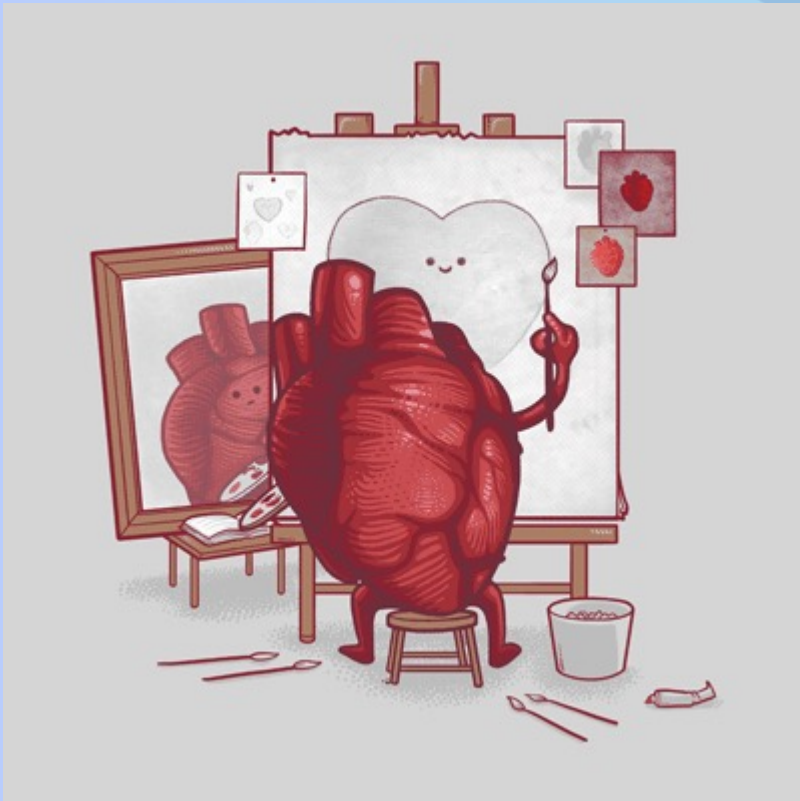


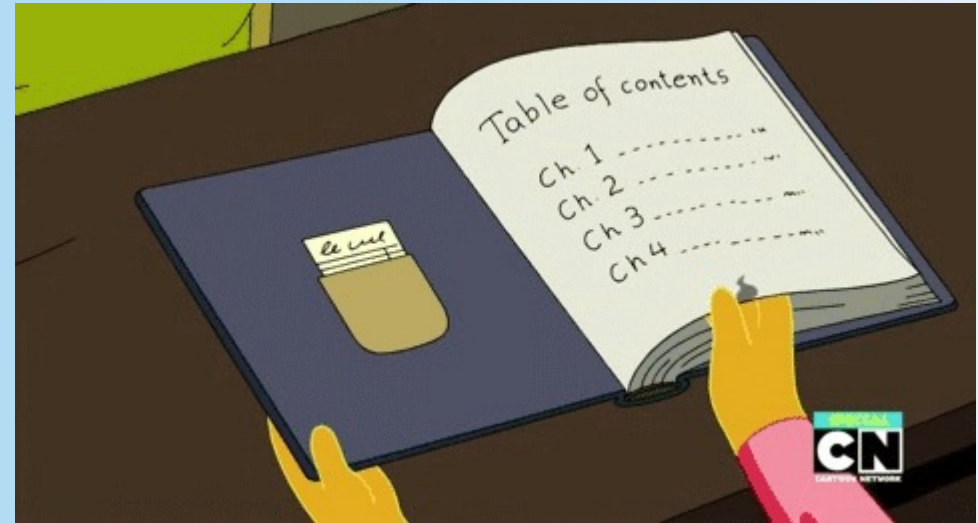
VALVULAR HEART DISEASES

BY VASVI SADHWANI

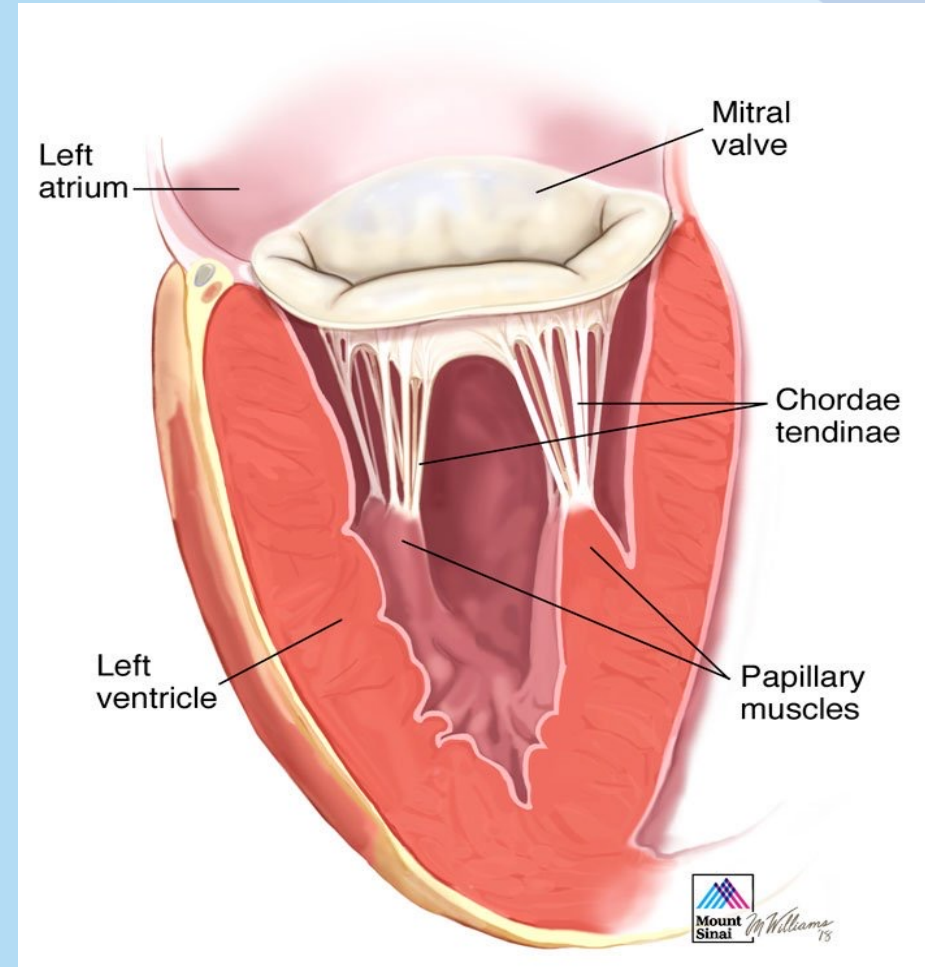
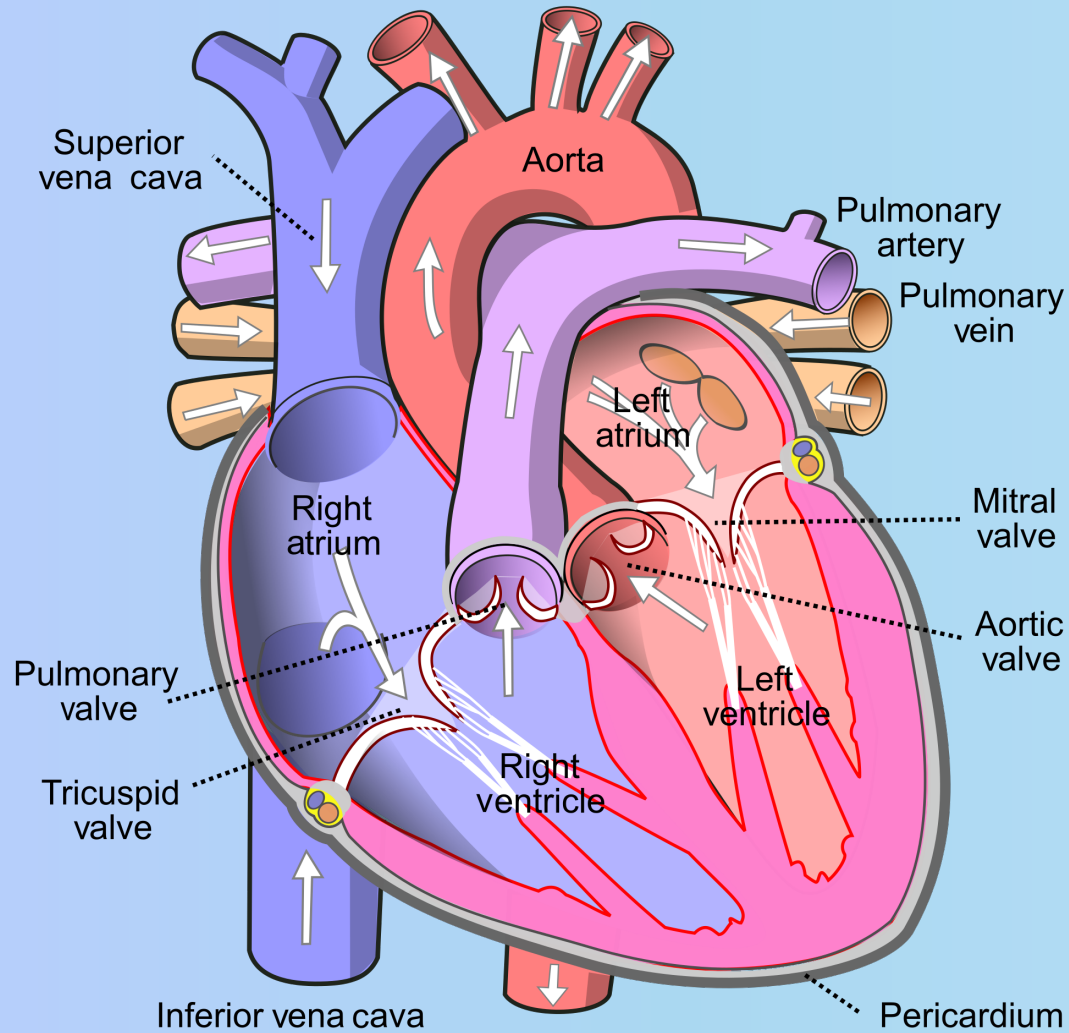


