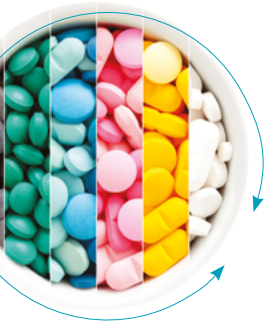
Why didn't my doctor give me antibiotics?

I've come to the doctor because I feel really sick. Last time when I felt really sick, the doctor gave me antibiotics – why wasn't I given them again today?



Antibiotics can lose their effectiveness if they're not used correctly. This loss of effectiveness is called 'antibiotic resistance' and it is a growing problem around the world.[1,2] About 30 % of outpatient antibiotic use may be inappropriate.[1,3]

This leaflet will explain why antibiotic resistance is a problem and why your doctor may choose not to prescribe antibiotics for you.

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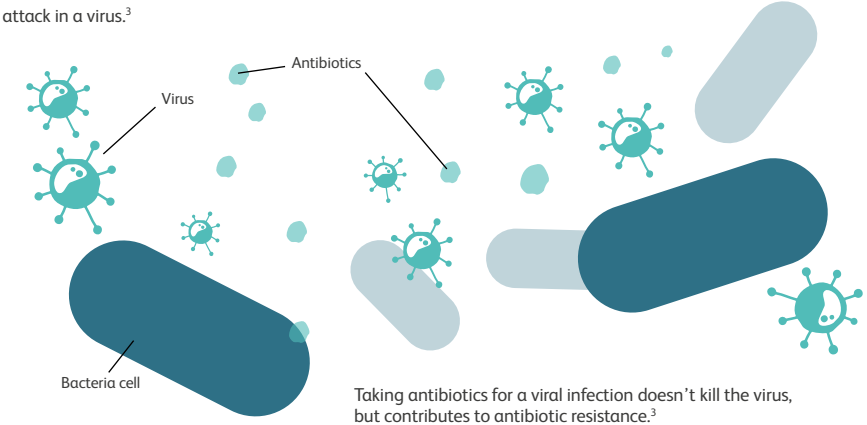
Bacteria, viruses and antibiotics

Bacteria and viruses can cause many different types of illnesses in humans.[1] An antibiotic is a medication used specifically to treat bacterial infections.[1] Antibiotics work by attacking the structures and functions inside bacterial cells, but have no effect against viruses.[1,2] Your doctor will not prescribe antibiotics to treat a viral infection or illness not caused by bacteria.[3]

Viruses and bacteria are different

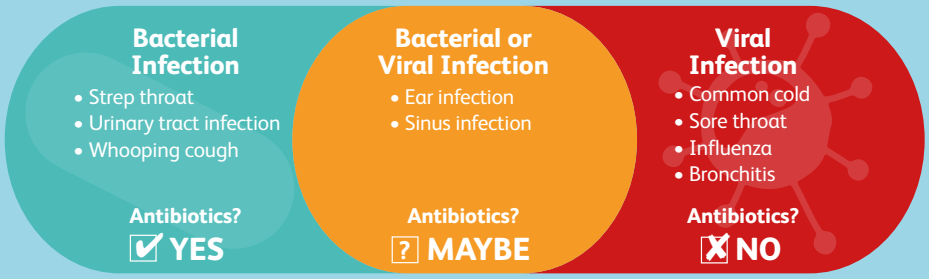
Antibiotics kill or slow the growth of bacteria by attaching to specific targets on, or within bacteria.[1] Viruses are constructed differently from bacteria – a virus must get inside a living cell to grow and replicate.[2] Antibiotics do not work against viruses because they have no cell membrane and therefore no target to attack in a virus.[3]



Taking antibiotics for a viral infection doesn't kill the virus, but contributes to antibiotic resistance.[3]

Antibiotics are not helpful for treating viral illnesses[3]

Bacterial vs viral infections[4,5]

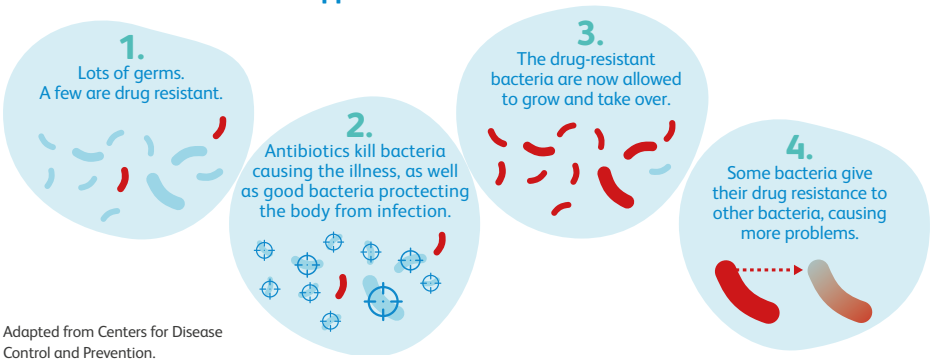


Note: The listed illnesses are examples; please consult your clinician for the most appropriate treatment.

