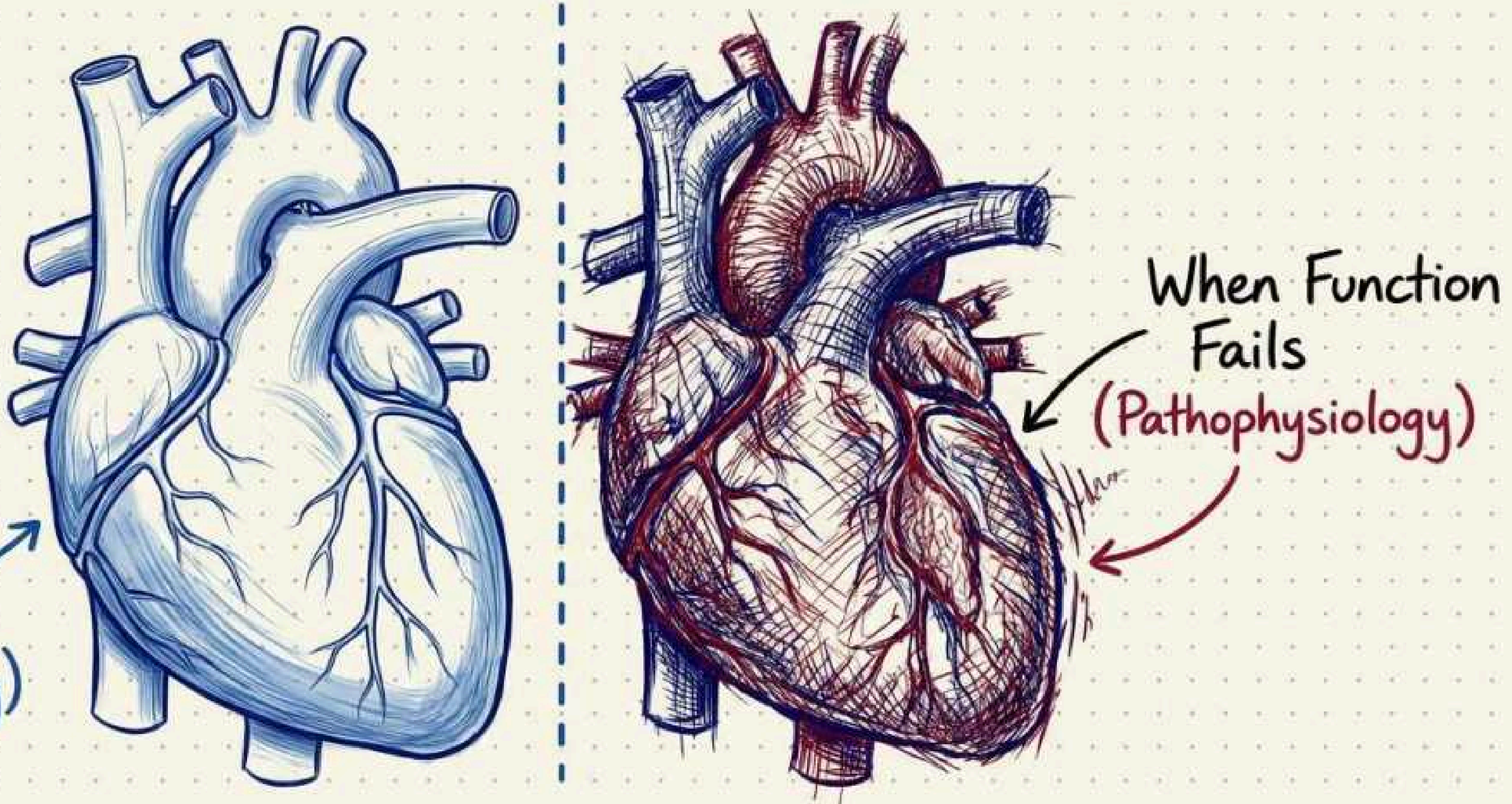
MED 521 B: Cardiovascular Pathophysiology

¶ 0.1



Welcome to Anderson Academy. Modelled on the Harvard/MIT Health Sciences and Technology subject of the same name, following the heart and blood vessels from health to illness.