OVERVIEW

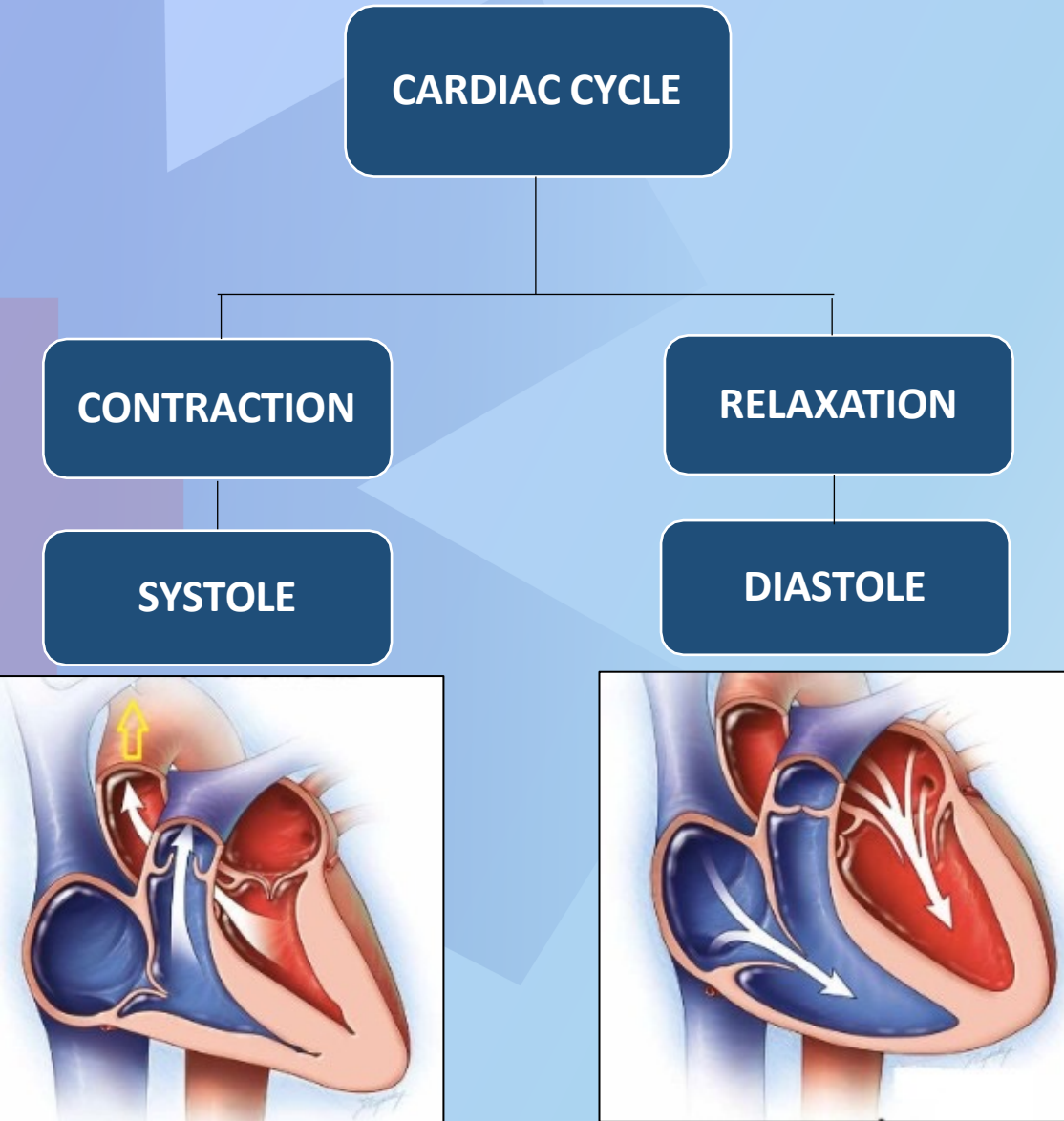
- ❑ Anatomy review
- ❑ Cardiac cycle
- ❑ Auscultation
 - Heart sounds
- ❑ What is a murmur?
 - Grading of a murmur
- ❑ Valvular diseases
- ❑ Quiz 💕💕💕💕



