

10.1 Infectious diseases

Name: _____ Class: _____ Date: _____

Total: 13 marks**KEY WORDS** pathogen 病原体 • cholera 霍乱 • malaria 疟疾 • infectious disease 传染病 • tuberculosis 结核病

Objective

Build the skills to answer exam questions on **infectious diseases** — the **pathogens** 病原体 that cause cholera, malaria, TB and HIV, how they are transmitted, and how they are controlled.

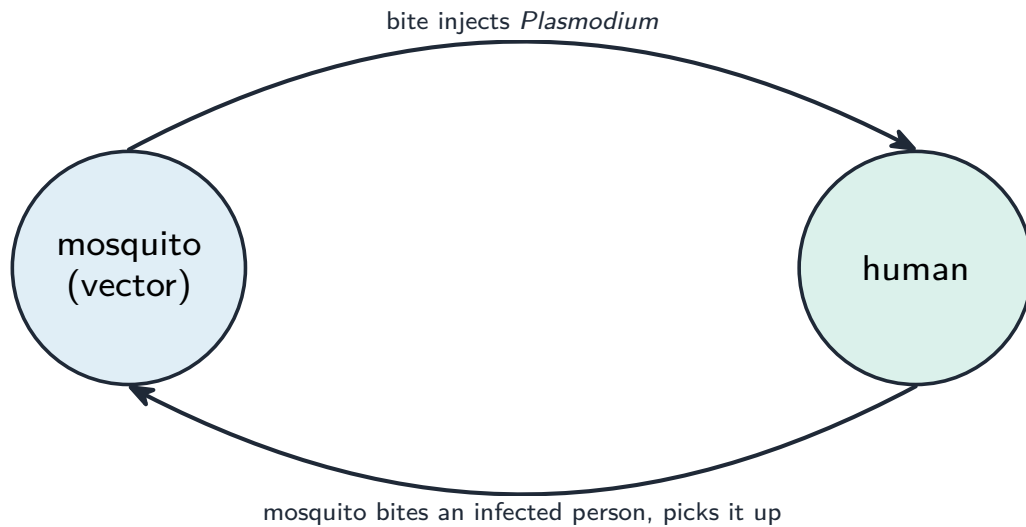
You must be able to:

- name the pathogen and type for cholera, malaria, TB and HIV/AIDS
- explain how each disease is transmitted
- discuss biological, social and economic factors in prevention and control

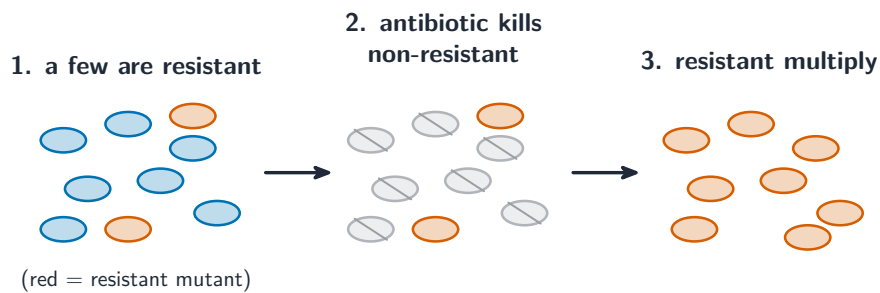
1 Worked examples

■ The four diseases

disease	pathogen (type)	transmission
cholera 霍乱	<i>Vibrio cholerae</i> (bacterium 细菌)	water/food contaminated with faeces
malaria 疟疾	<i>Plasmodium</i> (protocist 原生生物)	bite of an infected mosquito (vector 媒介); infected blood
TB 结核 病	<i>Mycobacterium</i> (bacterium)	airborne droplets 飞沫 from coughs/sneezes
HIV/AIDS HIV (virus 病毒)		unprotected sex; infected blood; mother to baby



Malaria needs a mosquito vector — which is why control targets the mosquito



Antibiotic resistance complicates treating infectious disease

■ Prevention and control

Control has **biological**, **social** and **economic** sides. Examples: cholera — clean water and sewage treatment; malaria — nets, drain still water, insecticides, drugs; TB — find and treat with antibiotics, BCG vaccine, reduce crowding; HIV — condoms, clean needles, test blood, education (no cure/vaccine yet).

2 Practice

2.1 Name the type of pathogen that causes (a) malaria and (b) HIV/AIDS. [2]

2.2 State how tuberculosis is transmitted from person to person. [1]

3 Exam-style questions

3.1 Which disease is caused by a protist and spread by a vector? [1]

- **A** cholera
- **B** HIV/AIDS
- **C** malaria
- **D** tuberculosis

3.2 Cholera is best prevented by: [1]

- **A** sleeping under a mosquito net
- **B** providing clean water and treating sewage
- **C** using condoms
- **D** taking a long course of antibiotics

3.3 (a) Explain why providing clean drinking water reduces the spread of cholera. [2]

(b) Discuss **one** social and **one** economic factor that make malaria hard to control in some countries. [2]

3.4 A region recorded 4000 malaria cases in 2015. After a mosquito-net programme, this fell to 1500 cases in 2020.

(a) Calculate the percentage decrease in cases. [2]

(b) Explain why targeting the mosquito reduces malaria. [2]

Solutions

2.1 (a) a protoctist (*Plasmodium*); (b) a virus (HIV).

2.2 by airborne droplets from coughing/sneezing.

3.1 C. Malaria is caused by the protoctist *Plasmodium* and spread by the mosquito vector.

3.2 B. Cholera spreads via faeces-contaminated water, so clean water and sewage treatment prevent it.

3.3 (a) the cholera bacterium spreads in water contaminated with faeces; clean water removes this route of transmission.

(b) social, e.g. people may not use nets / lack of education; economic, e.g. cost of nets, drugs or insecticides is too high.

3.4 (a) decrease = $4000 - 1500 = 2500$; percentage = $\frac{2500}{4000} \times 100 = 62.5\%$.

(b) the mosquito is the vector that transmits *Plasmodium*; killing mosquitoes / stopping bites breaks the transmission cycle.