How does my anatomy knowledge of the heart apply in basic medicine??

A) Structural anomalies

- Arteries
- Veins

B) Functional anomalies

1) Arrest ➔ Cease of contraction
2) Failure ➔ Insufficient pump (blood stasis)  a) Right   b) Left
3) Arrhythmia ➔ Irregular conduction
4) Rate ➔ Shift in ANS control  a) ↑ Tachycardia   b) ↓ Bradycardia
5) Infarction ➔ Defect in coronary arteries
6) Valvular ➔ a) Def-Closure ➔ Regurgitation   b) Def-Opening ➔ Stenosis
7) Congenital Malformation ➔ Abnormal structures and function
8) Wall ➔ *Septal-Nonseptal  *Endocardium, Myocardium, Pericardium
9) Trauma ➔ Damage to structures
10) Mediastinum ➔ Defect within anatomical topography
Mediastinum

- oesophagus
  1. spatium retroviscerale
  2. spatium paraviscerale
  3. spatium previscerale

- Th₆
- Th₈

- Superius
- Inferius
- Posterior

- aorta
- diaphragma
- abdominal cavity
- angulus sterni
- n. frenicus
Chest Side X-Ray (Side view)
What is the best way to man’s heart?

***It’s NOT a joke!
5th left intercostal space at miclavicular line

- It’s where you can palpate the apex of the heart. *[clinical physical examination]*
- Stab by a sharp object will penetrate the heart!!! *[traumatology]*
Cardiac skeleton and valves
Cardiac Fibrous Skeleton

- Pulmonary (semilunar) valve
- Tendon of Conus
- Aortic (semilunar) valve
- Right Fibrous Trigone
- Left Fibrous Trigone
- Bicuspid (Mitral) Cusp
- Septal Cusp
- Tricuspid Valve
- Anterior Cusp
- Posterior Cusp
- Septum
- Fibrous Rings

(required)
“Auscultation points”
“Auscultation points”

• Anatomic location

• Corresponding functional structures

• *Practice it to master it’s locations!*
SA = Sinoatrial node
AV = Atrioventricular node

Cardiac Conductive System
EKG/ECG in relation to heart anatomy

Normal Heartbeat | Fast Heartbeat | Slow Heartbeat | Irregular Heartbeat

P Wave | QRS Complex | T Wave

Activation of the atria | Activation of the ventricles | Recovery wave
**Right heart Failure:**
- ↑ preload
- Blood accumulation in Systemic Circulation
- Decreased blood flow to lungs
- Edema in Legs
- Less O₂ delivery [cynosis]

**Left heart Failure:**
- ↑ afterload
- Decreased blood flow to System
- Blood accumulation in Lungs
- Pulmonary Hypertension

**Heart Failure**

**Right ventricle:**
- Preload

**Left ventricle:**
- Afterload

**Systemic Circulation:**

**Pulmonary Circulation:**

**Aorta**
What is the concept of CPR (Cardiopulmonary resuscitation)?

**Compress** → Squeezing heart between sternum and vertebrae → **Blood eject**

**Decompress** → heart chambers expand back → **Blood fill**

**Cycles of compression** → mechanical pump of blood

ENSURE CONTINUOUS BLOOD SUPPLY TO THE **BRAIN**
Heart silhouette

Right Brachiocephalic vein
Superior vena cava
Right Atrium
Inferior vena cava
Diaphragm

Subclavian artery
Aortic arch (Knob)
Pulmonary Trunk
Left atrial appendage

Left Ventricle
Left Cardiophrenic angle

Cardiac Radiograph

Rezzat Al Redaian
Heart silhouette on X-ray
Normal Chest X-ray
Cardiomegaly
Left ventricular hypertrophy
Right ventricular hypertrophy
Ecocardiography
Coronary arteries
supplies circulation to the S-A node in 60%

S-A Nodal

Rt coronary a.

supplies the A-V node in 75%-90%

A-V branch

Posterior septal

In 70%, is the terminal branch of the RCa & supplies the posterior 1/3 of the septum & the post & inferior wall of the left Ventricle.

30% is terminal branch of left circumflex

Ant septal branches supply bundle branches

LAD supplies the septal & anterior myocardium of LV

Art septal

Art septal

L.A. of descending

Diagonal

OM supplies the lateral & posterior LV

Oblique marginal

 posters descend branch
Angiography
Left coronary a. stenosis
Cardiac Bypass surgeries