

Bacterial Resistance:

*When Antibiotics
Don't Work*



**A Consumer
Guide to Protecting
Your Family**

Widespread overprescription and misuse of antibiotics are promoting new strains of harmful bacteria that resist traditional treatments. This guide will help you understand the problem of bacterial resistance and offers tips to help prevent bacterial resistance.



What are bacteria?

Bacteria are microorganisms that exist everywhere — from the great outdoors to the cleanest of homes. When they get into our bodies, they can cause illnesses such as ear infections, strep throat, food poisoning and pneumonia.

How do our bodies fight bacteria?

Our body's immune system uses specially designed cells to locate and shut down microscopic invaders like bacteria, usually stopping them before they can cause trouble. We get sick — what is called a bacterial “infection” — when bacteria in our body reproduce faster than our immune system can kill them.

When bacteria get into our bodies, they can cause illnesses.

How do antibiotics fight bacteria?

Antibiotics are powerful bacteria-killing drugs that help our bodies regain the upper hand when a bacterial infection develops. Today, there are hundreds of antibiotics in use, most tailored to treat a specific kind of bacterial infection. (That's why taking unused antibiotics prescribed for one kind of bacterial infection won't necessarily work against another. Never “save” antibiotics; always finish the full course of treatment as prescribed.)

What is bacterial resistance?

Doctors have noticed that some bacteria are getting tougher to kill. The usual antibiotic drugs don't seem to work as well — or work at all. Such bacteria are said to be resistant.

Bacterial resistance makes an infection much harder to treat. Higher doses or stronger drugs may be required. In extreme cases, bacterial resistance can be fatal.

What are the principal causes of bacterial resistance?

Experts like the scientists at the Centers for Disease Control and Prevention (CDC) agree that the overprescription and misuse of antibiotic drugs are the main causes of bacterial resistance. The CDC says that up to half of the roughly 100 million prescriptions for antibiotics written each year are unnecessary.



Overprescription and misuse of antibiotics are the main causes of bacterial resistance.

How does the misuse of antibiotics promote bacterial resistance?

If you don't finish a prescribed course of medication, you may be killing only those bacteria most susceptible to antibiotics. This leaves the hardier bacteria to reproduce and cause more serious illness.

Bacterial vs. Viral Infections

Colds and flu are just two examples of common illnesses caused by viruses. Antibiotics don't kill viruses, only bacteria, and are therefore useless in fighting viral infections.

What's in a name?

Although scientists agree bacterial resistance is a serious problem, there's less consensus on what to call it. Here are some other terms that you may see used to describe bacterial resistance:

- Antibiotic resistance
- Antibacterial resistance
- Antimicrobial resistance

Also, if bacteria come into contact with — but are not killed by — an antibiotic, they may adapt their cell structure to make themselves “immune” to that antibiotic in the future. That's why it is important to use a given antibiotic only as prescribed.

Are there other possible causes of bacterial resistance?

■ Bacteria reproduce by dividing to create copies of themselves; sometimes the copies aren't exact and the new organism has different characteristics than the original. These characteristics could make the new organism resistant to an antibiotic.

■ Bacteria have the ability to “share” resistant characteristics with each other outside of reproduction. This makes it possible to transfer resistance from one person to another through exposure to resistant bacteria.

■ Bacterial resistance in humans may be increased by the use of preventive antibiotics in animal feed. In 1995, an estimated 4.5 million pounds of antibiotics were used to reduce the spread of disease and enhance the growth of cattle, swine and poultry. The U.S. Food and Drug Administration (FDA) is now reviewing this practice to determine its potential health impact.

■ The U.S. Food and Drug Administration (FDA) convened a panel of experts to examine the possible role of antibacterial hand and body wash products in promoting bacterial resistance. The panel reviewed the available science and determined that antibacterial wash products were not a public health concern.



Tips for fighting bacterial resistance:

1. Never take an antibiotic for viral infections such as colds or flu.

Don't ask your doctor to prescribe antibiotics if he or she doesn't think they are necessary.

2. If an antibiotic is called for, use it exactly as the doctor prescribes.

Follow the doctor's treatment instructions and finish the full amount of antibiotic prescribed.

Don't stop taking the medication just because you are feeling better. Never save antibiotics to treat yourself or others later.

3. Always wash your hands thoroughly.

Scrub your hands vigorously for 10 to 15 seconds using soap and warm water. Many leading brands have the word “antibacterial” on the label. (Remember to wash between your fingers, where germs accumulate.)