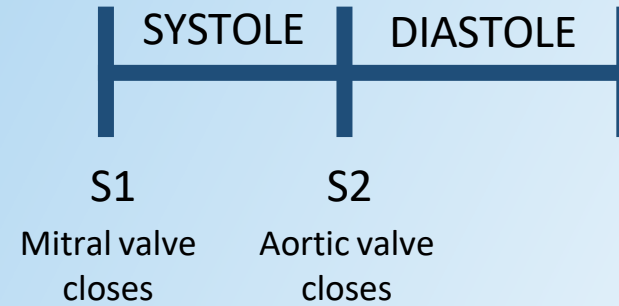
Anatomy of the Heart



CARDIAC CYCLE



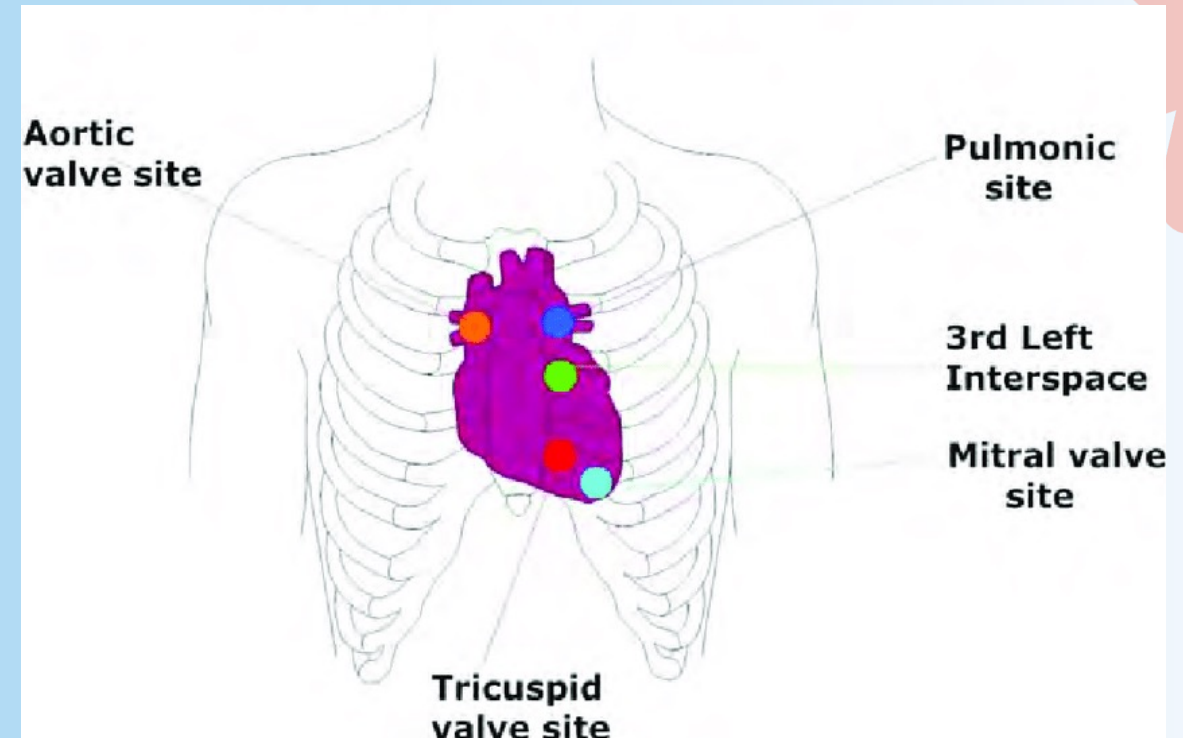
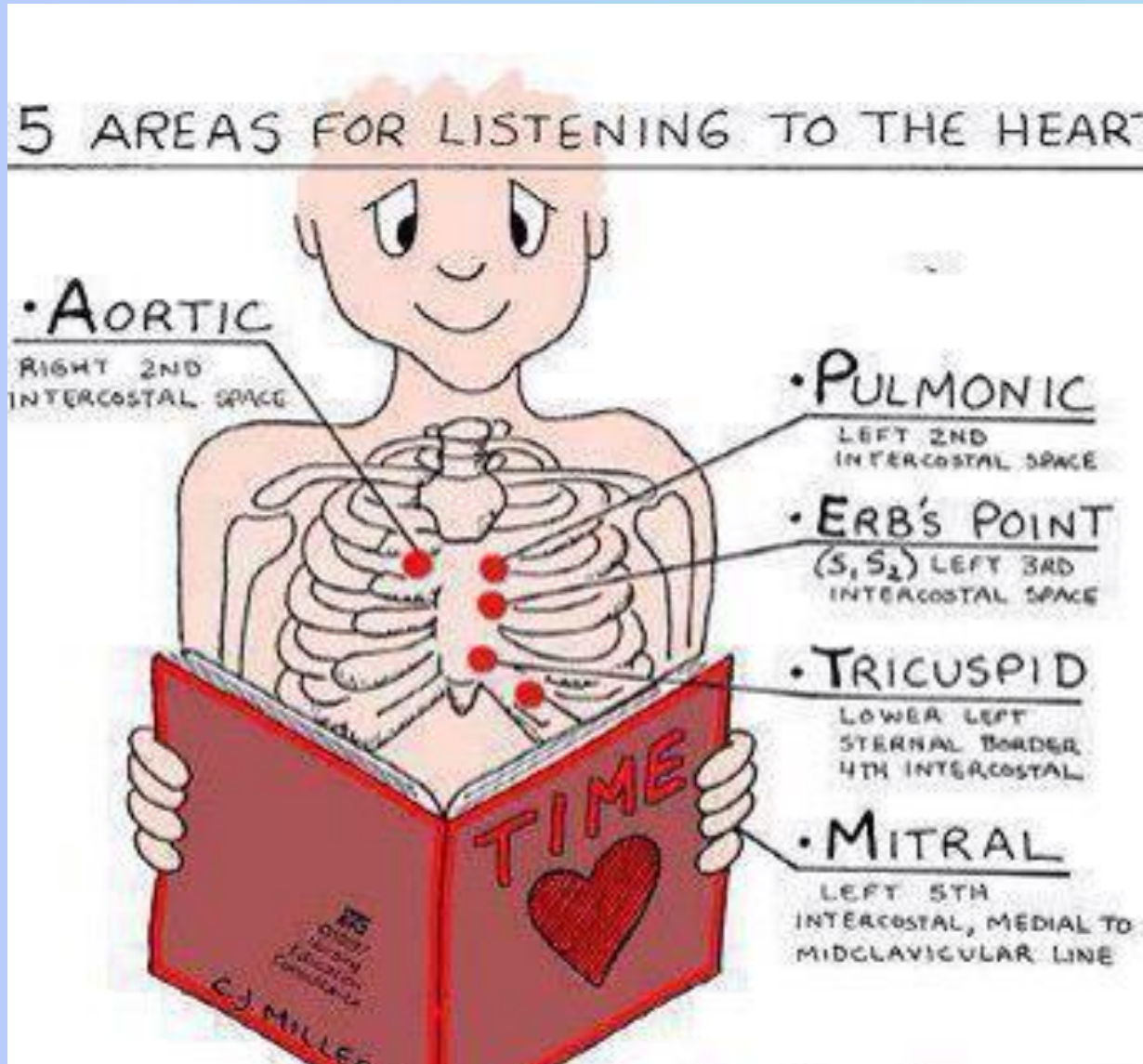
HEART SOUNDS:



STATE OF VALVES:

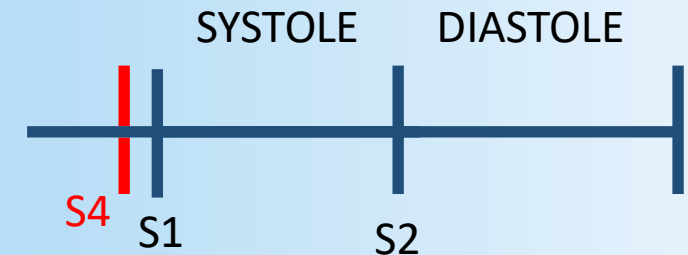
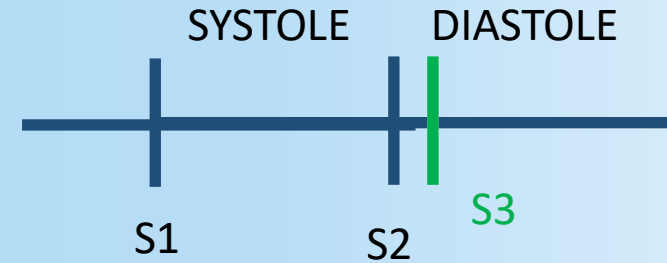
	SYSTOLE	DIASTOLE
AORTIC VALVE	OPEN	CLOSED
MITRAL VALVE	CLOSED	OPEN

Auscultation, Where?



