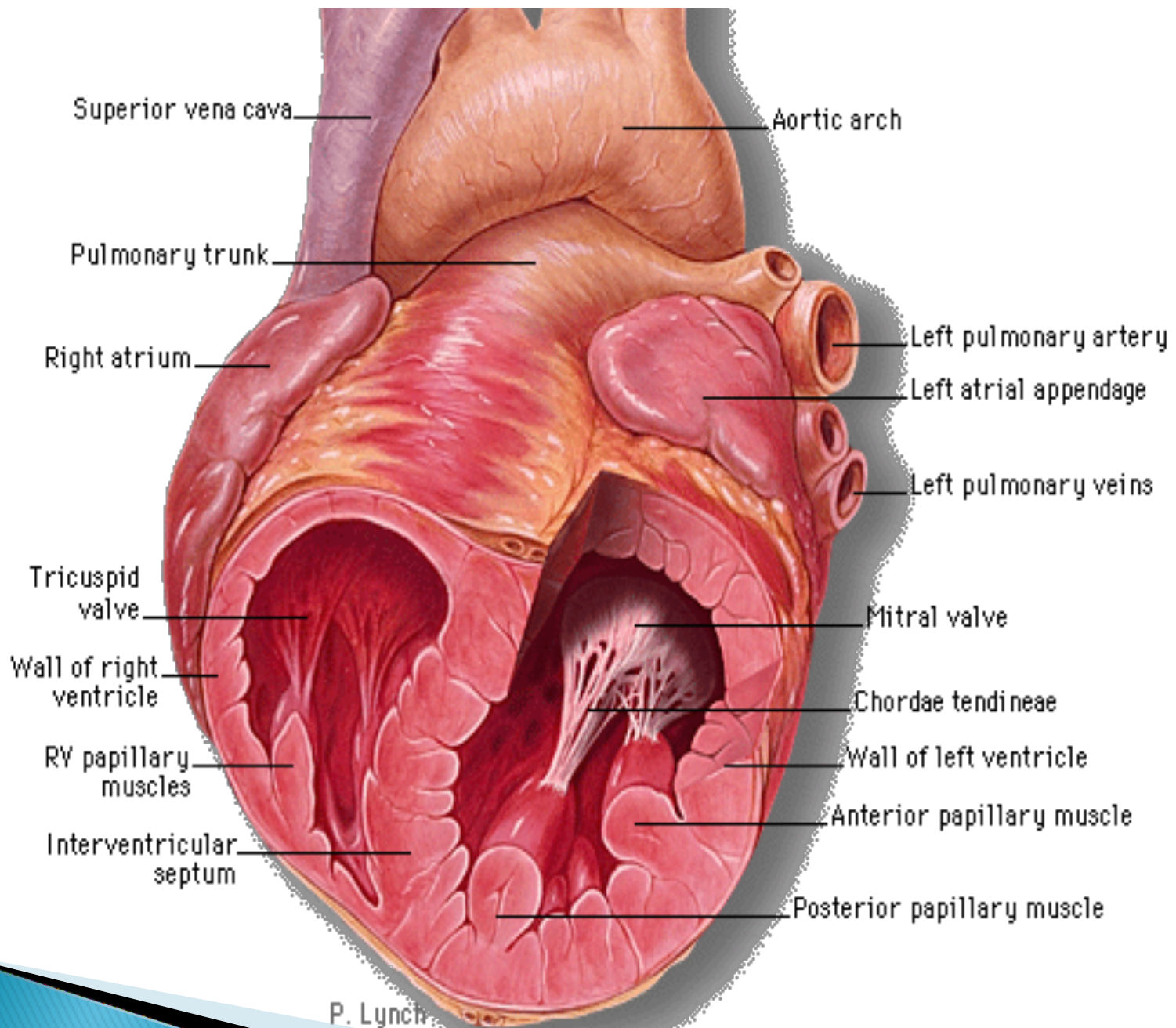
Total ischemic time: Within 120 min*

*Golden Hour = First 60 minutes

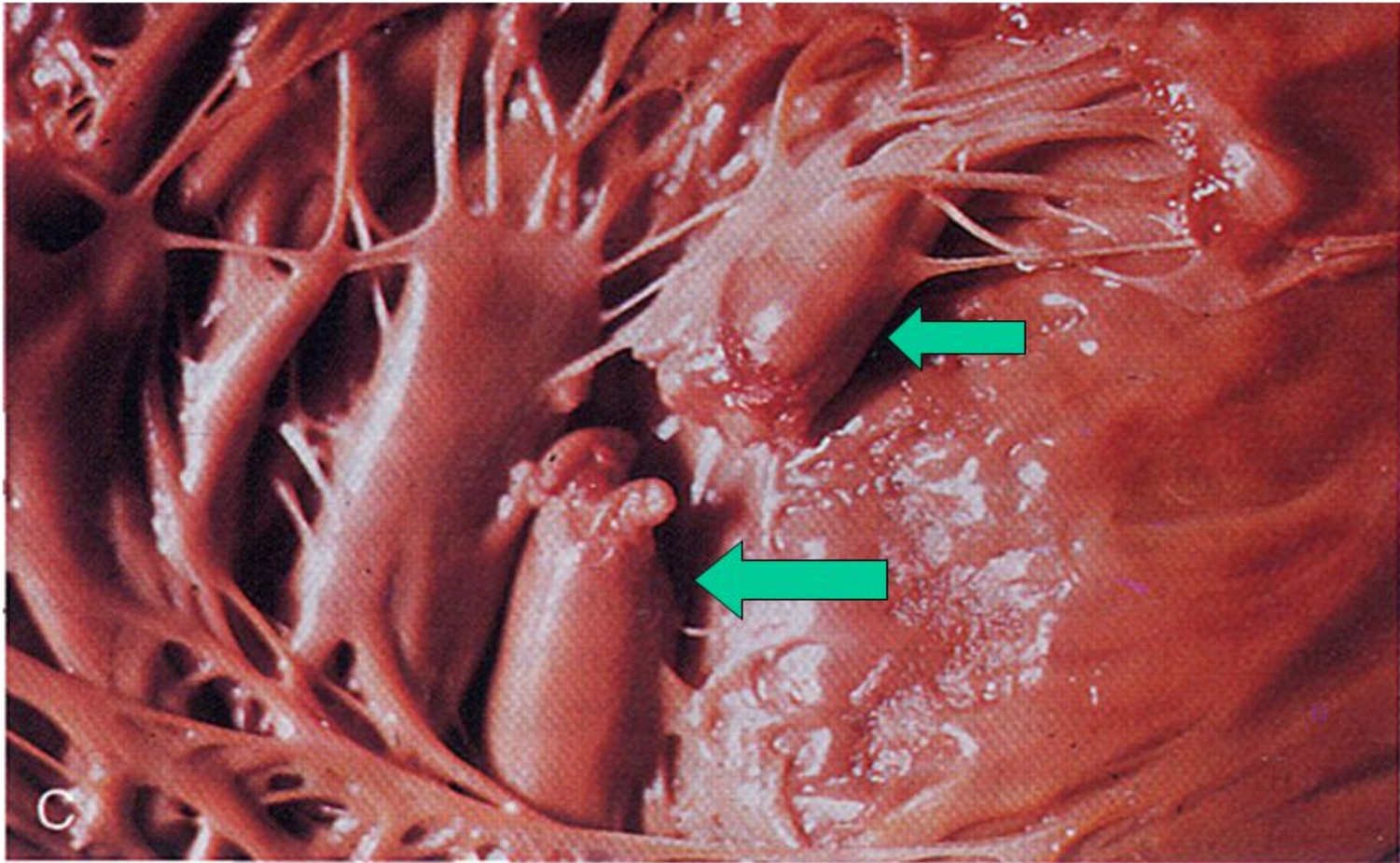