What is antibiotic resistance?

Antibiotic resistance is the ability of bacteria to resist and survive the effects of an antibiotic medication. Random 'mutations' or changes can occur to the genetic material inside bacteria every time they reproduce and multiply. These changes may enable the bacteria to survive, protecting them from different types of antibiotic medictions.[6] These mutations can also be passed on to other bacteria.[6,7]

How antibiotic resistance happens[8]



Adapted from Centers for Disease Control and Prevention.

Why are bacteria becoming resistant to antibiotics?

Overuse and misuse of antibiotics can promote the development of antibiotic-resistant bacteria.[6] Sensitive bacteria are killed by antibiotic medications, but resistant bacteria can flourish and spread causing antibiotic medications to become less effective.[6,9] Using antibiotics when they are not needed or using them incorrectly can enable development of antibiotic resistance.[1,6]

Incorrect use of antibiotics[5,6,10,11]:

- Not taking antibiotics exactly how your doctor prescribed them, for example:
  - Missing doses (eg, taking the drug once a day instead of 2 or 3 times a day)
  - Not finishing all the pills in the bottle or packet
  - Not taking the doses at the correct time interval (eg, if your pills were meant to be taken 2 times a day but you take both doses together)
- Taking antibiotics when they're not needed (eg, to treat coughs or colds caused by a virus)
- Taking antibiotics that were prescribed for someone else
- Taking antibiotics that are left over from a previous prescription

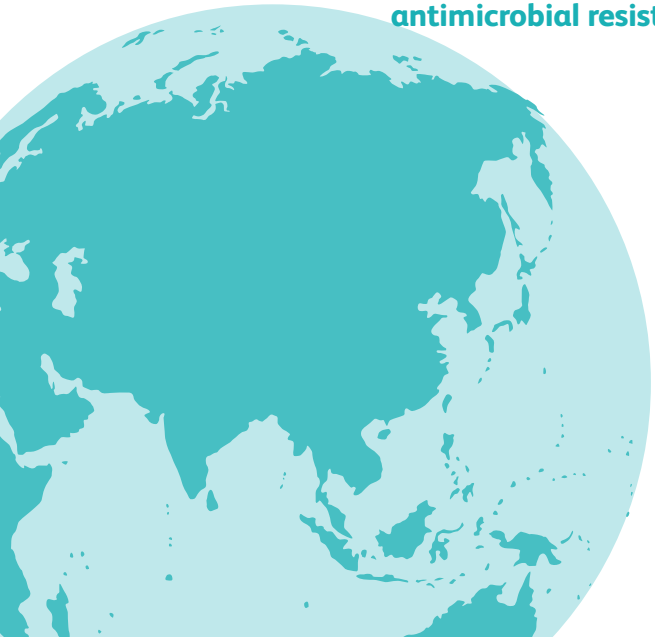
Incorrect use of antibiotics enables antibiotic resistance[1]

Why is antibiotic resistance such a big deal?

Antibiotic resistance is one of the world's greatest public health challenges[1]

- Antibiotic resistance may cause illnesses that were once easily treatable to become dangerous infections[1,9]
- Antibiotic-resistant bacteria can spread to family members, schoolmates and co-workers, and may threaten your community[1]
- Antibiotic resistance is limiting the choice of medications that can be used to effectively treat infections. Doctors may need to prescribe a second or third drug if the first antibiotic doesn't work, and they may even run out of treatment options[6]
- Antibiotic resistance can cause delays getting the right treatment to patients and may result in them getting sicker or even dying. If a patient gets severely ill they will need more care as well as alternative and potentially more expensive antibiotics, which may have more severe side effects[6]

In 2019, an estimated
1.27 million deaths
worldwide were directly attributable to bacterial antimicrobial resistance[12]



Without effective intervention, by 2050 antimicrobial resistance may cause 10 million deaths/year worldwide[13]

What if there were no more antibiotics?