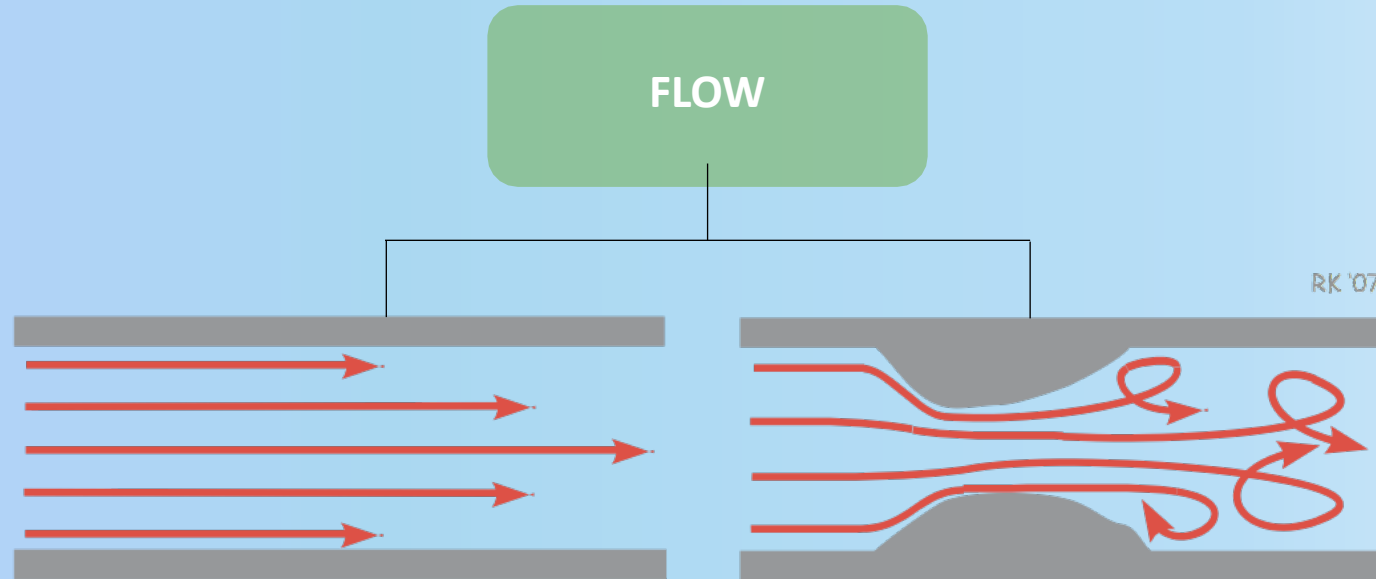
Heart Sounds

- **S1**
 - Closure of AV valves
- **S2**
 - Closure of semilunar valves
- **S3**
 - Volume overload
 - Tensing of chorda tendinea
- **S4**
 - Pressure overload
 - Atria contract into a non-compliant ventricle



What is a Murmur?

- Murmurs are **audible vibrations** caused by turbulent flow



Laminar Flow

- Flow in layers
- Non-audible

Turbulent Flow

- Chaotic flow
- Created by narrowing of vessels or damaged valves
- Audible vibrations
- Radiates

MURMURS - GRADING

LEVINE SCALE

Diagnostic workup



S1, S2 > Murmur



S1, S2 = Murmur



S1, S2 < Murmur



- S1, S2 << Murmur
- Palpable thrill



- S1, S2 <<< Murmur
- Stethoscope barely touching the chest



- S1, S2 <<<< Murmur
- Heard without stethoscope



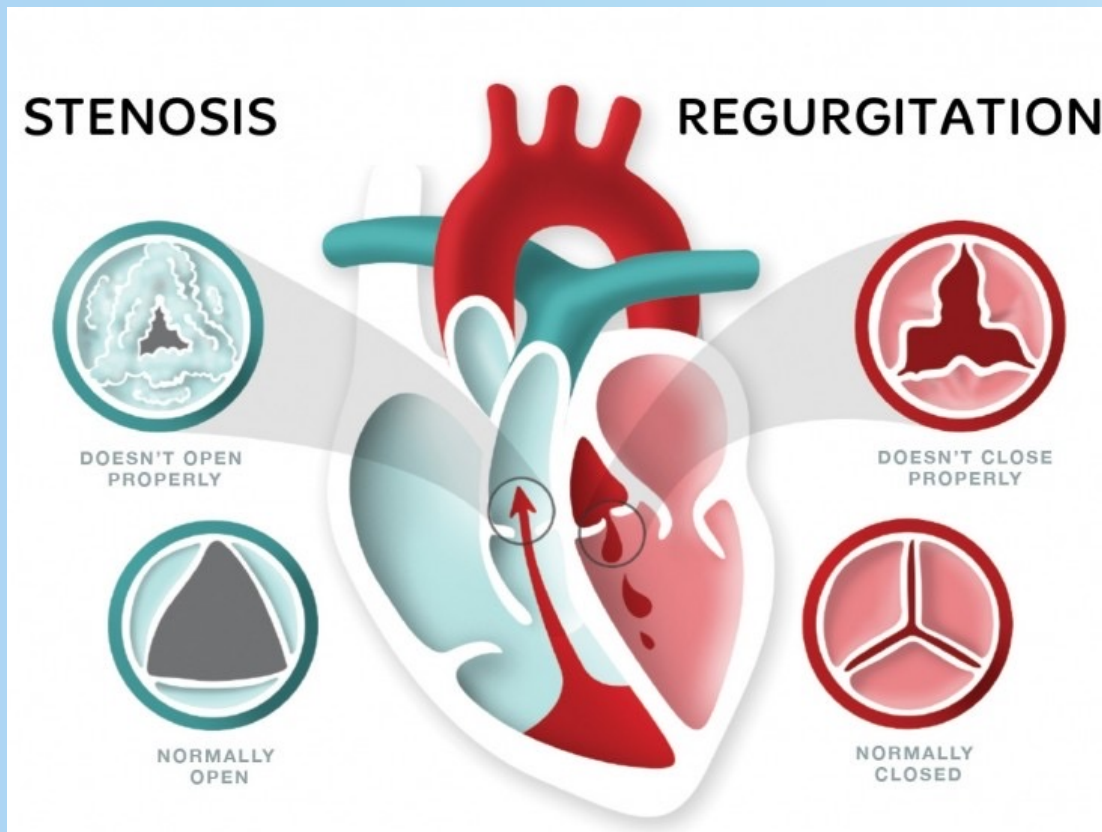
Stenosis vs regurgitations

Stenosis

An abnormal narrowing or contraction of an opening

Murmur is heard when the valve is supposed to be open

Stiff valve
Problems w/ opening
causes turbulent flow
causes murmur



Regurgitation

An abnormal backward flow of blood through a heart valve

Murmur is heard when valve is supposed to be closed

Floppy valve
Problems w/ closing
(remains open) causes
turbulent flow causes
murmur

	Stenosis	Regurgitation
Semilunar valves	Systolic murmur	Diastolic murmur
AV valves	Diastolic murmur	Systolic murmur

