

SNS COLLEGE OF ALLIED HEALTH SCIENCE
Affiliated to The Tamil Nadu Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME: Applied Physiology

UNIT :1-Introduction and Individual circulation

TOPIC :Overview of Cardiovascular system

FACULTY NAME : Kavipriya S

Overview and Functions of the Cardiovascular System

Case Study Background

Case: A 45-year-old male, Mr. Raj, visits the clinic complaining of fatigue, shortness of breath, and mild chest pain.

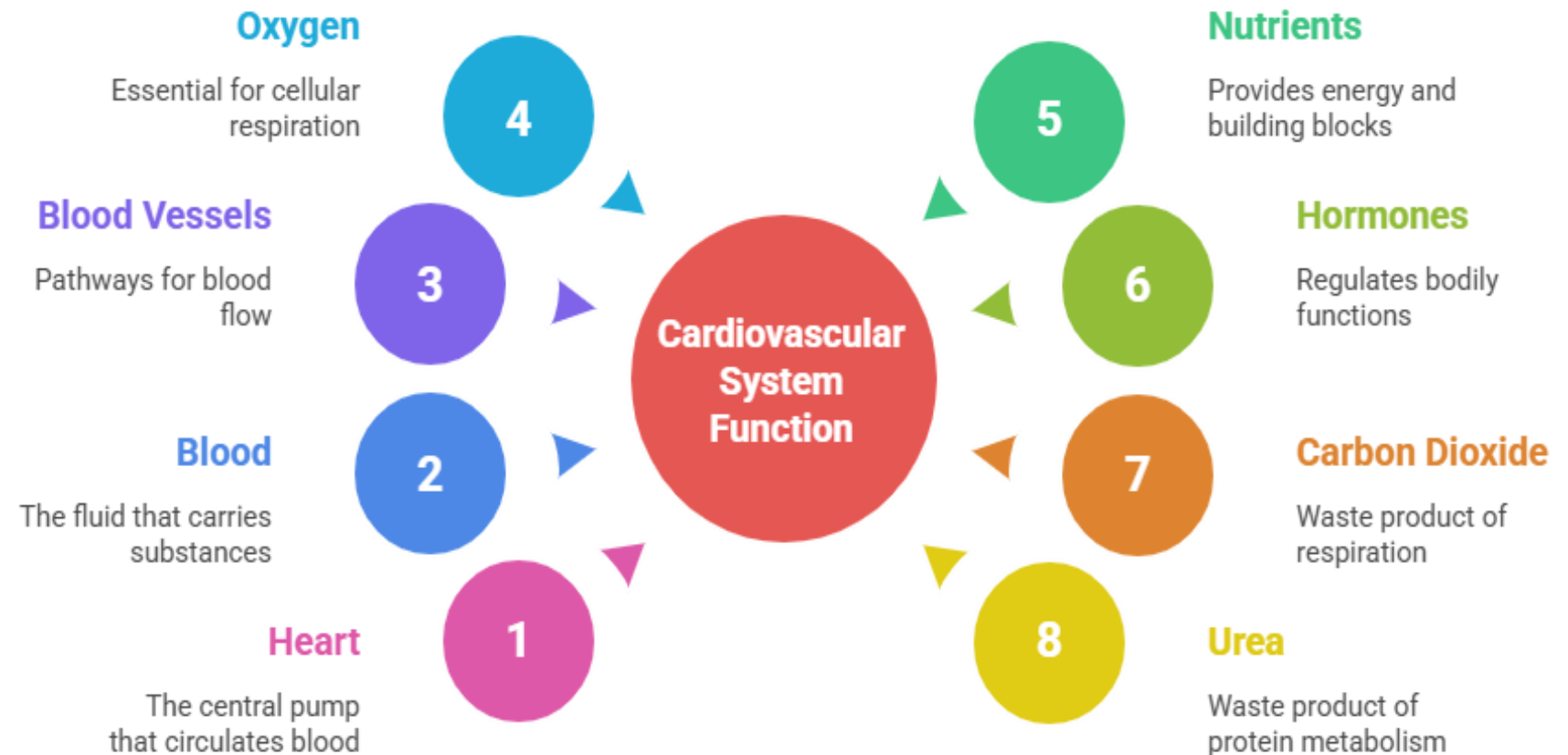
The doctor suspects a cardiovascular issue and begins to assess the functioning of his heart and blood vessels.