Gemini Notebook

Questions & Feedback

¶ 0.2



Email: garyanderson @ mail.grokbot.com



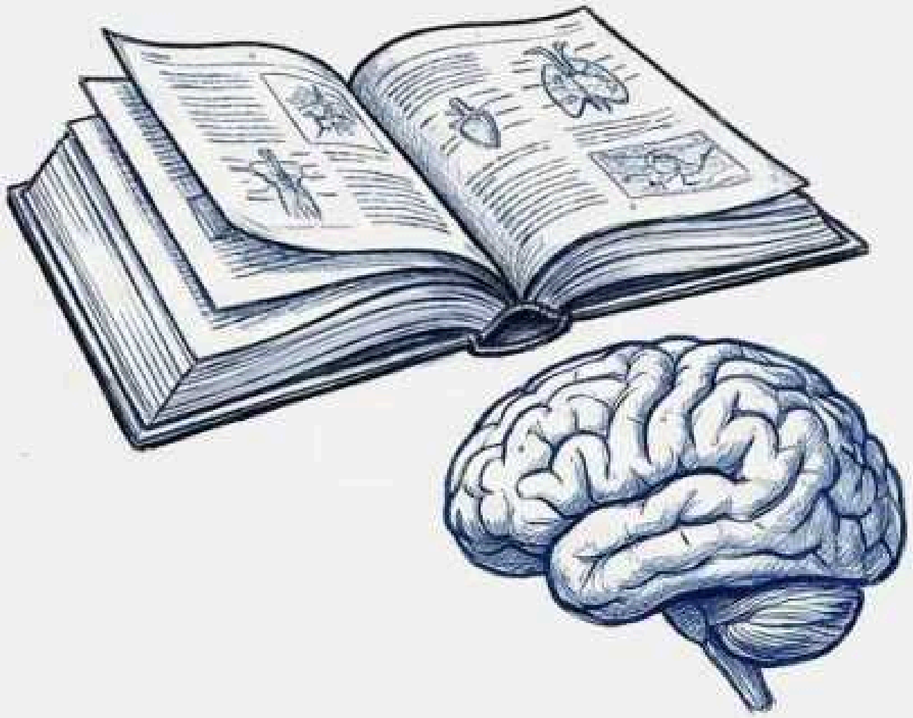
X Network: @garyanderson

Questions or feedback about this course are always welcome.

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Knowledge, Not Clinical Training

¶ 0.3



Provides medical knowledge. Completing this does NOT make you a medical doctor, gives no clinical skills or licence, and is not medical advice.



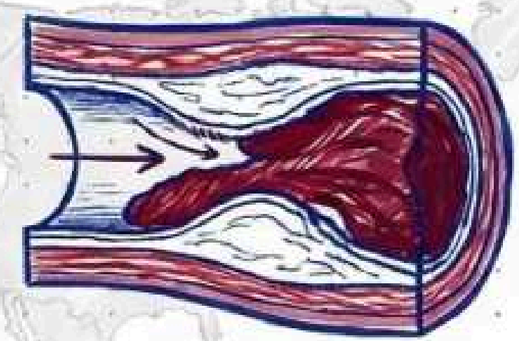
MEDICAL EMERGENCY:

Chest pain, sudden breathlessness, or fainting require immediate action. **Call emergency services at once.**

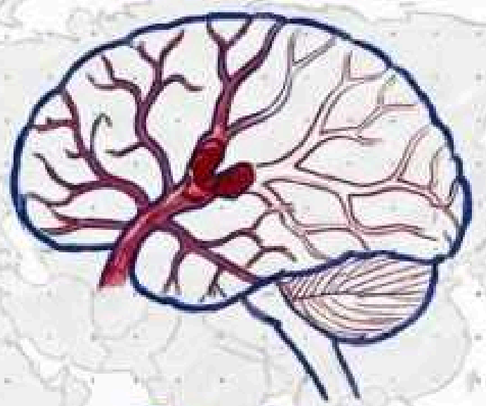
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The Leading Cause of Death Worldwide

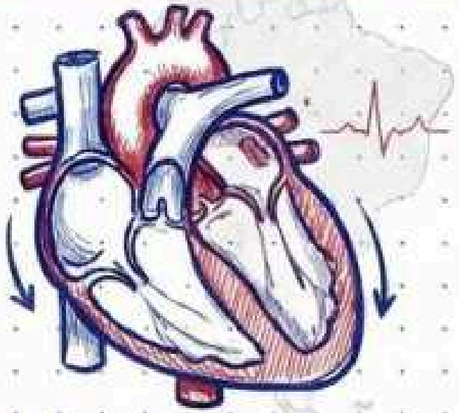
¶ 0.4



Heart Attacks



Strokes



Heart Failure



Rhythm Disorders



High Blood Pressure:
The most common risk factor. Often presents with zero symptoms.