▶ **Complications of MI:**

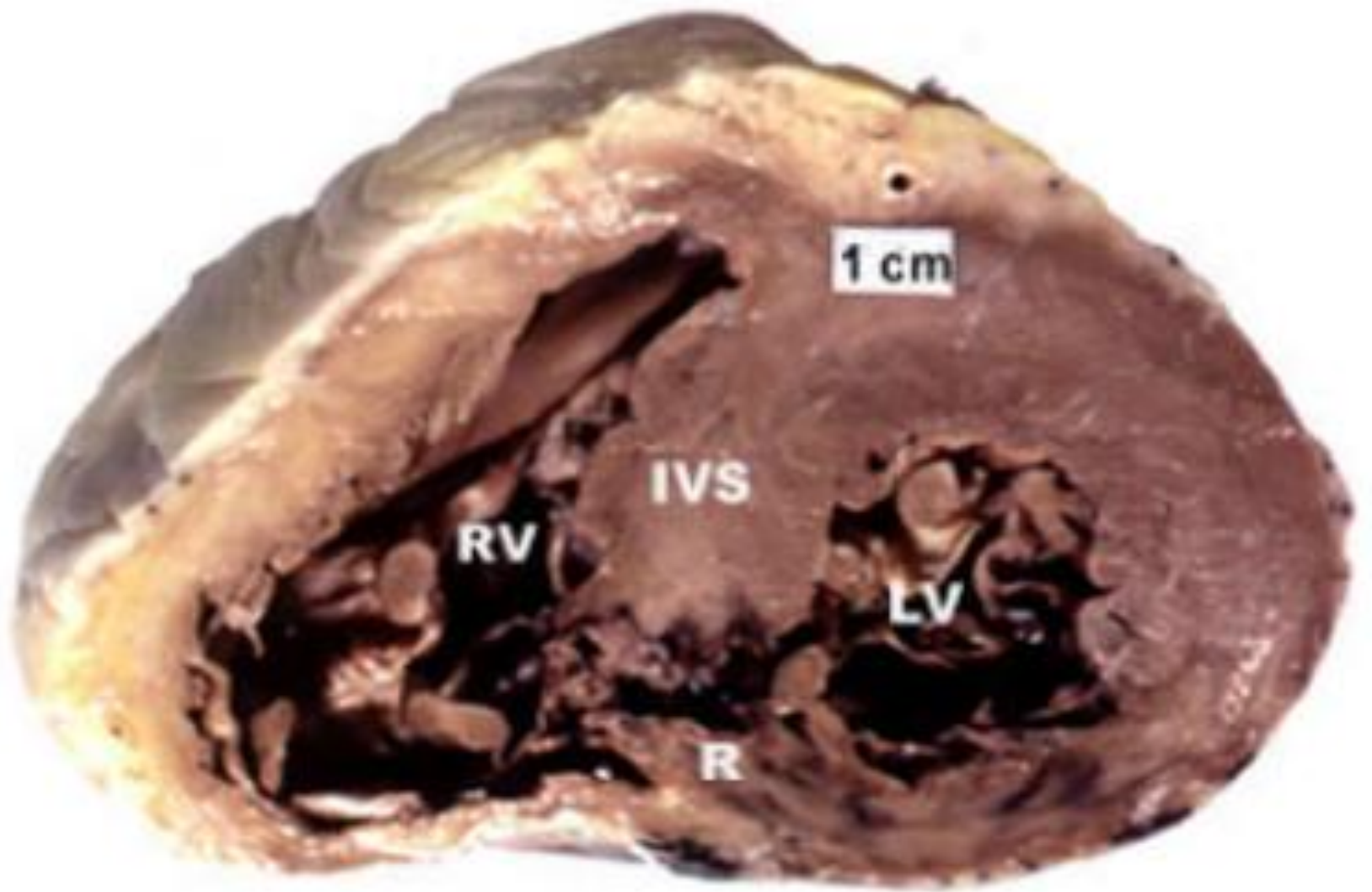
- ▶ Free wall rupture.
- ▶ Ventricular septal defect (VSD).
- ▶ Papillary muscle rupture causing mitral regurgitation.
- ▶ Cardiogenic shock (Left ventricular failure).
- ▶ Arrhythmias (VF, VT, AF).
- ▶ Ventricular aneurysm.
- ▶ Pericarditis.