Empathize (Understanding the Patient and the System)

- Cardiovascular system = **heart + blood + blood vessels**.
- Function: **Transport essential substances** (oxygen, nutrients, hormones) and **remove wastes** (CO₂, urea).

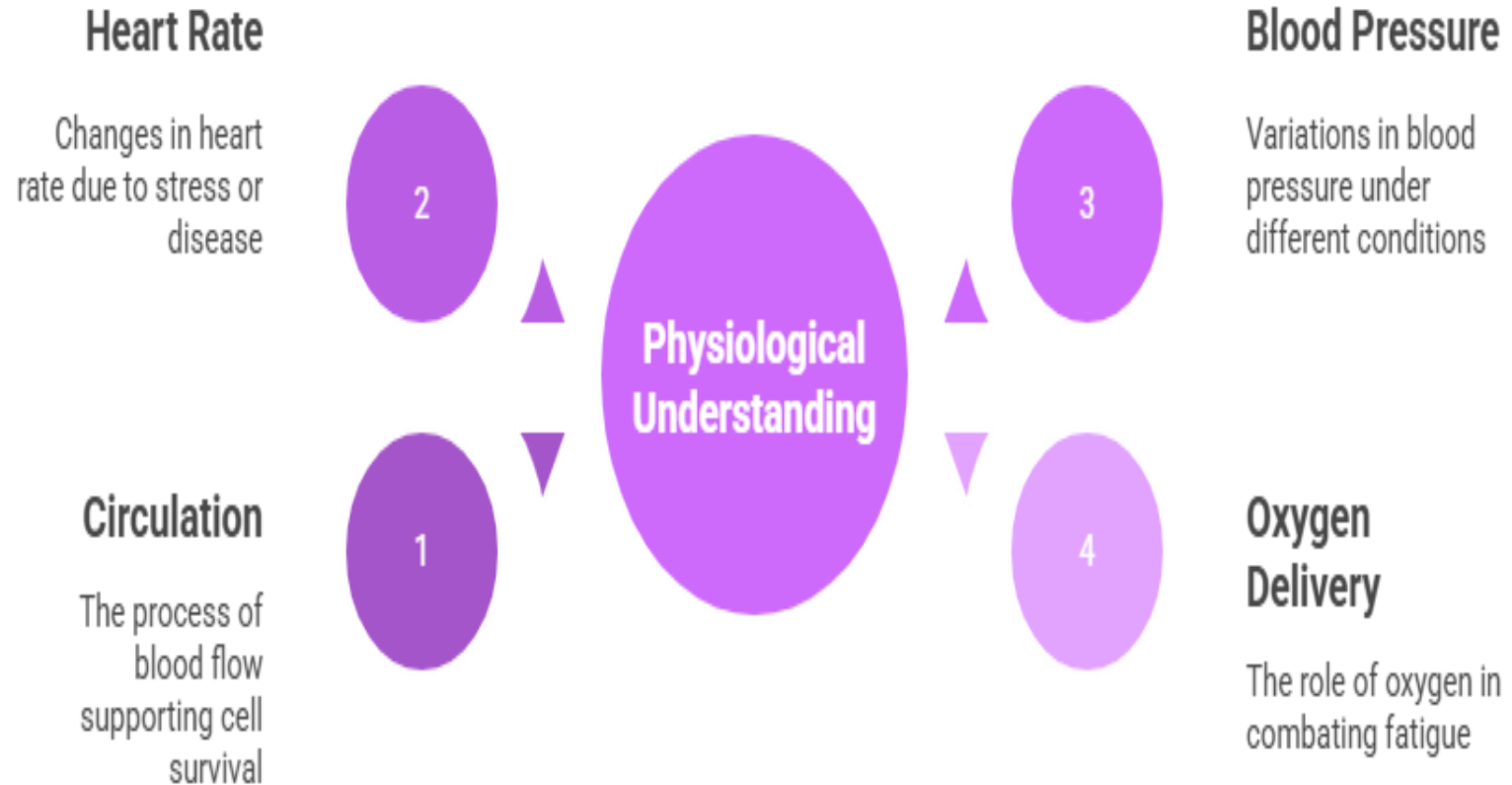
Components of the Cardiovascular System



Empathy helps to realize:

- How circulation supports **every cell's survival.**
- How **heart rate and blood pressure** change with stress or disease.
- Importance of **oxygen delivery** in fatigue cases.