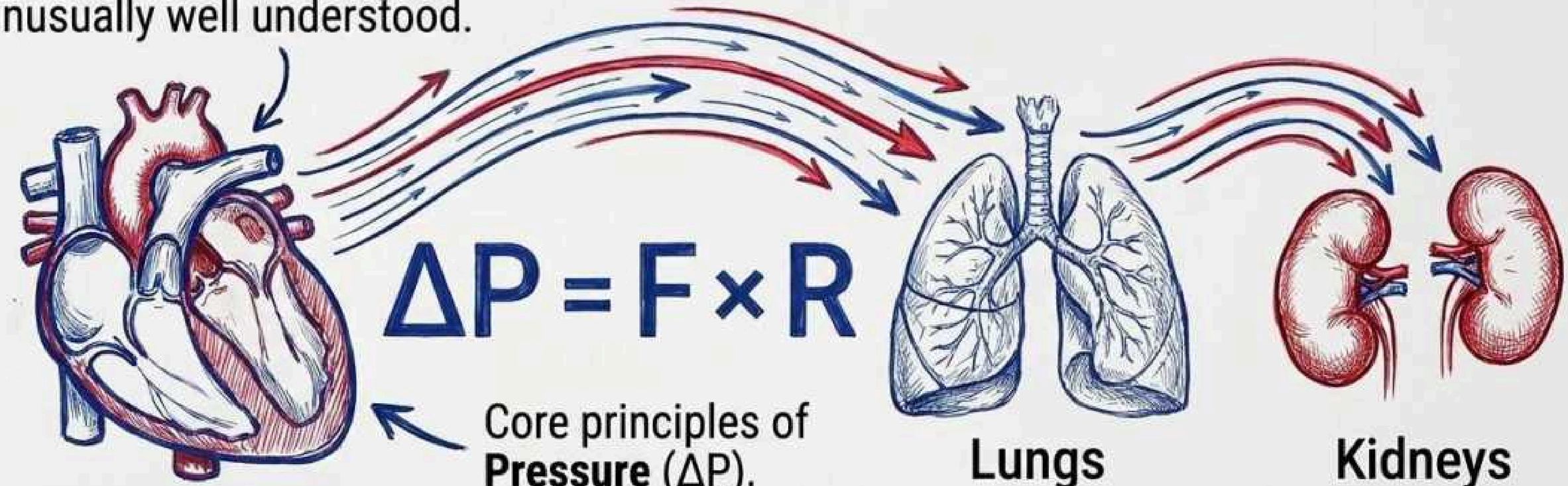
Few areas of medicine offer greater rewards for prevention & early treatment

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Year Two Curriculum: Organ by Organ

¶ 0.5

Starts Here: Physiology is unusually well understood.



$$\Delta P = F \times R$$

Heart

Core principles of **Pressure** (ΔP), **Flow** (F), and **Resistance** (R).

