

Exercise walk-through

Pathogens and Infectious Diseases ■ 8.15

eXercise

You must be able to

- distinguish **infectious** 传染性 from **non-infectious** diseases
- give examples of waterborne and vector-borne diseases
- link environmental change to disease spread

Method — Infectious vs non-infectious

- **Infectious** diseases are caused by **pathogens** (bacteria, viruses, parasites) and can **spread** (e.g. cholera, malaria).
- **Non-infectious** diseases do not spread between people (e.g. cancer, heart disease).

Method — Waterborne diseases

Spread by **contaminated water** (poor sanitation): **cholera**, dysentery, typhoid. Clean water and sewage treatment prevent them.

Method — Vector-borne diseases

Spread by a **vector** (an organism that carries the pathogen), often insects: **malaria** and dengue (mosquitoes). Controlling the vector controls the disease.

Method — Environmental links

Climate change can expand mosquito ranges (spreading malaria); poor **sanitation** spreads waterborne disease; deforestation can increase human-wildlife contact.

Practice 2.1 ■ 1 mark

What causes an infectious disease?

Solution 2.1

Method: Infectious vs non-infectious

Worked steps

A pathogen (bacterium, virus, or parasite) **B1**.

Practice 2.2 ■ 1 mark

Give one example of a waterborne disease.

Solution 2.2

Method: Environmental links

Worked steps

Any one: cholera, dysentery, typhoid **B1**.

Practice 2.3 ■ 1 mark

What is a vector?

Solution 2.3

Worked steps

An organism that carries and transmits a pathogen **B1**.

Exam-style 3.1 ■ 1 mark

Malaria is spread by mosquitoes, which act as a

A pathogen

B vector

C host only

D nutrient

Solution 3.1

Method: Vector-borne diseases

A pathogen

B vector



C host only

D nutrient

Worked steps

B — a vector.

Exam-style 3.2 ■ 2 marks

A region with poor sanitation has frequent cholera outbreaks.

- (a) Explain how cholera spreads there.
- (b) State one way to prevent it.

Solution 3.2

Method: Waterborne diseases

Worked steps

- (a) Sewage contaminates the drinking water with the cholera bacterium; people drink the contaminated water and become infected, spreading it further **M1 A1**.
- (b) Any one: clean water supply, sewage treatment, sanitation **B1**.

Exam-style 3.3 ■ 2 marks

Explain how climate change could increase the spread of a vector-borne disease.

Solution 3.3

Worked steps

Warmer temperatures can expand the range and breeding season of the vector (e.g. mosquitoes), so the disease reaches new areas and more people **M1** **A1**.