Understanding Physiological Processes

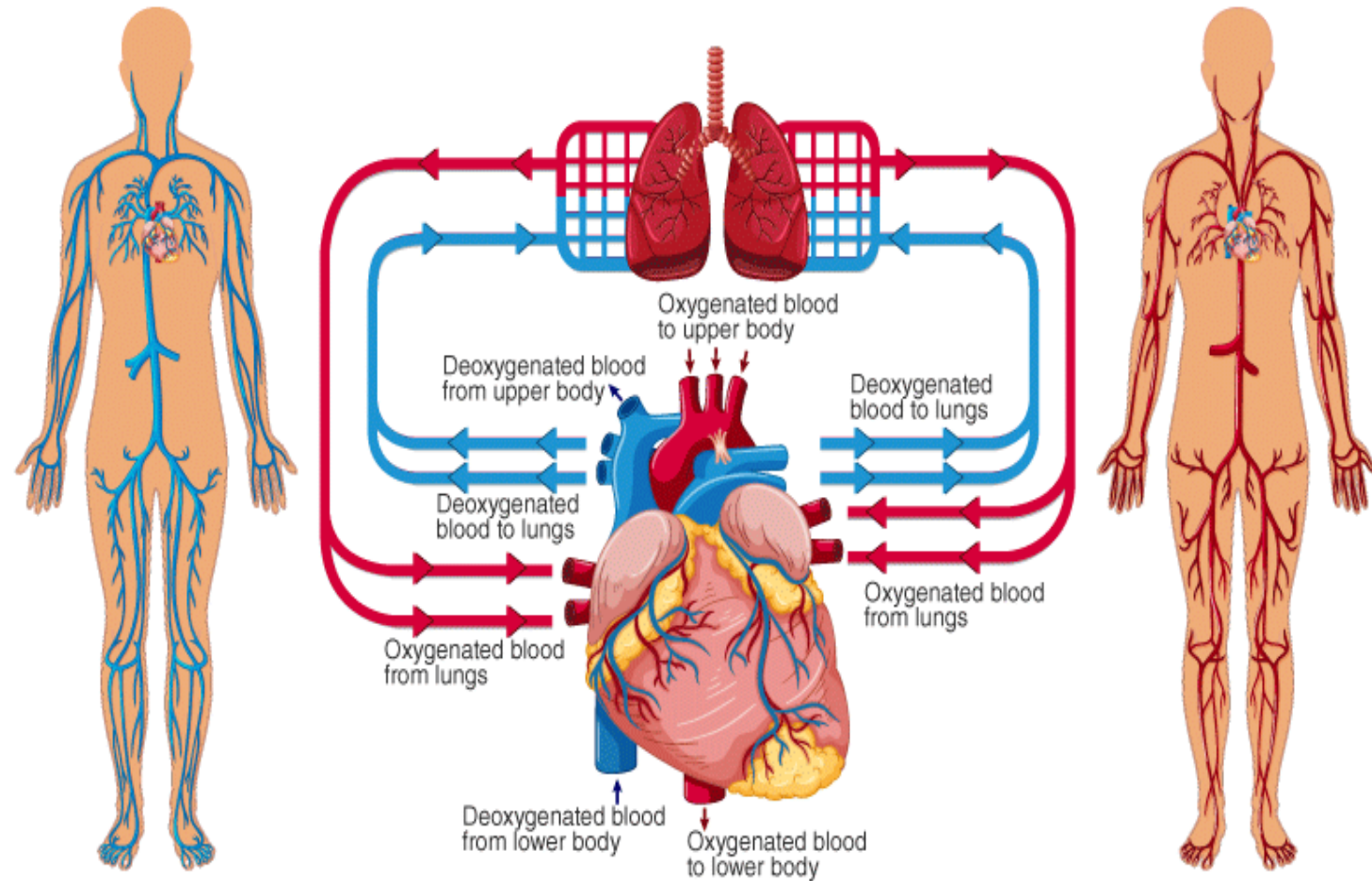


Define (Identify Core Problems and Components)

Heart: muscular pump with 4 chambers – right & left atria, right & left ventricles.