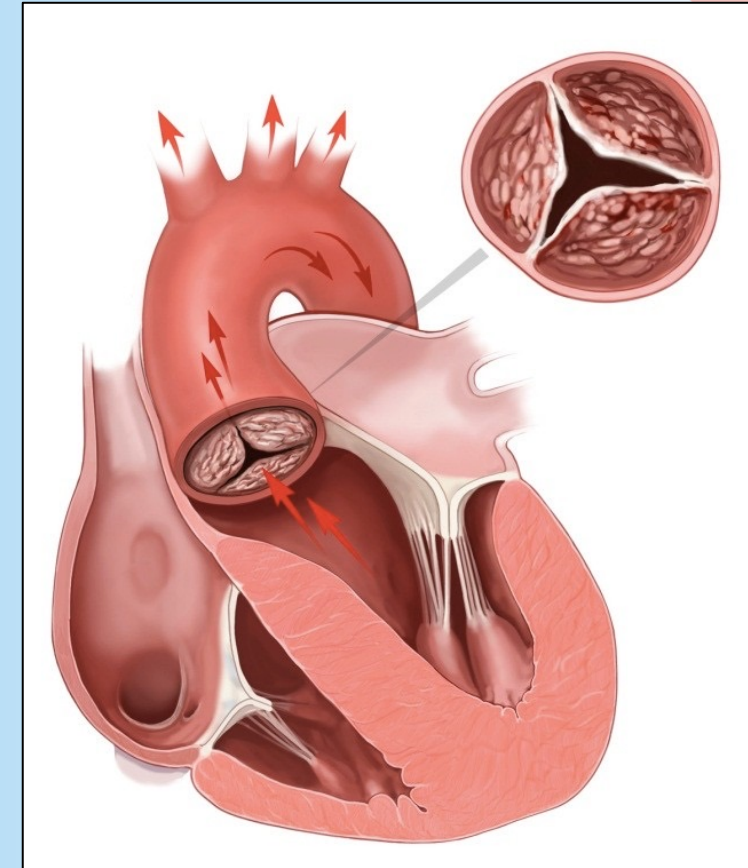
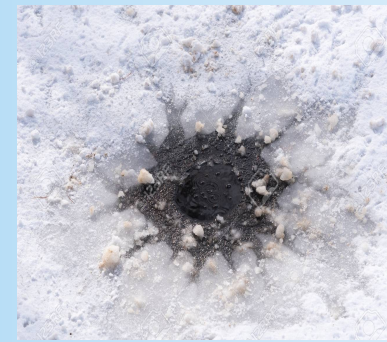
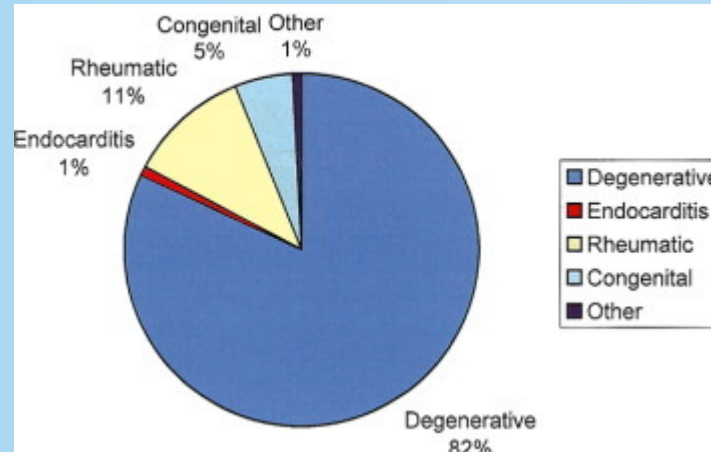
AORTIC STENOSIS - Causes

- Problems with valve opening



Left VENTRICLE has to exert more pressure to open the aortic valve (Pressure overload in LV)

- Senile/ Age related degeneration - Calcification
- Congenital Bicuspid valve
- Rheumatic Fever



AORTIC STENOSIS

Pathophysiology



AORTIC STENOSIS

LV OUTFLOW OBSTRUCTION

SYSTOLIC MURMUR

PRESSURE OVERLOAD

PRESSURE TRANSMITTED TO PULMONARY CIRCULATION

S4 HEART SOUND

SIGNS AND SYMPTOMS OF LEFT HEART FAILURE

↓ CO (cardiac output)

CONCENTRIC HYPERTROPHY

↑ O₂ DEMAND

DYSPNEA

EXERTIONAL SYNCOPE

FATIGUE

* ANGINA ON EXERTION

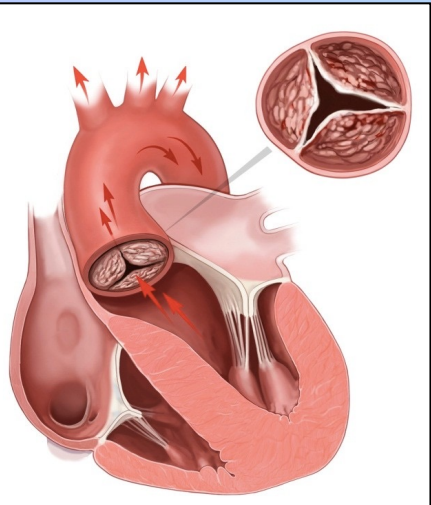


MNEMONIC

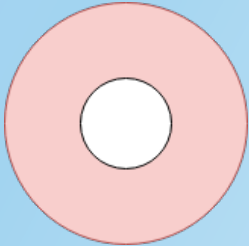
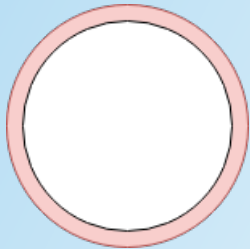
S - Syncope

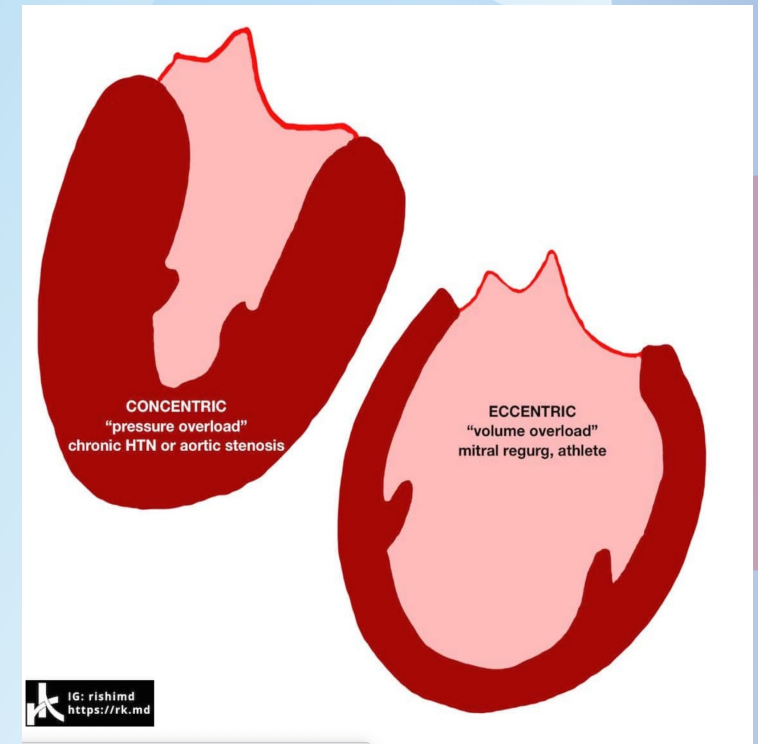
A - Angina

D - Dyspnea

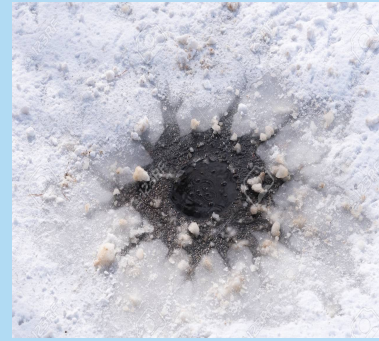


Concentric vs. Eccentric Hypertrophy

	Concentric	Eccentric
Chamber size	↓	↑
Wall thickness	↑	Normal
Pathophysiology	Pressure overload	Volume overload
Consequence	Impaired filling – Diastole	Impaired contraction – Systole
Etiology - Example	Aortic Stenosis	Aortic regurgitation
Illustration		

