

10.1 Infectious diseases

Name: _____ Class: _____ Date: _____

Total: 13 marks

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.

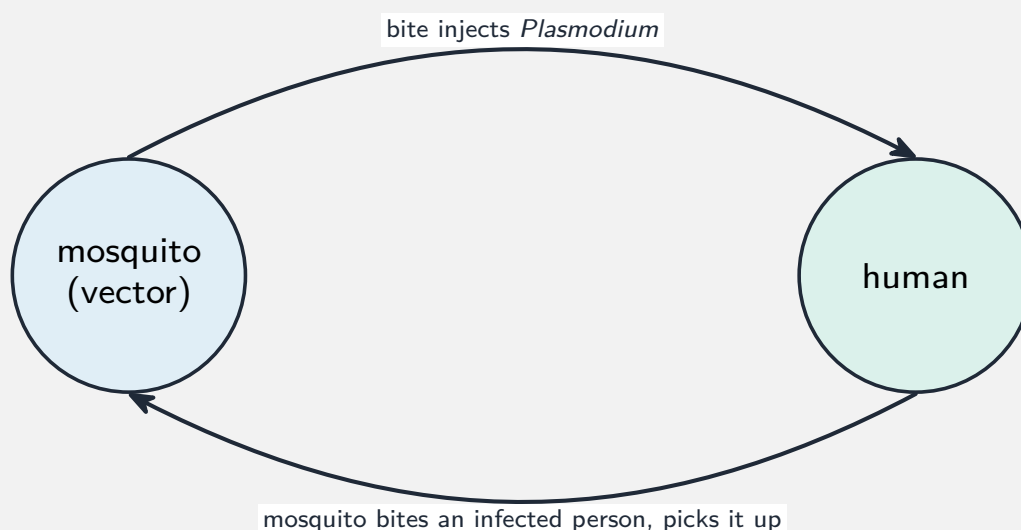
You must be able to:

- 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

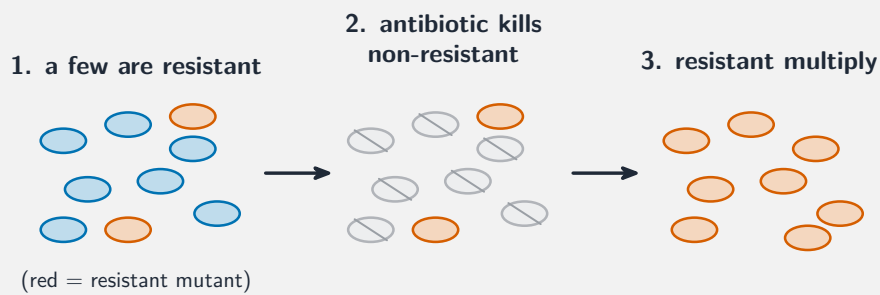
1 Worked examples

■ 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> (protoctist 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 protoctist 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
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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]

4 Go further

You are now ready for the real exam questions on this subtopic. Open the **10.1 Infectious diseases** past-paper sheet in the Library, or try these in **Practice mode**:

- 9700/11 N25 —Q36 (pathogens and transmission)
- 9700/13 N25 —Q37 (disease control)
- 9700/22 N25 —Q2 (infectious disease, structured)
- 9700/24 N25 —Q2 (infectious disease, structured)

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.