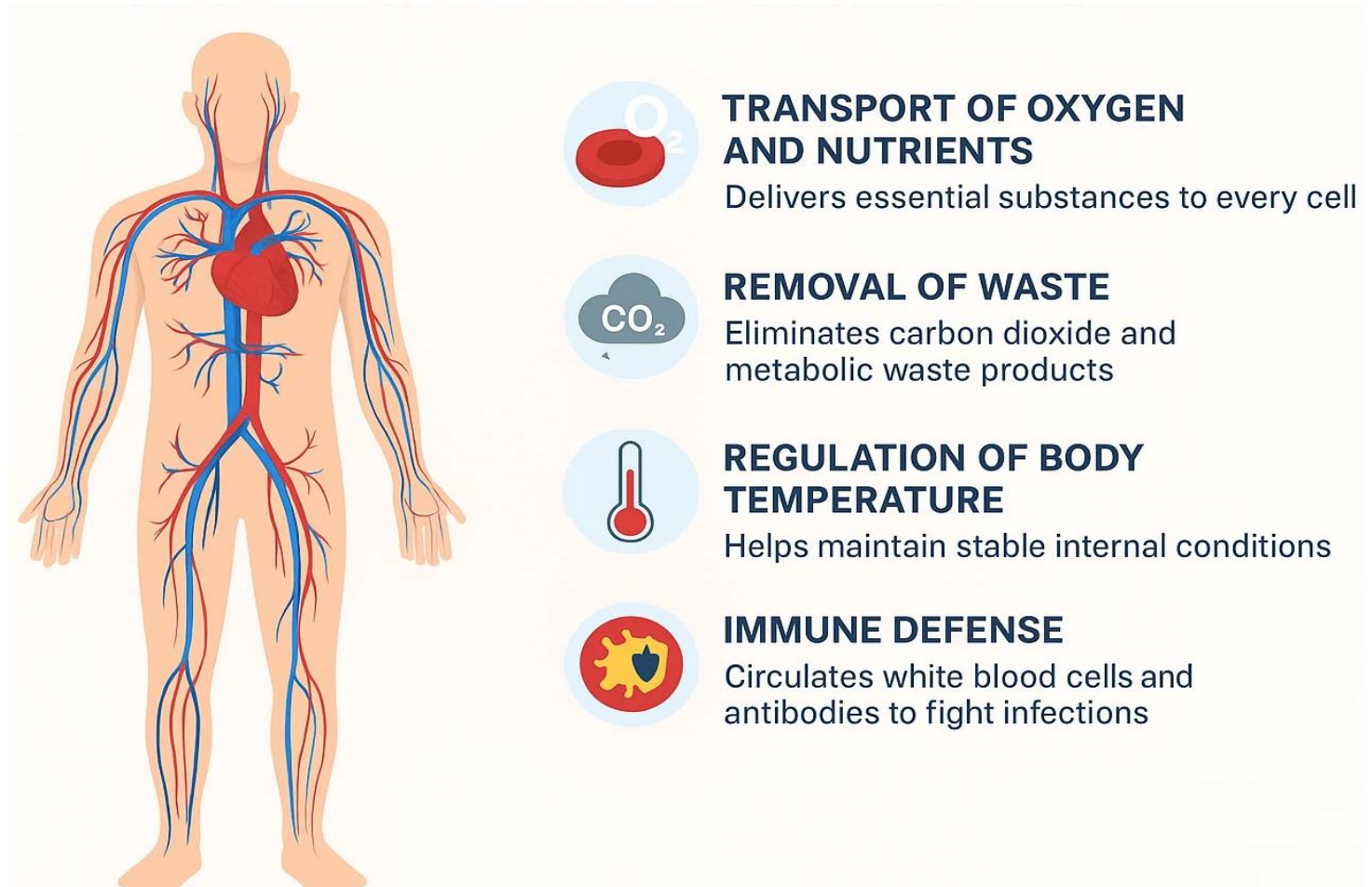
Blood vessels:

- **Arteries:** carry oxygenated blood *away* from the heart.
- **Veins:** carry deoxygenated blood *to* the heart.
- **Capillaries:** exchange of gases and nutrients at tissue level.



