

Antibiotic Resistance Web Page

This website provides information for the general public, healthcare providers, correctional health professionals, and other important audiences about **antibiotic resistance** as well as about specific bacteria that have developed antibiotic resistance.

GENERAL INFORMATION

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What are bacteria and viruses?

Bacteria and viruses are germs that can cause infections and disease, but they are very different in other ways. Most bacteria can live on their own, outside the body. Viruses can only live inside cells of the body. Most bacteria in the world are good and play an important role in nature. Only some bacteria are capable of causing infections and diseases. Antibiotics do not kill viruses, and should not be used to treat viral illnesses.

What are antibiotics?

Antibiotics are drugs that kill bacteria, tiny germs that can cause infections and disease. Antibiotics have been used for many years to treat illnesses caused by bacteria. Many people are familiar with the antibiotic penicillin, which was discovered during the 1920s by Alexander Fleming. Antibiotics come in pill form, as syrups, as salves and ointments, and are also given by injection. Antibiotics kill both good and bad bacteria.

What is antibiotic resistance?

Each time you take an antibiotic, bacteria that are sensitive to the antibiotic are killed. Other bacteria **are not killed** as easily and may grow and multiply - they are “resistant” to the antibiotic.

Over many years, some bacteria have become resistant to antibiotics commonly used to treat infections caused by these bacteria. “Antibiotic resistance” describes this process. These bacteria have slowly changed over time and are **no longer sensitive** to some antibiotics. In other words, some antibiotics no longer work very well against some infections caused by resistant bacteria.



Some antibiotics no longer work against some infections caused by resistant bacteria.

Why is antibiotic resistance a problem?

For a single patient with a skin infection, or other bacterial infection, antibiotic resistance may mean that a prescribed medication does not work the way it is supposed to. This may result in an infection that does not heal as quickly, or other complications such as additional visits to the doctor, additional tests, and another prescription for a different antibiotic. The infection may get worse before resistance is discovered and the treatment is changed.

For the entire community, and all over the world, antibiotic resistance is a problem because many bacteria that cause infections are becoming more resistant to commonly-used antibiotic treatments. New medications are slowly being developed to treat resistant bacteria.

What causes antibiotic resistance?

Antibiotic resistance is a natural process - stronger bacteria survive and multiply.

Unfortunately, the problem of antibiotic resistance is made worse when antibiotics are not used correctly or are used when they are not needed. This can happen with animals as well as people. Antibiotic overuse, and misuse, can create the conditions for the development of antibiotic resistant bacteria. Millions of treatments with antibiotics are prescribed each year when not needed. Overuse of antibiotics in children is of particular concern because the highest rates of antibiotic use occur among children. Fortunately, patients and doctors can work together to reduce antibiotic resistance.

When are antibiotics not needed? Can they really be overused?

Antibiotic resistance is natural, but happens faster when antibiotics are misused or overused. For example, antibiotics do not work against diseases caused by **viruses** (as mentioned above) but sometimes are prescribed and taken to treat viral illnesses. Every time a person takes antibiotics, sensitive bacteria are killed but resistant bacteria may grow and multiply. Treating viral illnesses with antibiotics is a problem because it can lead to the development of resistant bacteria.

How can I tell if an infection is bacterial or viral?

This can be very difficult. Consult your doctor to be sure. Depending on the symptoms of the illness, sometimes doctors can be quite sure about the cause of the illness without ordering a test. For example, colds and the flu are viral illnesses (see below). Sometimes it is necessary for a doctor to order a test to determine whether an illness is due to a virus or bacteria.

Knowing what causes an illness is important, because antibiotics do not kill viruses and should **not** be prescribed or taken to treat viruses.

Remember: antibiotics do not kill viruses!

Antibiotics can only be used to treat infections caused by bacteria.

What kinds of infections are caused by viruses and should not be treated with antibiotics?

- Colds
 - Flu
 - Most coughs and bronchitis
 - Sore throats (except for those resulting from strep)
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What can I do to prevent antibiotic resistance?

- Talk to your doctor about antibiotic resistance.
 - Do **not** take an antibiotic for a viral infection like a cold, a cough, or the flu. Antibiotics should be used only to treat bacterial infections.
 - Take an antibiotic exactly as the doctor tells you. Do not skip doses. Complete the prescribed course of treatment, even if you are feeling better. If treatment stops early, some bacteria may survive and cause re-infection.
 - Do not save any antibiotics for the next time you get sick. Throw away leftover medication once you are finished with your course of treatment.
 - Do not demand antibiotics when a doctor says they are not needed.
 - Do not take antibiotics prescribed for someone else. The antibiotic may not be right for your illness. Taking the wrong medicine may delay correct treatment and may allow bacteria to multiply.
 - Parents, remember that these “rules” apply to children who have been prescribed antibiotics.
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What are some bacterial infections that are resistant to common antibiotics?

The following infections have become resistant to (unable to be treated by) certain common antibiotics. As a result, these infections are now more difficult to treat than in the past:

- [Staphylococcus aureus](#)
 - Tuberculosis
 - Gonorrhea
 - Salmonella
 - *Streptococcus pneumoniae*
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External Links

For more information about antibiotic resistance, visit:

- [Alliance for the Prudent Use of Antibiotics](#)
- [Alliance Working for Antibiotic Resistance Education \(AWARE\)](#)
- [Centers for Disease Control and Prevention. Get Smart. Know When Antibiotics Work](#)
- [United States Food and Drug Administration. Consumer Education: Antibiotics and Antibiotic Resistance](#)