Lungs

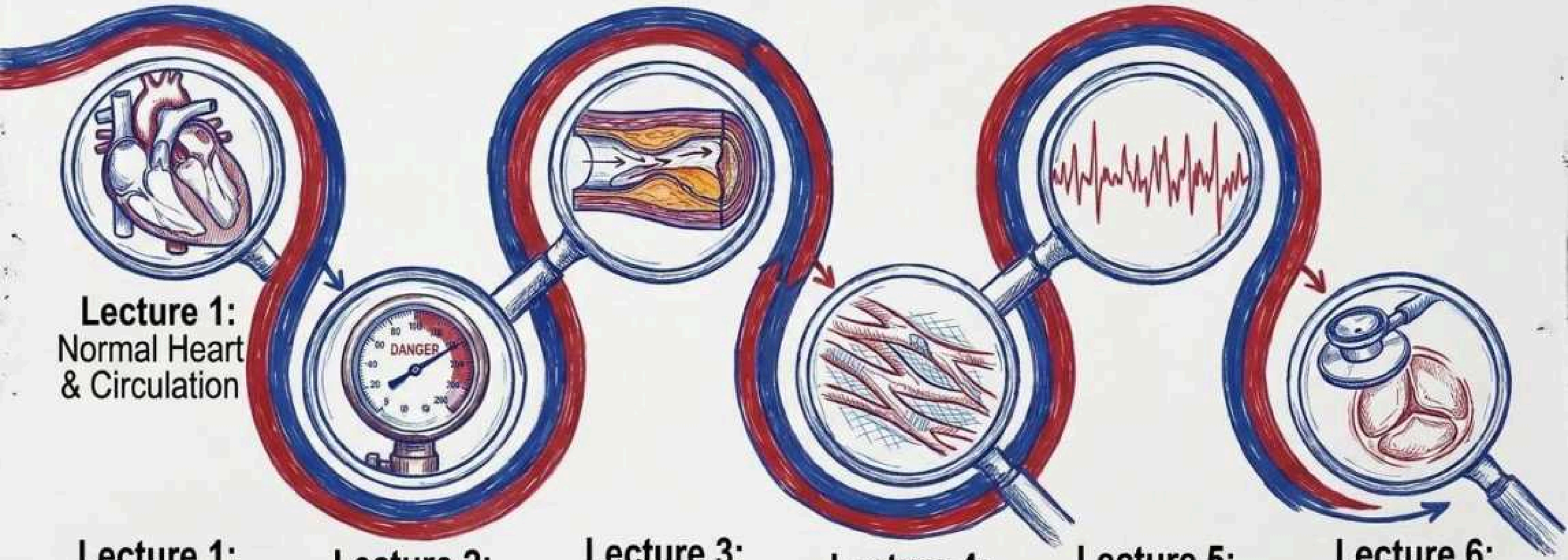
Kidneys

These exact same hydraulic principles reappear in the subsequent respiratory and renal courses.