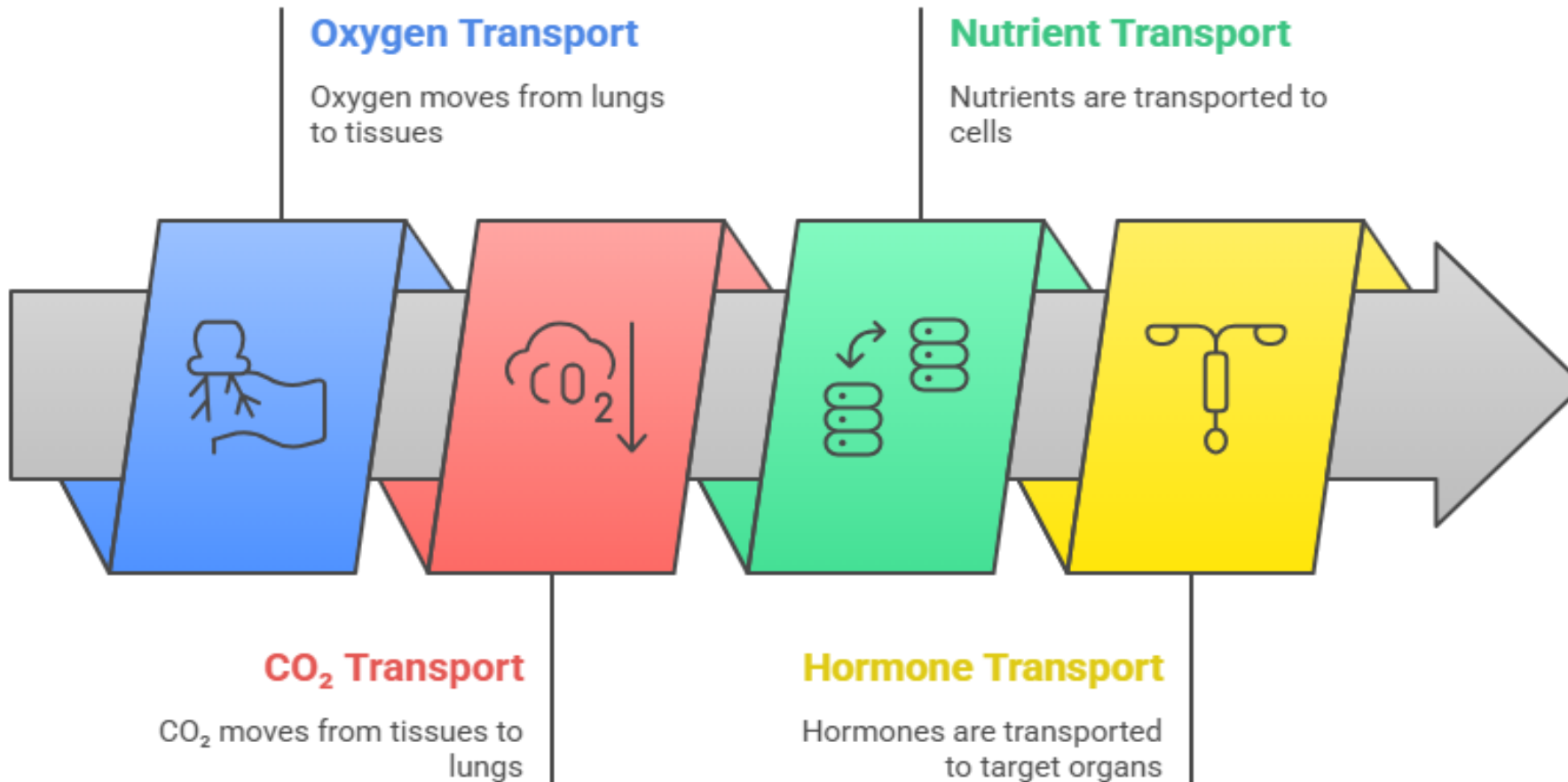
Define

- **Blood:** carries oxygen, nutrients, hormones, and waste.
- **Problem (in case):** Poor oxygen delivery due to possible reduced cardiac output.



