

Study Guide — PBS Unit 3: Outbreaks and Emergencies (End-of-Unit Test)

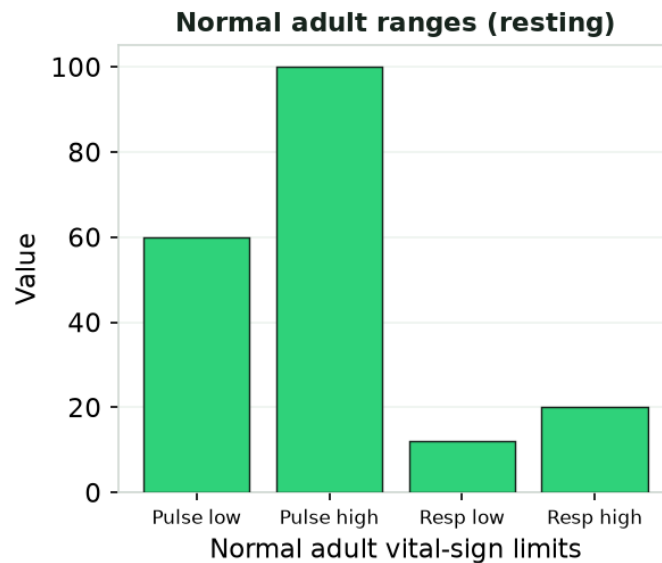
Principles of Biomedical Science · Unit 3 — Outbreaks and Emergencies · Modeled on the PLTW Guided Review format

Vocabulary to know cold

Term	Definition
Chain of infection	The six links by which disease spreads: agent, reservoir, portal of exit, mode of transmission, portal of entry, and host.
Outbreak	A rise in disease cases above the normally expected level in a specific area and time.
Herd immunity	Indirect protection that occurs when enough of a population is immune to stop easy spread.
Epidemiology	The study of how diseases are distributed and spread in populations.
Pyrexia	The medical term for fever; body temperature above normal.
Hypotension	Abnormally low blood pressure (hypo- = low, tension = pressure).
Phagocytosis	The process by which immune cells engulf and digest pathogens.
Lymphatic system	The system that drains tissue fluid and transports immune cells.
nephr/o	Combining form meaning kidney (e.g., nephropathy = kidney disease).
brady-	Prefix meaning slow (e.g., bradypnea, bradycardia).
-pnea	Suffix meaning breathing (e.g., tachypnea, bradypnea, apnea).
anti-	Prefix meaning against (antibiotic, antibody, antiseptic).

Worked examples (follow the reasoning)

Example 1. A school clinic records adult vital signs and wants to flag abnormal values. Using the normal-range chart, decide whether a pulse of 110 bpm and a respiration rate of 10/min are normal.



- Read the normal pulse limits: about 60-100 bpm.
- Compare 110 bpm: it exceeds 100, so it is high (tachycardia).
- Read the normal respiration limits: about 12-20 breaths/min.
- Compare 10/min: it is below 12, so it is low (bradypnea).

Answer: Both are abnormal: pulse 110 is high (tachycardia) and respiration 10 is low (bradypnea).

Example 2. Explain how breaking one link in the chain of infection can stop an outbreak, using handwashing as the example.

- Recall the chain: agent, reservoir, portal of exit, mode of transmission, portal of entry, susceptible host.
- Identify which link handwashing targets: the mode of transmission (contact spread).
- Removing pathogens from hands interrupts that link.
- If the pathogen cannot reach a new portal of entry, transmission stops.

Answer: Handwashing breaks the mode-of-transmission link, so the pathogen cannot reach a new host and spread is halted.

Practice questions (with reasoning)

1. A worldwide epidemic spread across multiple countries and continents is called a:

- A. outbreak
- B. pandemic
- C. cluster
- D. remission

Answer: B. A pandemic is an epidemic that has spread over a very wide area, across countries or continents.

2. Which term means an abnormally fast heart rate?

- A. bradycardia
- B. tachycardia
- C. arrhythmia
- D. hypotension

Answer: B. Tachy- (fast) + cardi/o (heart) + -ia = tachycardia.

3. The portal of entry in the chain of infection is:

- A. where the pathogen leaves the source
- B. the route the pathogen uses to enter a new host
- C. the person who gets sick
- D. the original reservoir

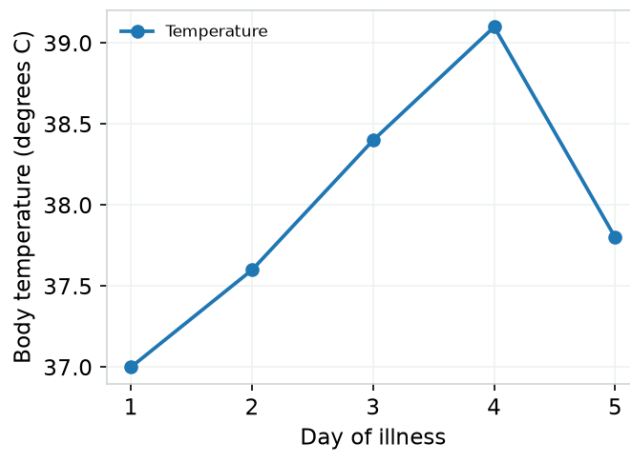
Answer: B. The portal of entry is the site (e.g., mouth, broken skin) through which a pathogen enters a new host.

4. SPIRAL (Unit 1): A coronal (frontal) plane divides the body into:

- A. right and left halves
- B. anterior (front) and posterior (back) portions
- C. upper and lower portions
- D. equal diagonal halves

Answer: B. The coronal/frontal plane separates the body into front and back portions.

5. The line graph tracks a patient's body temperature over five days of an infection. On which day did the patient first cross into pyrexia (fever, above 38.0 degrees C)?



- A. Day 1
- B. Day 2
- C. Day 3
- D. Day 5

Answer: C. Day 3 is the first reading above the 38.0 degrees C fever threshold (38.4), marking the onset of pyrexia.