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The Course Map

¶ 0.6



Lecture 1:
Normal Heart
& Circulation

Lecture 1:
Normal Heart
& Circulation

Lecture 2:
Blood Pressure
& Hypertension

Lecture 3:
Atherosclerosis
& Coronary
Artery Disease

Lecture 4:
Heart Failure

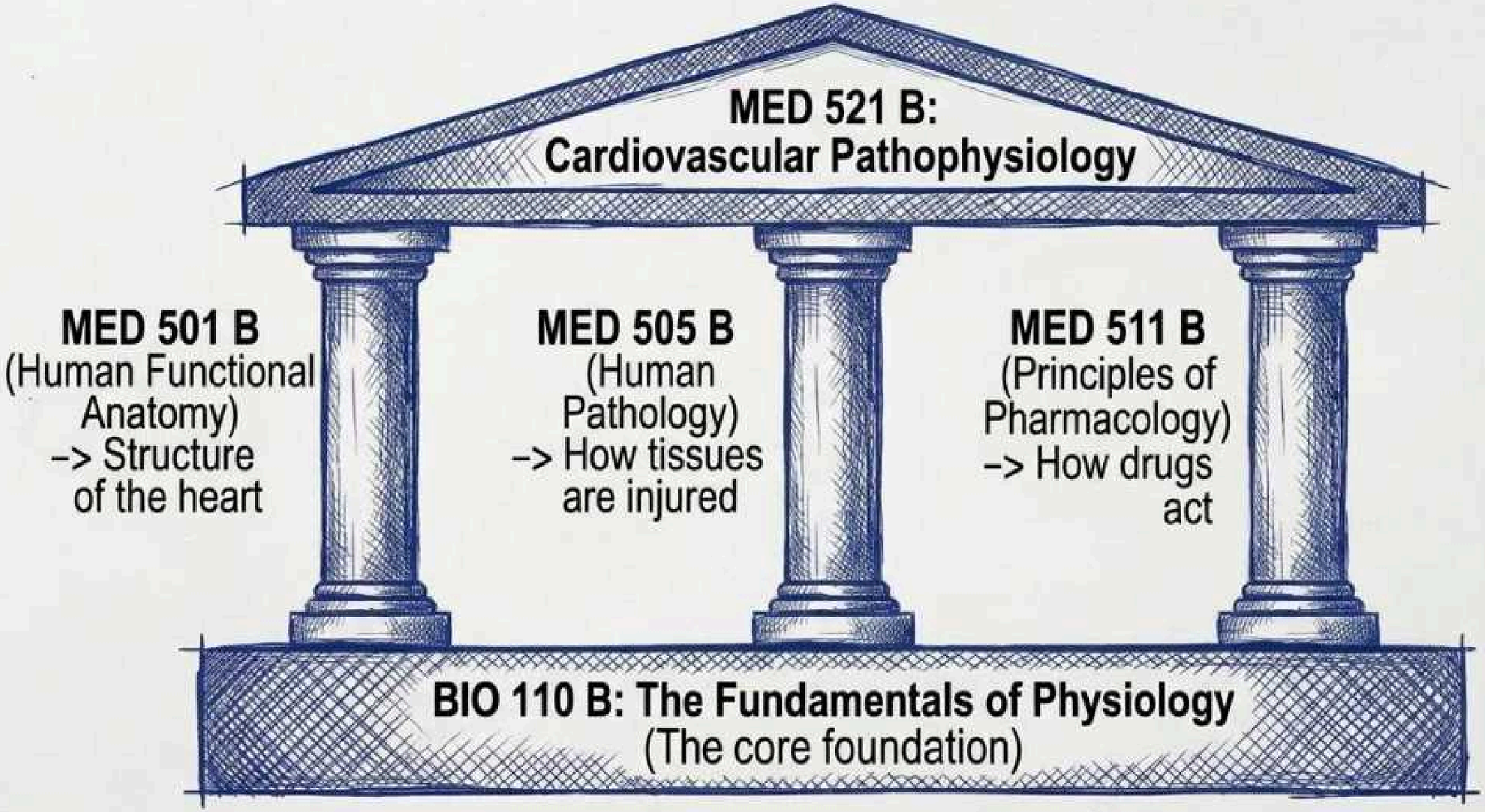
Lecture 5:
Disorders of
Heart Rhythm

Lecture 6:
Valve Disease,
Assessment &
Prevention

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The Recommended Background

¶ 0.7



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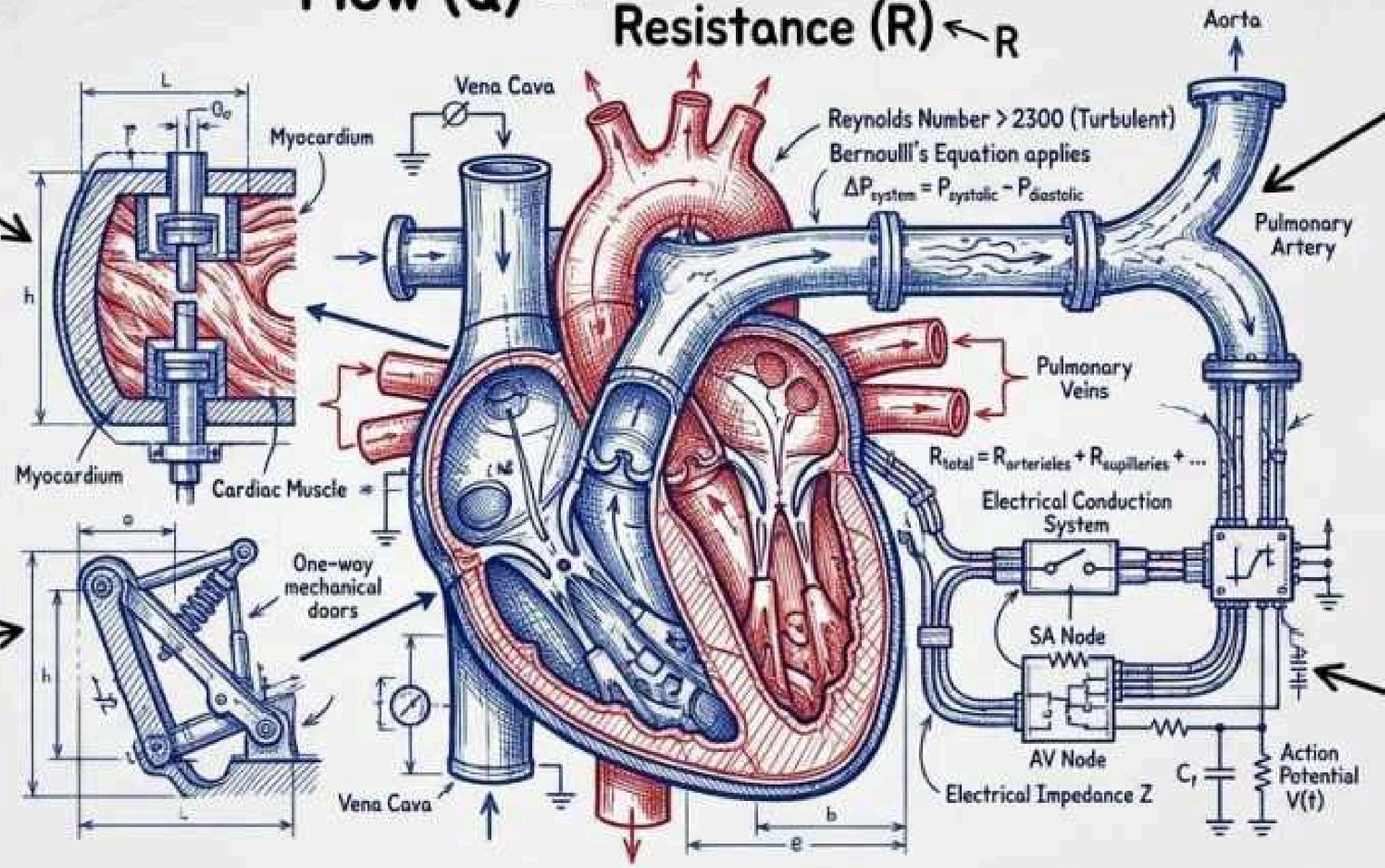