4. Always handle food correctly.

Basic sanitation and proper food handling can go a long way toward preventing foodborne illness.

Stay safe:



- **Keep your hands, utensils and food preparation surfaces clean.**

- Avoid cross-contamination; don't let raw meat, poultry and fish — or their juices — come into contact with other foods.

- Cook foods to the proper temperature to kill off dangerous microorganisms.

- Refrigerate foods promptly to keep harmful bacteria from growing and multiplying.

5. Get vaccinated.

If you're 65 or older or you have a chronic illness, you should get vaccinated for pneumococcal pneumonia. It's a major cause of death in older adults.

6. Exercise, eat right, drink lots of water and get plenty of sleep.

Taking care of yourself is the best way to boost your immune system so you can fight off infections.



Use Tools Wisely!

Antibiotics, antiseptics and antibacterials remain important tools in protecting you and your family from illness caused by bacteria. The key is to use them wisely.

Glossary

Antibacterial Ingredient: The active ingredient in antibacterial personal care products used to kill or control the growth of bacteria. Common antibacterial ingredients include triclosan, triclocarban, chloroxylenol (PCMX) and alcohol (ethyl alcohol).

Antibacterial Soap: A product that contains an ingredient(s) designed to kill or control certain bacteria on the hands or body. Antibacterial soaps are effective against the bacteria that can cause odor or skin infections, intestinal illnesses and other commonly transmitted diseases.

Antibiotic: A drug, usually administered by mouth or by injection (although occasionally also applied to the skin), which has effective action against bacteria at very low concentrations.

Antimicrobials: Ingredients and/or products containing those ingredients that inhibit or kill microorganisms. These products are usually used on surfaces such as inanimate objects or skin. In certain situations, the terms antimicrobial and antibacterial are used interchangeably.

Antiseptic: Substance that prevents or inhibits the growth of microorganisms. Antiseptics are usually applied to the skin.

Antibiotics, Antibacterials and Antiseptics

■ **Antibiotics are drugs designed to kill bacteria within your body.**

■ **Antibacterials kill bacteria on surfaces (e.g., counters, bathrooms, doorknobs — even your skin).**

■ **Antiseptics kill bacteria on the skin.**

Bacteria: Single-celled microorganisms that are commonly found in most environments. Some bacteria can cause infectious diseases.

Resistant Bacteria: Bacteria that are no longer sensitive to the antibiotics that have been used to destroy them in the past.

Campylobacter: Bacteria often found in contaminated poultry that can cause diarrhea, cramps and fever.

Cross-contamination: Transfer of bacteria from a food product, such as uncooked poultry, to other foods, hands or surfaces.

Cyclospora cayetanensis: A protozoan parasite that causes diarrhea.

Disinfectant: A product or substance that destroys harmful bacteria, viruses, etc. on inanimate surfaces.

E. coli 0157:H7: E. coli is a type of bacteria that is normally found in the human colon and generally causes no harm. However, a particular virulent strain of E. coli, known as E. coli 0157:H7, can lead to bloody diarrhea, abdominal cramps, and blood and kidney disorders. In rare cases, it has been fatal.

Germ: Commonly used term for microorganisms, like bacteria and viruses.

Hand Sanitizer: Product usually formulated with alcohol to kill bacteria on the hands without washing with soap and water.

Immune System: A collection of more than 100 million specialized cells within the body that locate and destroy invading microorganisms.

Listeria monocytogenes: A pathogenic bacteria that causes listeriosis and, in some cases, meningitis.

Microbes: Living organisms that are too small to be seen without a microscope. Often refers to disease-causing microorganisms.

Microorganism: Microscopic-sized organisms, like bacteria, viruses or fungi.

Pathogen: Any disease-producing microorganism.

Pneumococcus: Bacteria that cause pneumonia and certain other diseases.

Salmonella: Bacteria which may be found in raw or undercooked foods, especially eggs, poultry, fruit and vegetables. A major cause of food poisoning that results in fever, abdominal cramps and diarrhea. Salmonella infections range in severity and sometimes require hospitalization.

Shigella: Bacteria that can cause gastrointestinal illness including fever, abdominal pain and diarrhea.

Staphylococcus: Bacteria commonly found on skin that can cause wound infections, boils and other serious infections.

Streptococcus: Disease-causing bacteria that can lead to skin infections, sore throat and other serious infections.

SOURCES:

Centers for Disease Control and Prevention
U.S. General Accounting Office, Health,
Education and Human Services Division
Mayo Clinic Health Letter
Safe Tables Our Priority

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from your physician or other healthcare
professional.**



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