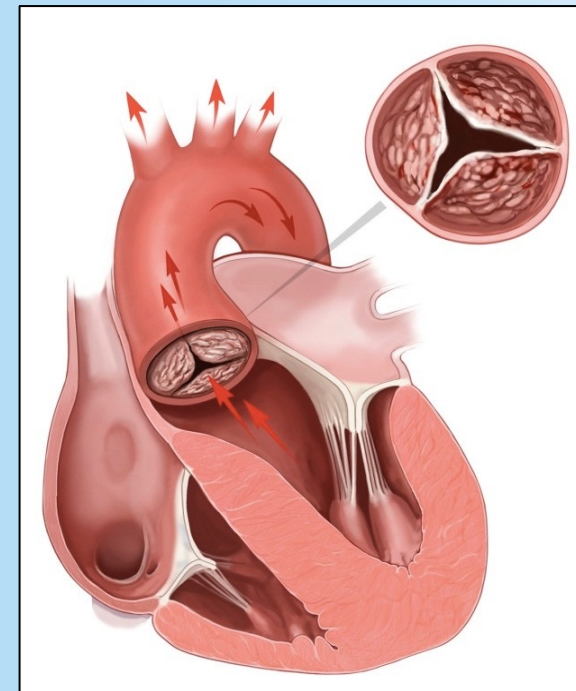
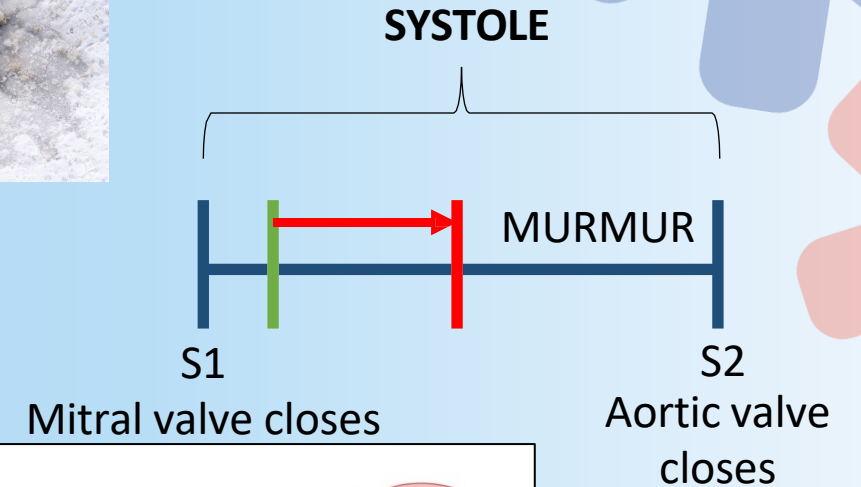
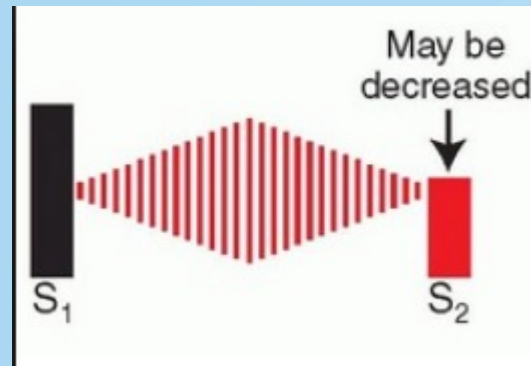


AORTIC STENOSIS

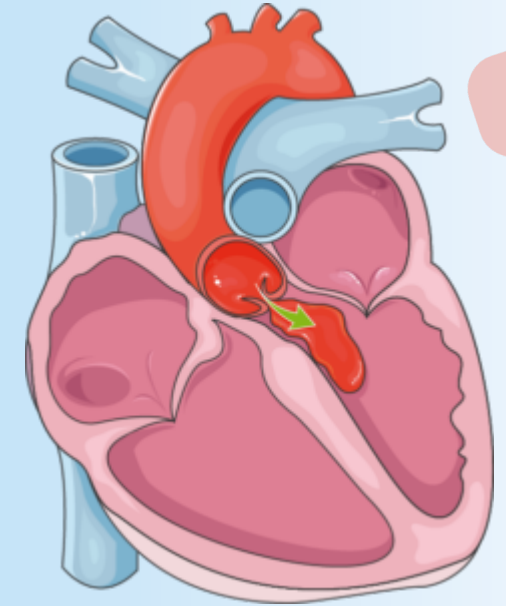
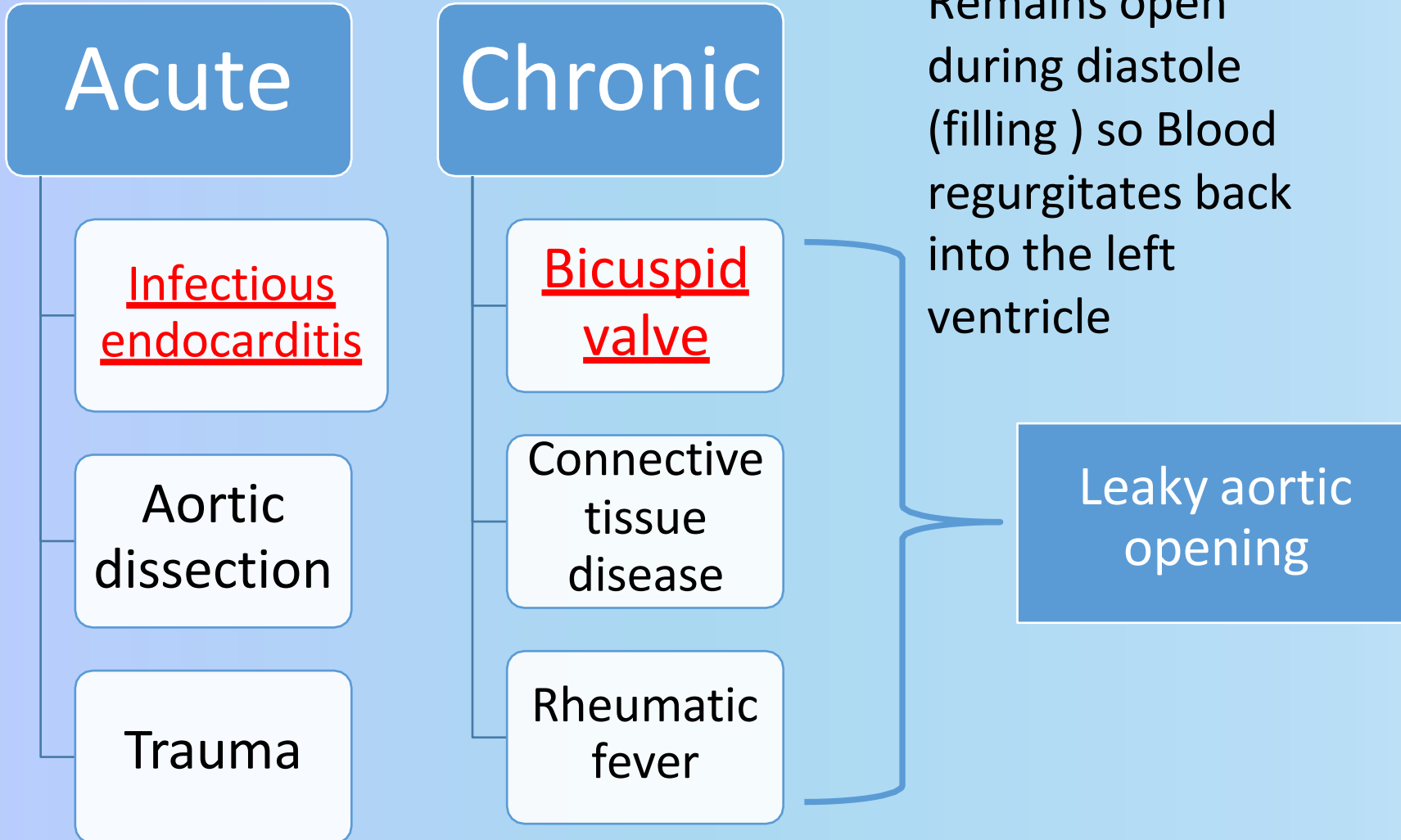