Practical Tip: The Engineering Analogy

¶ 0.8

$$\text{Flow } (Q) = \frac{\Delta \text{ Pressure } (P) \leftarrow P_s^{(Q)}}{\text{Resistance } (R) \leftarrow R}$$

1. The Pump:
Cardiac muscle / Myocardium

2. The Pipes:
Blood vessels (Arteries & Veins)



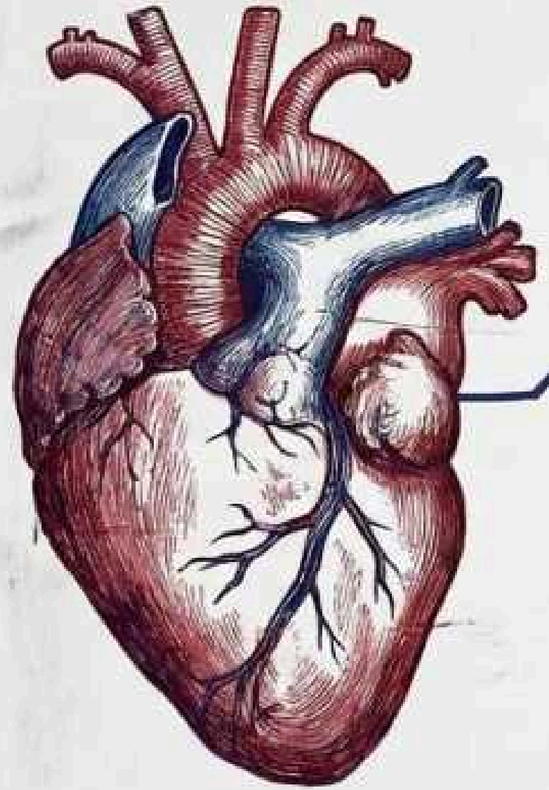
3. The Valves:
One-way mechanical doors

4. The Wiring:
Electrical conduction system

When facing a new condition, ask: Which part of this system has failed? The consequences usually follow.

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¶ 0.9



So let us begin with how a healthy heart and circulation work...