Ideate (Think of Possible Functions and Solutions)

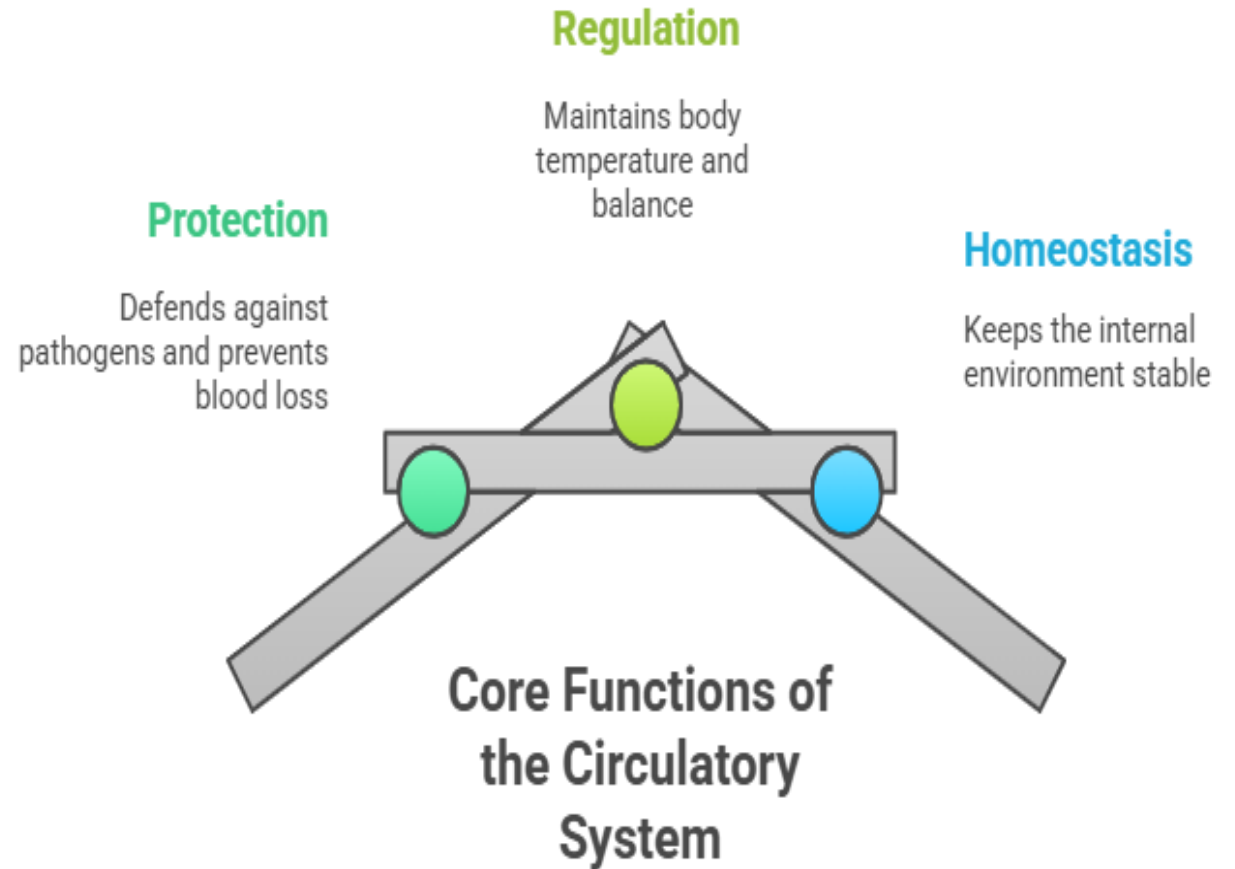
Cardiovascular Transport Functions



Functions of the Cardiovascular System:

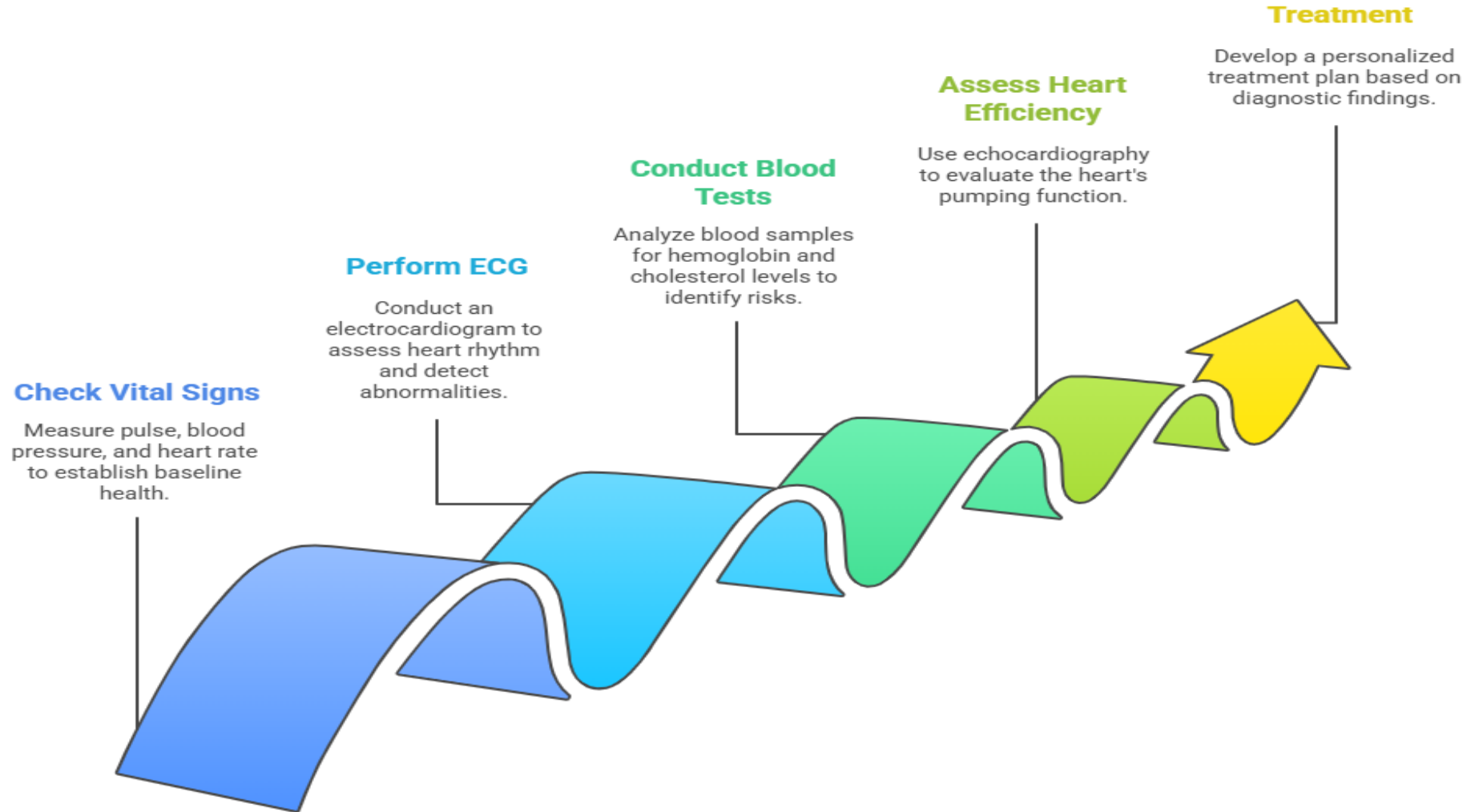
- **Protection:**
 - White blood cells defend against pathogens.
 - Platelets prevent blood loss by clotting.
- **Regulation:**
 - Body temperature (through blood flow).
 - pH and water balance maintained.
- **Homeostasis:** Keeps the internal environment stable.

In the case, these functions help explain why poor circulation → fatigue and breathlessness.