AUSCULTATION

- **Midsystolic murmur**
 - Prolonged opening time
- **Crescendo-decrescendo (rising-falling)**
 - Blood flow through the aorta rapidly escalates, then decline
- **Ejection click**
 - Originating from the aortic valve (NOT turbulent blood flow)
 - Stiff valve
- **Radiates to the neck**
- **Displaced apical impulse**
 - Hypertrophy
- Decreased and delayed carotid pulse (parvus et tardus)
- HEART FAILURE signs

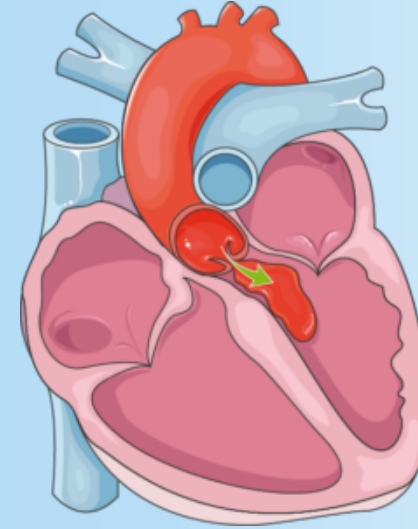


AORTIC REGURGITATION- Causes



AORTIC REGURGITATION

Pathophysiology



AORTIC REGURGITATION

DIASTOLIC MURMUR

BACKFLOW OF BLOOD INTO LV

S3 HEART SOUND

↑ DIASTOLIC LV VOLUME

VOLUME OVERLOAD

PRESSURE TRANSMITTED TO PULMONARY CIRC.

SIGNS AND SYMPTOMS OF LEFT HEART FAILURE

ECCENTRIC HYPERTROPHY

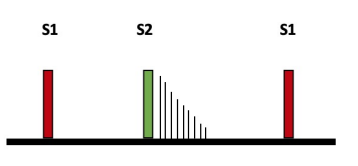
↑ STROKE VOLUME,
* ↓ EF

ANGINA

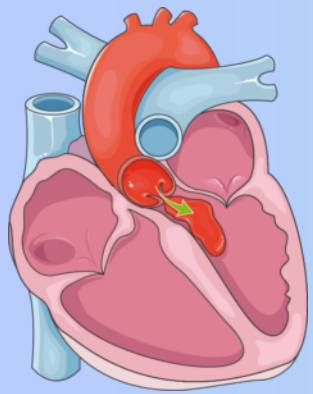
OXYGEN DEMAND

↑ PULSE PRESSURE

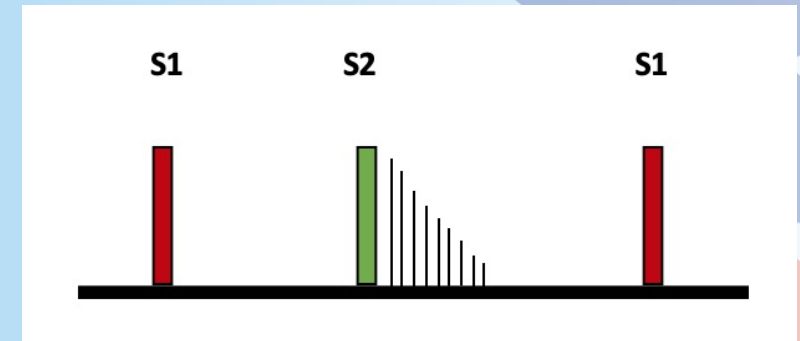
HYPERDYNAMIC PULSES



$$\text{*EJECTION FRACTION} = \frac{\text{STROKE VOLUME}}{\text{END-DIASTOLIC VOLUME}}$$