Ruptured Papillary muscle





1 cm

RV

IVS

LV

R

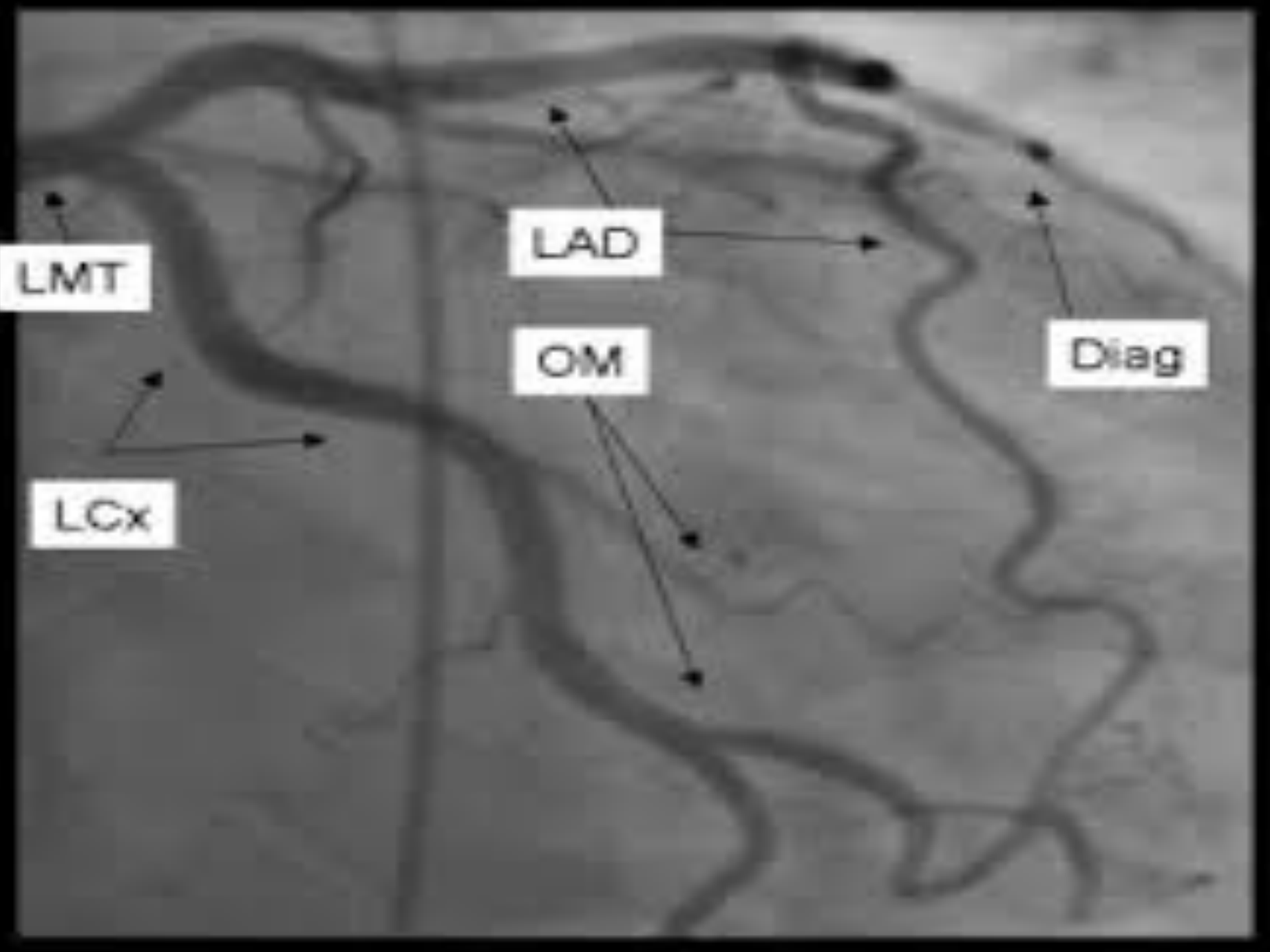
LMT

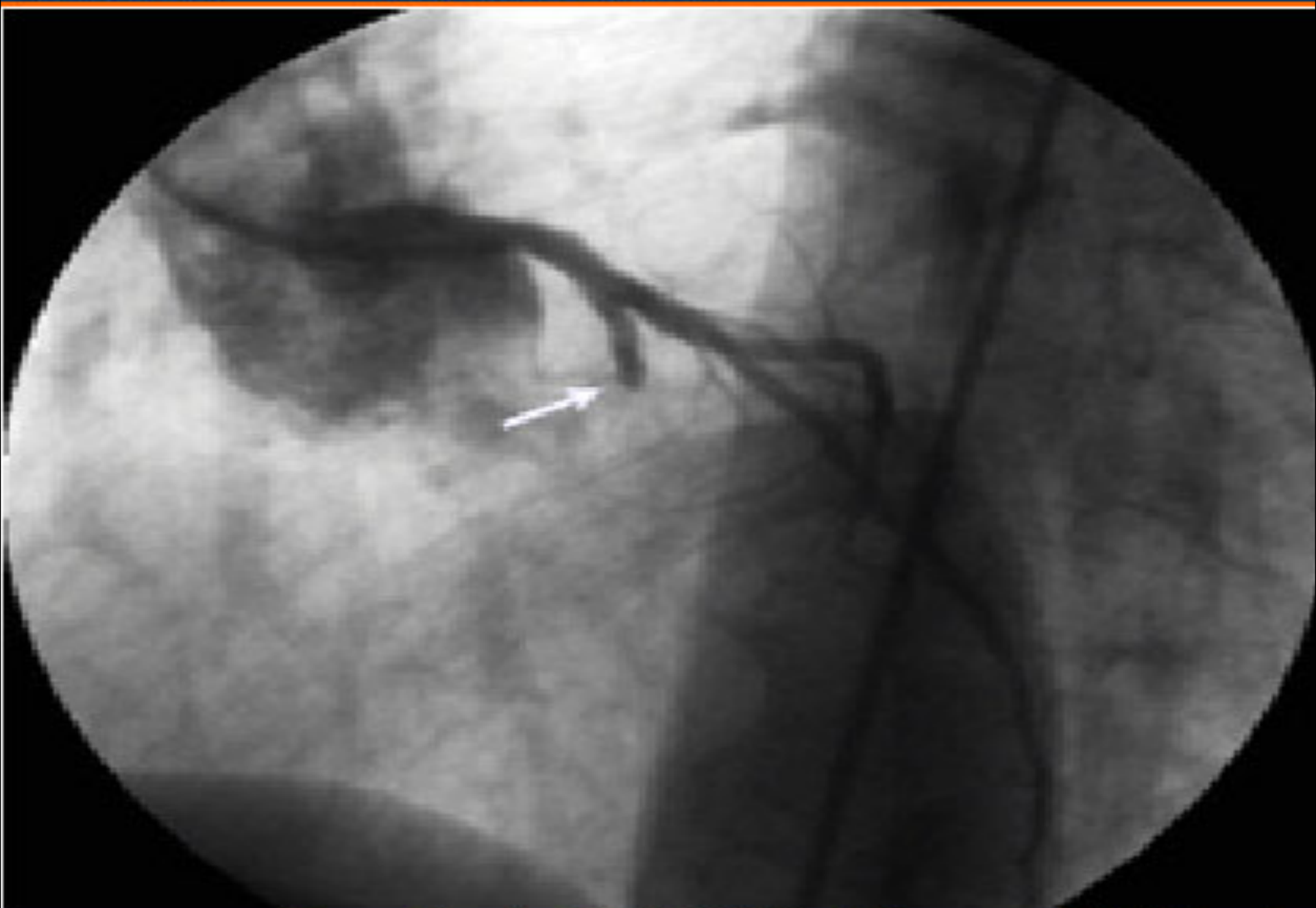
LAD

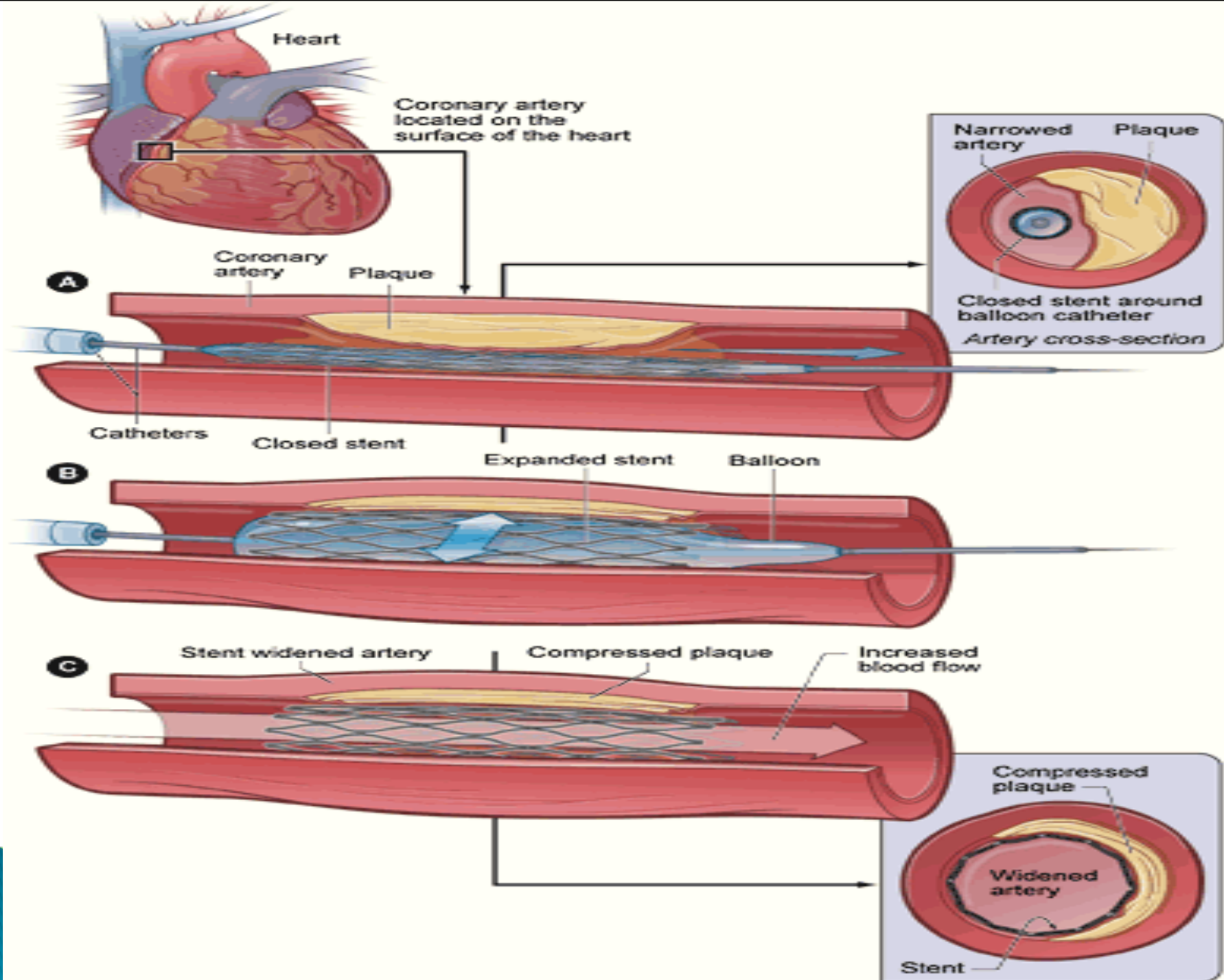
Diag

OM

LCx



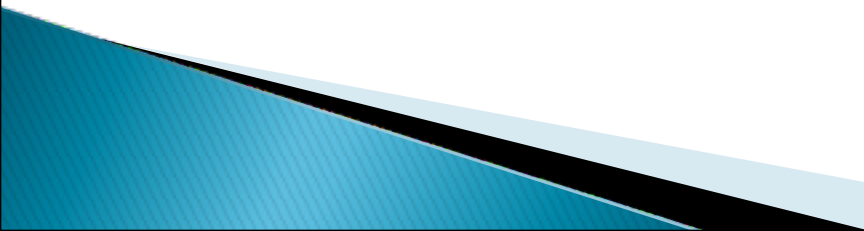




Case

- ▶ A 60-year old male patient with past medical history of hypertension and smoking presented to the emergency room with sudden aphasia (unable to speak) and weakness in his right arm and leg.

- ▶ The ***most common symptom of a stroke*** is sudden weakness or numbness of the face, arm or leg, most often on one side of the body.

- ▶ Other symptoms include:
 - ▶ confusion.
 - ▶ difficulty speaking or understanding speech.
 - ▶ difficulty seeing with one or both eyes.
 - ▶ difficulty walking, dizziness, loss of balance or coordination.
 - ▶ severe headache with no known cause.
 - ▶ fainting or unconsciousness.
- 

STROKE is an Emergency.
Every minute counts.

ACT F.A.S.T!



FACE

Does one side of the face droop?
Ask the person to smile.



ARMS

Is one arm weak or numb?
Ask the person to raise
both arms. Does one arm
drift downward?



SPEECH

Is speech slurred?
Ask the person to repeat
a simple sentence. Is the
sentence repeated correctly?



TIME

If the person shows any of these
symptoms, **Call 911** or get
to the hospital immediately.