



Health Matters

SDSU Student Health Services

General Health

Antibiotics

Description

Antibiotics are medications that can help to treat some infections and save lives. Antibiotics work on various types of infections caused by bacteria.

Antibiotics **DO NOT** fight infections caused by viruses, such as:

- Colds
- Flu
- Most coughs and bronchitis
- Sore throats, unless caused by strep

Antibiotics are produced synthetically either from a mold or fungus. They include family medications such as, aminoglycosides, macrolides, penicillins, tetracyclines, and cephalosporins.

What type of illnesses do antibiotics treat?

Some antibiotics are effective against only certain types of bacteria. Others can effectively fight a wide range of bacteria. Bacterial infections include:

- Strep throat
- Most (but not all) ear infections
- Some sinus, bladder, and lung infections such as acute bronchitis

How do antibiotics work?

Antibiotics weaken or destroy bacteria. Antibiotics do this by interfering with protein formation processes of bacteria. Antibiotics work either by directly attacking an existing infection or by preventing a new infection from growing.

How do bacteria become resistant to antibiotics?

Bacteria can become resistant to an antibiotic that had previously been effective.

Bacteria develop resistance for several reasons:

- Antibiotics are given appropriately for months or years for life threatening conditions
- Antibiotics are given appropriately for acute infections but are taken inappropriately (missing doses or failing to take all the antibiotics ordered by the provider.)
- Antibiotics are either ordered by a provider or purchased in a foreign country for infections that do not require antibiotics, such as colds, sore throats, flu and some cases of food poisoning.

This is why it is so important to **use antibiotics for only bacterial infections**. In the past, antibiotics may have been prescribed inappropriately, even sometimes for viral infections. Antibiotics should not be used for these viral infections because they don't help in treating symptoms, and they may cause side effects. In addition, overuse of antibiotics contributes to the emergence of more resistant bacteria, which may not respond to commonly used, inexpensive antibiotics. If these bacteria continue to spread, many bacterial infections will eventually become immune to treatment. This is why it is important for providers to properly treat illnesses.

Common Misconceptions

“I got better on antibiotics the last time I had a cold.”

Remember viral infections are not cured by antibiotics! They will run their course and will be cleared by your immune system whether or not you take antibiotics. Any observation you make regarding antibiotic use and a more rapid recovery is purely coincidental in the context of viral infections.

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“I took “xyz” antibiotic a lot as a child, so I know it won’t work for me.”

The fact is that if you have not taken that antibiotic for at least a few years, it is as likely to cure an infection as well as other antibiotics used for a given infection.

“I’ve taken “xyz” antibiotics so much, I’m immune to them.”

Since antibiotics are not developed to target metabolic processes in humans, you do not develop immunity to them. Our bacteria however may develop resistance.

“My dad is allergic to “xyz” antibiotic so I must be allergic to it too.”

Specific drug allergies are not inherited so the likelihood of you being allergic to the same antibiotic as your family members is no greater than anyone else who is not related to your family.

When do I need antibiotics?

This answer depends on the diagnosis given by your provider. The following are some basic guidelines:

Colds and flu: These illnesses are caused by viruses. The symptoms can be treated with a variety of measures but antibiotics are used only for some bacterial complications.

Cough or Bronchitis: These are usually caused by viruses. However, if the cough lasts a long time, antibiotics may be prescribed for a presumed bacterial infection.

Sore Throat: Most sore throats are caused by viruses. However, "Strep throat" is caused by a certain strain of bacteria and can be treated with antibiotics. A culture of a throat swab specimen will assist the provider with the proper diagnosis of a Strep infection.

Sinus Infections: A runny nose or yellow-green mucus does not usually indicate, a bacterial infection. Antibiotics can and will be used for infections that are severe or last more than two weeks.

Are there any side effects to using antibiotics?

Yes. As with any drug, there are certain possible side effects that may occur when using antibiotics.

Antibiotics can cause unfavorable reactions such as:

- Nausea
- Diarrhea
- Stomach pain

Some people experience an **allergic reaction** that can be characterized by:

- A rash and itching
- Difficulty breathing in severe cases

Some of these allergic reactions can be fatal. Some antibiotics kill naturally occurring bacteria that are needed by the body. In these instances bacteria that can cause diarrhea or yeast infections replace the "good" bacteria.

People experiencing any adverse reactions after taking antibiotics should contact a health care provider immediately.

What should I consider when using antibiotics?

Antibiotics have been around for many years. They were once considered to be a "miracle cure" and they continue to provide significant benefits when used wisely. In order to maintain our ability to treat serious bacterial infections effectively, it is important that you remember the following items:

Carefully follow your provider's advice and recommendations.

Your provider will determine what form of treatment is best suited for your illness and related symptoms. If prescribing an antibiotic is deemed appropriate, your provider will then select the one that will work best for treating your specific infection. Your provider will also provide you with a sufficient amount of medication and will instruct you on proper dosage.

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Antibiotics should only be used when prescribed by your health care provider.

Consult with your health care provider before taking any other medications (including over-the-counter non-prescription medications). You should never take antibiotics that were originally prescribed for someone else, or antibiotics prescribed to treat a previous illness or antibiotics you bought in Mexico with out a prescription.

Always take the correct dosage.

As with any medication, taking the correct dosage is a very important factor in antibiotic effectiveness. If an inadequate dosage of an antibiotic is taken, it will not effectively treat the infection and the bacteria are more likely to become resistant to the medication. As a result, the bacteria can continue to grow and develop ways to disrupt the antibiotic's effects.

Always complete the medication. Antibiotics must be taken for the full amount of time prescribed by your health care provider. You need to take all medication prescribed to you. Do not stop taking the antibiotics when your symptoms go away. Stopping the treatment may allow some of the bacteria to continue to live and become resistant to the antibiotic prescribed to you. This will make it more difficult to treat any subsequent infections you acquire.

Antibiotics should not be saved and reused. As mentioned before, you should always take the full course of antibiotic treatment, so none of the drug should be "left over." However, in the event that this has occurred, the antibiotics should not be taken to treat any other illness. Do not take them when you merely feel sick. Different types of infections require different types of antibiotics, so taking leftover medications is often not effective. For example, if you are taking antibiotics for a viral infection, you are potentially doing more harm to your body than good.

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