If care is not taken to preserve antibiotic therapy, we risk a future in which antibiotics are no longer effective[1,14]

In a world with no more effective antibiotics[1,9,15-17]:

- Common infections and minor injuries which have been treatable for decades could become life-threatening
- More serious infections such as pneumonia and blood poisoning would become harder, perhaps impossible, to treat
- Surgery of any kind would become a dangerous procedure
- Old ways of dealing with infections may have to be reintroduced, such as amputation
- Illnesses would persist for longer and hospital stays would be longer

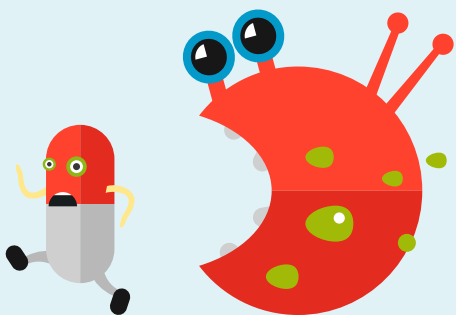
What are the consequences of antibiotic resistance?

- It is estimated that in 2019, antibiotic resistance was associated with **4.95 million deaths** and directly caused **1.27 million deaths** worldwide[12]
- More than **58,000 babies died** in 1 year from antibiotic-resistant infections in India[18]
- Antibiotic resistance caused more than **38,000 deaths** per year in Thailand[18]

Antibiotic resistance is making previously treatable infections much more difficult to manage.[9,17] Examples of infections becoming harder to treat because of antibiotic resistance include[9,17]:

- Pneumonia
- TB
- Blood poisoning
- Gonorrhea

If we do not change the way we use antibiotics, we risk returning to a world where common infections and minor injuries can be deadly.[9]

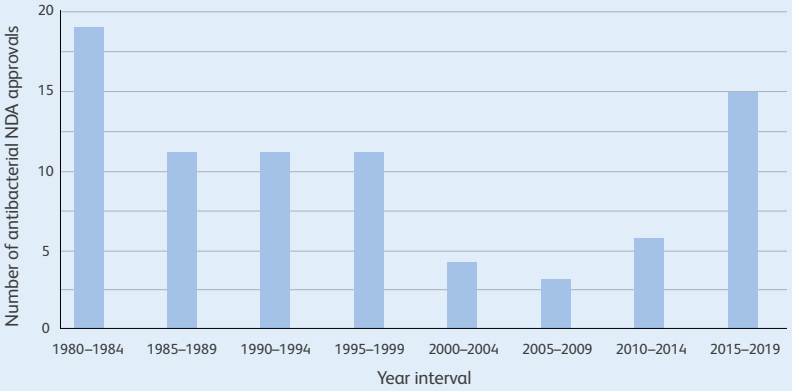


Can’t we just make new antibiotics?

It is difficult to develop new antibiotics.[19-21] Even if new antibiotics are discovered and developed, continuing with the same inappropriate use will not fix the problem, and antibiotic resistance will continue to rise.[21] Currently, the number of new antibiotics and their indications are not keeping up with antibiotic resistance.[22]

If antibiotic resistance continues to rise, there may be no effective antibiotics in the future[14]

Number of antibacterial new drug application (NDA) approvals[20,23]



Drugs are limited to systemic agents. Adapted from: Ventola CL, 2015 and the US FDA’s Center for Drug Evaluation and Research (CDER).[20,23]

What can we do?[3,5,6,10]

Protect yourself, your family and your friends by using antibiotics properly. Don't ask for antibiotics to treat your cold and flu symptoms. If your doctor does give you antibiotics for a bacterial infection remember the 3 'R's:

RIGHT TIME

RIGHT DOSE

RIGHT DURATION

PRESCRIPTION

- **ALWAYS** take your antibiotics exactly as prescribed by your doctor. Do not buy or use antibiotics without first seeing your doctor and getting a proper prescription
- **FINISH** the full course of treatment, even if you start to feel better
- **NEVER** use left-over antibiotics and **NEVER** share antibiotics with someone else or save pills to use another time
- **ALWAYS ASK** your doctor if there's anything you're unsure about or contact them if you experience side effects that make you want to stop taking them
- **GET** recommended vaccines to prevent infections
- **WASH** your hands and follow other hygiene measures

SIGNATURE .....

DATE .....

Protect yourself, your family & your friends

Take care with antibiotics

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