

10 Infectious disease – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	Write it 3 times (English)		
bacteria	_____	_____	_____
antibiotics	_____	_____	_____
antibiotic	_____	_____	_____
penicillin	_____	_____	_____
cell walls	_____	_____	_____
viruses	_____	_____	_____
mutation	_____	_____	_____
resistant	_____	_____	_____
natural selection	_____	_____	_____

Recall

From Part 1 you know **bacteria** cause diseases like cholera and TB. Here we look at the drugs that fight bacteria – and why they are losing their power.

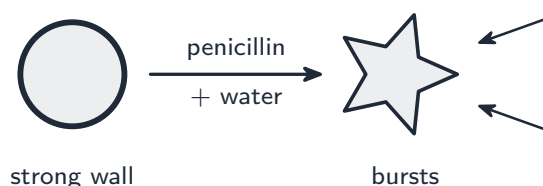
- You met **antibiotics** at IGCSE as medicines that treat bacterial infections.
- They do **not** work against viruses – this part explains why.

New ideas

Read these first, then do the Practice.

■ 1 How antibiotics work

An **antibiotic** is a drug that kills bacteria or stops them growing. For example, **penicillin** stops bacteria from building their **cell walls**. As the bacterium grows, its weak wall cannot hold it, so the cell takes in water and **bursts**.



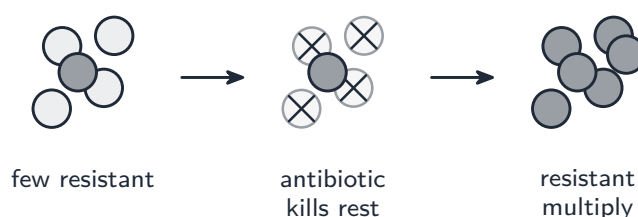
■ 2 Why not viruses?

Antibiotics do **not** work against **viruses**. A virus has no cell wall and no chemical reactions of its own – it just uses the host cell's machinery. So there is **no antibiotic target** in a virus. (This is why antibiotics do not treat a cold.)

■ 3 Antibiotic resistance

Sometimes a **mutation** makes a bacterium **resistant** – the antibiotic no longer kills it. Resistance spreads by **natural selection**:

- when the antibiotic is used, the non-resistant bacteria die, but the resistant ones survive.
- the survivors multiply, so over time more and more bacteria are resistant.



To slow resistance: only use antibiotics when needed, always **finish the full course**, and reduce their heavy use in farming.

Watch out: antibiotics kill *bacteria* (e.g. by stopping cell-wall building) but do *nothing* to viruses (no cell wall, no reactions of their own to target). Resistance spreads by *natural selection*.

Practice

Try these in order.

10.1 What is an antibiotic? [1]

10.2 Explain how penicillin causes a growing bacterium to burst. [2]

10.3 Give one reason why antibiotics do not work against viruses. [1]

10.4 A few bacteria in a population are resistant to an antibiotic. Explain how, over time, most of the population can become resistant. [3]

10.5 State two things people can do to slow down antibiotic resistance. [2]

10.6 Challenge. Stopping a course of antibiotics early can make resistance worse. Explain why, using natural selection. [2]
