

ANTIBIOTICS



WHAT ARE ANTIBIOTICS?

- ★ The term “antibiotic” originally referred to a natural compound that kills bacteria or stops bacterial growth. The term was then extended to include compounds produced both naturally and synthetically
- ★ Antibiotics are drugs used to treat bacterial infections. Viral infections and fungal infections do not respond to antibiotic treatment so your doctor will not prescribe an antibiotic for these types of infections



- ★ Antibiotics have been used for a long time; the first antibiotic, penicillin, was discovered in 1928. Penicillin was widely introduced as a treatment for bacterial infections in 1945, dramatically reducing illnesses and the number of deaths due to infectious diseases

WHEN ARE ANTIBIOTICS HELPFUL/NOT HELPFUL?

- ★ Antibiotics only work against infections caused by bacteria. They do not work against viral or fungal infections
- ★ Antibiotics are not helpful for the common cold or for the flu because these illnesses are caused by a virus. Similarly, COVID-19 is a virus and cannot be treated with antibiotics
- ★ However, some types of pneumonia are caused by bacteria (bacterial pneumonia) and are treated with antibiotics. Skin infections are also commonly caused by bacteria and can also be treated with antibiotics



WHAT ARE COMMON TYPES/CLASSES OF ANTIBIOTICS AND EXAMPLES?

Antibiotics are grouped into **categories** according to their chemical structure or shape and how they kill bacteria or stop bacterial growth

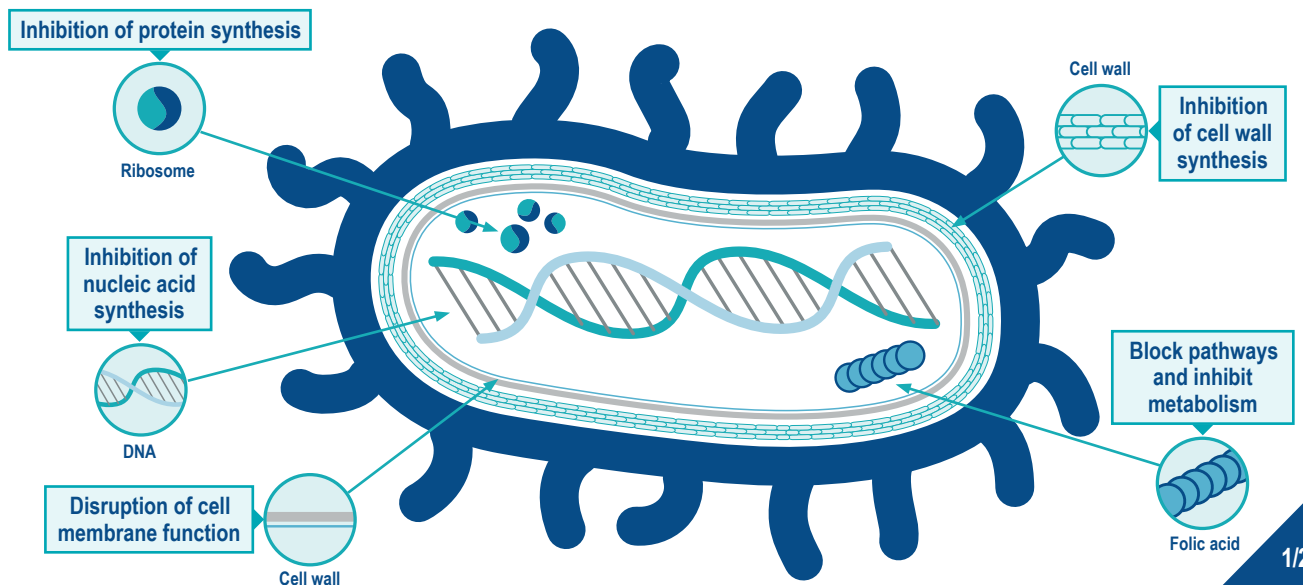
Different classes of antibiotics can be effective against different types of bacteria and each antibiotic is effective only against certain bacteria

In selecting an antibiotic to treat a person with an infection, doctors estimate which bacteria are likely to be the cause

Some common classes of antibiotics and representative examples:

Class	Antibiotic
Penicillin	Amoxicillin
Macrolide	Azithromycin
Tetracycline	Doxycycline
Fluoroquinolone	Levofloxacin
Folate antagonist	Trimethoprim-sulfamethoxazole

THE VARIOUS MECHANISMS OF ACTION FOR ANTIBIOTICS



SIDE EFFECTS OF ANTIBIOTICS

★ As with all medicines, antibiotics have some side effects. The most common of these include



Upset stomach



Diarrhea



Nausea and vomiting



In women, vaginal yeast infections

★ Antibiotics can also cause allergic reactions. Allergic reactions can include mild itchy rashes. Other reactions can occur and be serious such as swelling and breathing difficulty

★ It is important to distinguish between side effects and allergies so that doctors can decide which antibiotics to prescribe

This is not a complete list of side effects. Always be sure to ask your doctor for more information regarding any treatment prescribed.

HERE ARE SOME QUESTIONS YOU MAY WANT TO ASK YOUR PROVIDER BEFORE TAKING ANTIBIOTICS

? If I have an allergic reaction to an antibiotic, does that mean there's antibiotic resistance?

? Are there vaccinations that can protect me from bacterial infections?



? Is my infection bacterial or viral? Can you test for that?

? How should the prescribed antibiotic be taken?

? What are the side effects?



ANTIBIOTIC RESISTANCE

- ★ Antibiotics fight bacteria, but bacteria fight back and find new ways to survive. Their defense strategies are called resistance mechanisms
- ★ Some bacteria can become resistant to the antibiotics that were previously used to treat them
- ★ Only germs (bacteria, fungi, viruses), not people, become resistant to antibiotics

ADDITIONAL RESOURCES



Merck Manual, Overview of antibiotics
<https://www.merckmanuals.com/home/infections/antibiotics/overview-of-antibiotics>

CDC: Antibiotics aware
<https://www.cdc.gov/patientsafety/features/be-antibiotics-aware.html>



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