

Study Guide — PBS Unit 2: Clinical Care (End-of-Unit Cumulative Test)

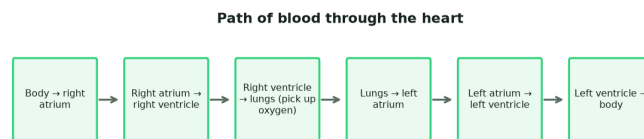
Principles of Biomedical Science · Unit 2 — Clinical Care · Modeled on the PLTW Guided Review format

Vocabulary to know cold

Term	Definition
Artery	Vessel that carries blood AWAY from the heart.
Vein	Vessel that returns blood TO the heart.
Left ventricle	Heart chamber that pumps oxygenated blood out to the body through the aorta.
Cardi/o (root)	Heart (e.g., cardiac, cardiology, cardiomyopathy).
-itis (suffix)	Inflammation (e.g., endocarditis = inflammation of the inner heart lining).
Myocardial infarction	Heart attack; death of heart muscle from a blocked coronary artery.
Atherosclerosis	Plaque buildup that narrows and hardens arteries.
Hypertension	High blood pressure (hyper- + tension); systolic 130 mmHg or higher / diastolic 80+.
LDL vs. HDL	LDL = 'bad' cholesterol (promotes plaque); HDL = 'good' cholesterol (protective).
Insulin resistance	Cells respond poorly to insulin; the core problem in Type 2 diabetes.
Epinephrine (adrenaline)	Adrenal hormone that raises heart rate and blood pressure during stress.
Blood typing (Unit 1 review)	Identifying ABO type by which antigens (A/B) are present using anti-A and anti-B sera.

Worked examples (follow the reasoning)

Example 1. Trace a red blood cell from the body, through the heart and lungs, and back out to the body.



- Deoxygenated blood from the body enters the right atrium.
- It flows to the right ventricle.
- The right ventricle pumps it to the lungs, where it picks up oxygen.
- Oxygen-rich blood returns to the left atrium, then the left ventricle.
- The left ventricle pumps it out to the body.

Answer: Body → right atrium → right ventricle → lungs → left atrium → left ventricle → body.

Example 2. A patient has fasting glucose 175 mg/dL, HbA1c 7.4%, blood pressure 142/90 mmHg, and high LDL. Identify each abnormal finding using correct terminology and name the two diseases at work.

- Fasting glucose 175 (>100) and HbA1c 7.4% (>6.5%) → hyperglycemia consistent with diabetes.
- Blood pressure 142/90 (>130/80) → hypertension.
- High LDL promotes atherosclerosis.
- Together, uncontrolled diabetes plus hypertension and high LDL point to diabetes AND cardiovascular disease risk.

Answer: Hyperglycemia/diabetes (glucose + A1c) and cardiovascular disease risk (hypertension + high LDL/atherosclerosis).

Practice questions (with reasoning)

1. Which blood pressure reading is classified as hypertension?

- A. 110/70 mmHg
- B. 118/76 mmHg
- C. 145/92 mmHg
- D. 120/80 mmHg

Answer: C. 145/92 is at or above the 130/80 hypertension threshold.

2. 'Endocarditis' means inflammation of the:

- A. heart muscle
- B. inner lining of the heart
- C. lungs
- D. kidney

Answer: B. Endo- (within) + cardi/o (heart) + -itis (inflammation) = inner heart lining inflammation.

3. SPIRAL (Unit 1): A blood sample agglutinates with both anti-A and anti-B serum. The blood type is:

- A. type O
- B. type A
- C. type B
- D. type AB

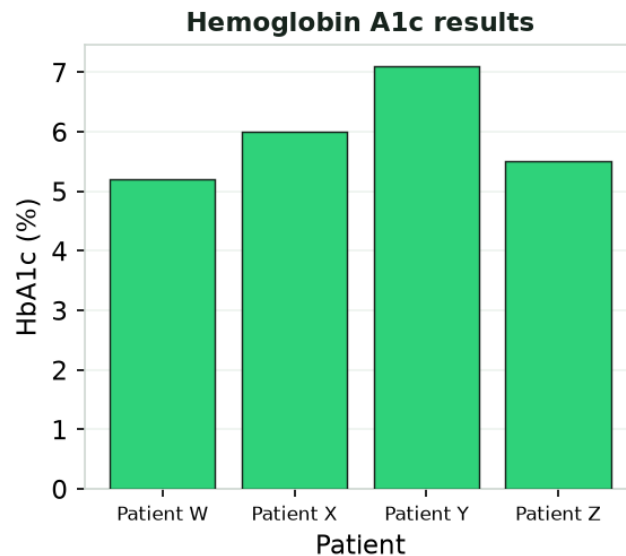
Answer: D. Reaction with both means both A and B antigens are present = type AB.

4. Which is the correct comparison of the two diabetes types?

- A. Type 1 = insulin resistance, Type 2 = autoimmune
- B. Type 1 = autoimmune (no insulin), Type 2 = insulin resistance
- C. both require no treatment
- D. both are caused only by sugar intake

Answer: B. Type 1 is autoimmune beta-cell loss; Type 2 is insulin resistance.

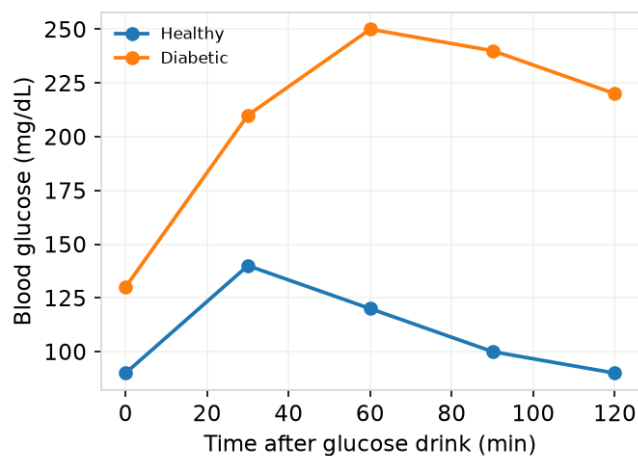
5. The bar graph shows four patients' HbA1c results. Using the diagnostic cutoffs (normal below 5.7%, prediabetes 5.7-6.4%, diabetes 6.5% or higher), which patient is in the diabetic range?



- A. Patient W
- B. Patient X
- C. Patient Y
- D. Patient Z

Answer: C. Patient Y's HbA1c of 7.1% is at or above the 6.5% diabetes cutoff; X (6.0%) is prediabetic and W/Z are normal.

6. The line graph shows blood glucose during an oral glucose tolerance test for a healthy person and a person with diabetes. Which feature identifies the diabetic curve?



- A. It starts lower and returns to baseline quickly
- B. It stays high and fails to return toward baseline by 120 min
- C. It never rises after the glucose drink
- D. It is identical to the healthy curve

Answer: B. In diabetes, insulin resistance prevents glucose clearance, so the curve peaks higher and remains elevated at 120 minutes instead of returning to baseline.