Prototype (Apply Knowledge Clinically)

Steps to Heart Treatment



Testing-Patient Health Evaluation Process



Re-evaluate Symptoms

Assess patient's condition post-intervention

Monitor changes in patient's energy

Observe Energy Level



Observe Blood Pressure

Check for stability in blood pressure

Evaluate the heart's performance

Observe Heart Efficiency

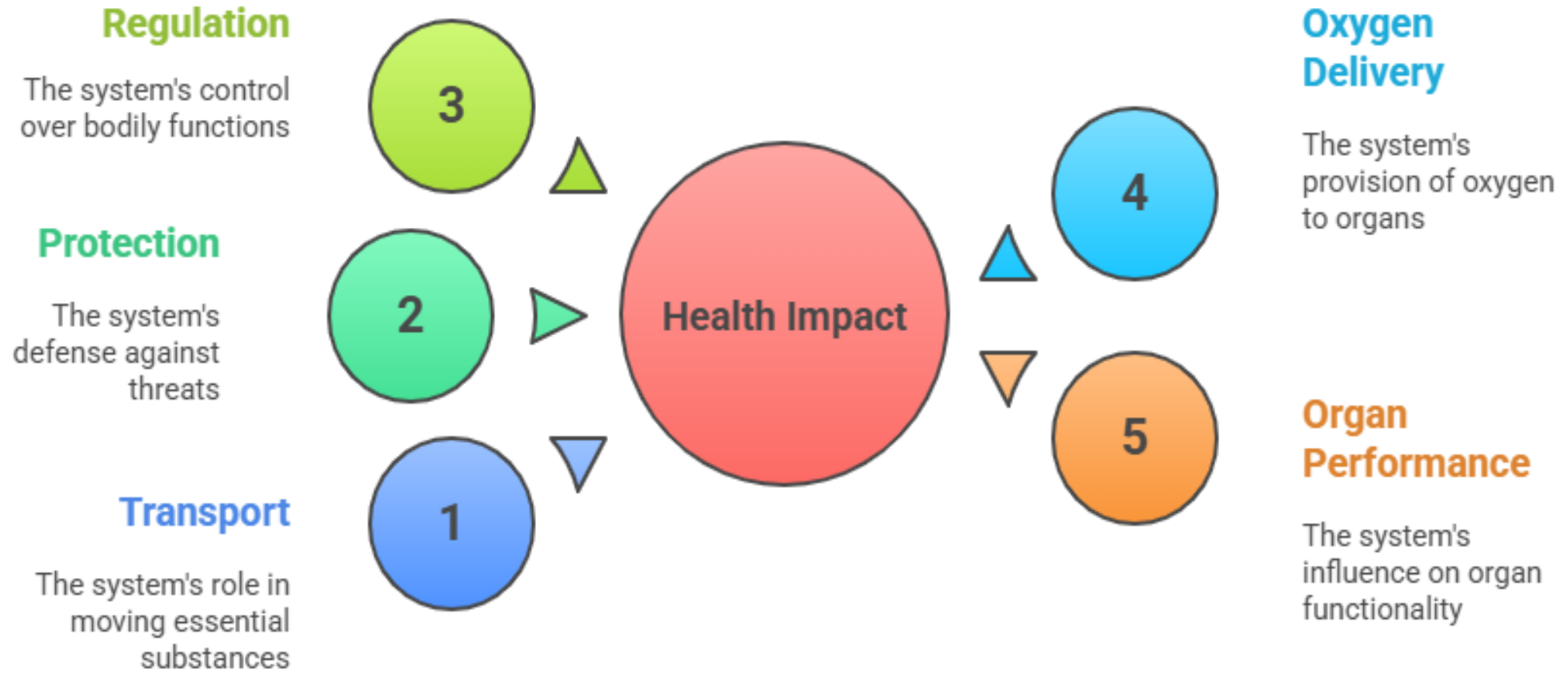


Reflection on Cardiovascular System

Understand the system's role in health

Summary

Cardiovascular System's Impact on Health



Reference :

Title	Author(s) / Editor(s)	Why Useful / Highlights
Cardiovascular Physiology (Mosby Physiology Series, 11th Edition)	Achilles J. Pappano, Withrow Wier	Covers fundamentals of cardiovascular function, links structure to pathophysiology. (Elsevier Shop)
Cardiovascular Physiology, Ninth Edition	David Mohrman & Lois Heller	Well-structured for students; strong on “big picture” plus mechanisms and clinical links. (McGraw Hill)
Cardiovascular Physiology Concepts	Richard E. Klabunde	Emphasizes core concepts, integrates cases, good for reinforcing foundations. (cvphysiology.com)
Cardiovascular Physiology (Elsevier / ScienceDirect edition)	<i>Journal of the American Heart Association</i> (JAHA)	Comprehensive coverage of how the cardiovascular system works in health and disease. (ScienceDirect)