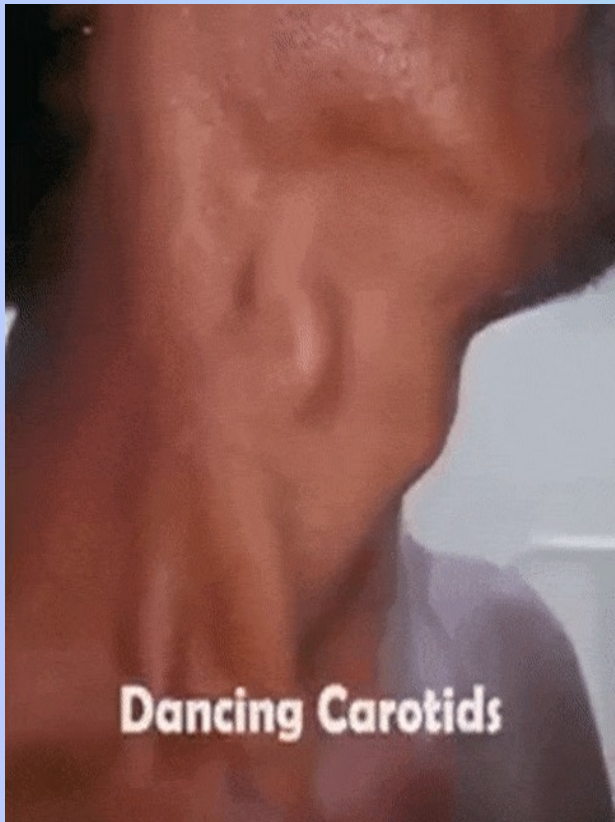
Hyperdynamic Pulses



Corrigan's Sign

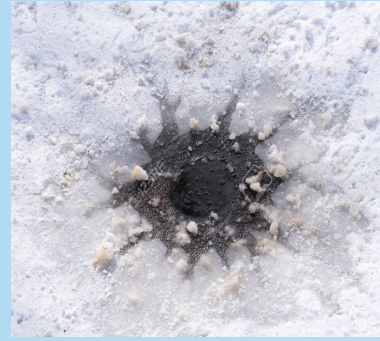
De Musset's Sign

Mueller's Sign



MITRAL STENOSIS

Causes

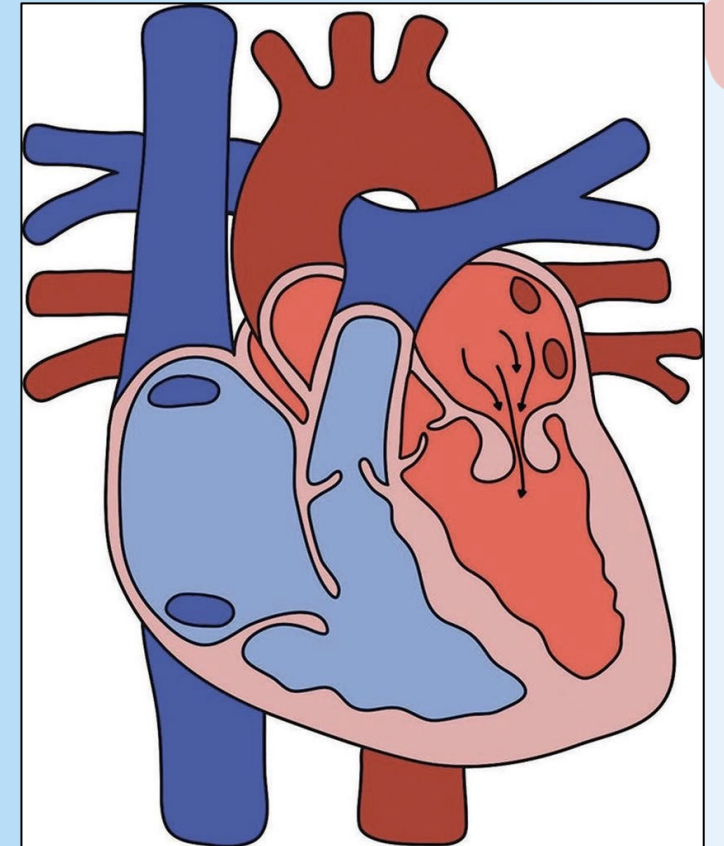


Chronic

Rheumatic fever

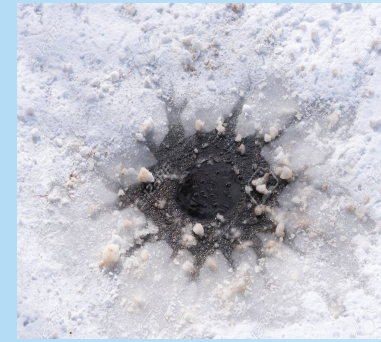
Congenital defects

Narrowed mitral opening



Mitral stenosis - Pathophysiology

MITRAL STENOSIS



↑ BLOOD VOLUME IN LA

DIASTOLIC MURMUR AND OPENING SNAP

↑ LA PRESSURE

PRESSURE TRANSMITTED TO PULMONARY CIRC.



LA ENLARGEMENT

SIGNS AND SYMPTOMS OF LEFT HEART FAILURE

STRETCHING OF MYOCARDICAL MUSCLE FIBERS

COMPRESSION AND RUPTURE OF BRONCHIAL VESSELS

COMPRESSION OF LARYNGEAL NERVE

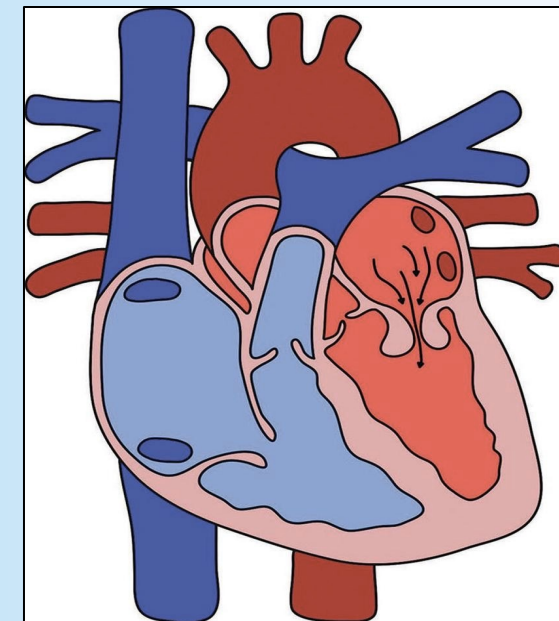
ATRIAL FIBRILLATION

HEMOPTYSIS

HOARSENESS

PALPITATIONS

STROKE



Mitral regurgitation - Causes



Changes to the chorda tendinea or leaflets

Primary

Mitral valve prolapse

Infectious endocarditis

Leaky mitral opening

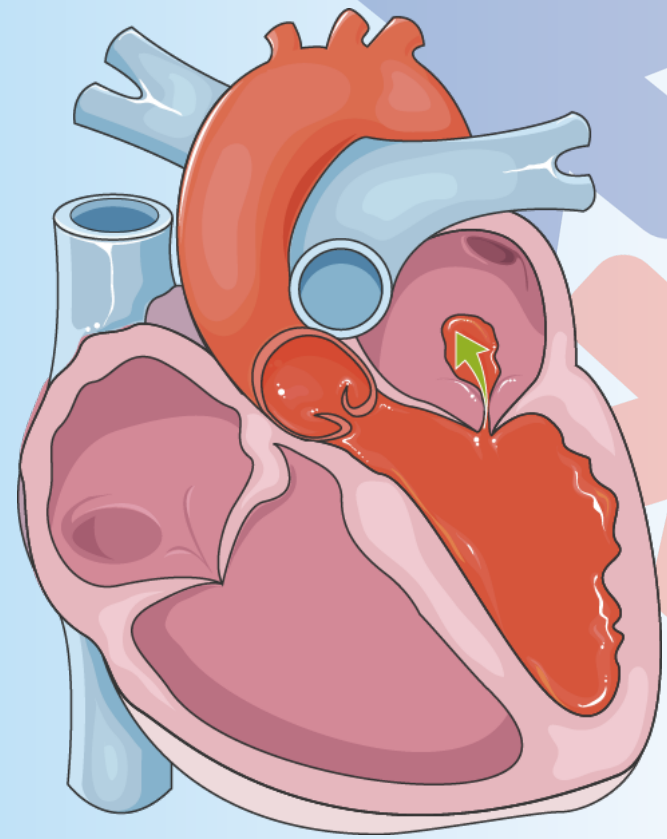
Changes to the left ventricle

Secondary

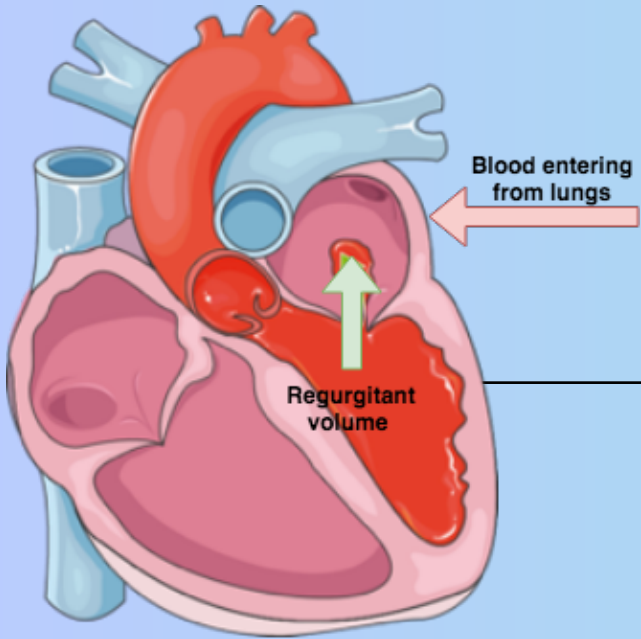
Ischemic heart disease

Left-sided heart failure

Leaky mitral opening



MITRAL REGURGITATION



MITRAL REGURGITATION

BACKFLOW OF BLOOD INTO LA

↑ LV FILLING AND PRESSURE

↑ LA VOLUME AND PRESSURE

SIGNS AND SYMPTOMS OF LEFT HEART FAILURE

VOLUME OVERLOAD

ECCENTRIC HYPERTROPHY

↑ OXYGEN DEMAND

ANGINA

The LA receives blood from the lungs AND the regurgitated blood from previous systole --- delivered to LV

Q

U



I

Z

How to participate?

Q

U



I

Z



WEB

1

Connect to www.wooclap.com/VALVULAR

2

You can participate

Q

U



I

Z

Q

U



I

Z