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A REVIEW ON INTRODUCTION TO ANTIBIOTICS

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INTRODUCTION TO ANTIBIOTICS

Antibiotics are medicines used to prevent and treat bacterial infections. Antibiotic resistance occurs when bacteria change in response to the use of these medicines.

Bacteria, not humans or animals, become antibiotic-resistant. These bacteria may infect humans and animals, and the infections they cause are harder to treat than those caused by non-resistant bacteria.

Antibiotic resistance leads to higher medical costs, prolonged hospital stays, and increased mortality.

The world urgently needs to change the way it prescribes and uses antibiotics. Even if new medicines are developed, without behaviour change, antibiotic resistance will remain a major threat. Behaviour changes must also include actions to reduce the spread of infections through vaccination, hand washing, practising safer sex, and good food hygiene.

Types of antibiotics

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Types of Antibiotics
By Sarah Lewis, PharmD

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The discovery of the first true antibiotic—penicillin—in 1928 was one of the most life-changing events of the 20th century. Before its discovery, when bacterial infections developed, there wasn't much doctors could do. People died from illnesses and injuries that are highly curable today. Now, there are more than 100 antibiotics to fight the war against bacterial infections. Here is a look at common antibiotic names and the types of antibiotics your doctor may prescribe.

1. Penicillins

Close-up of penicillin prescription bottle label

The first penicillin gave rise to an entire class of antibiotics known as penicillins. Penicillins are derived from a specific mold (a type of fungi)—Penicillium. They are widely useful antibiotics that are often a doctor's first choice for several types of infections. This includes skin, respiratory, ear, STDs (sexually transmitted diseases), and dental infections. They are highly effective against familiar organisms, such as staph and strep. Rashes and allergic reactions are common with penicillins. Other common side effects include diarrhea, nausea, and abdominal pain. Examples of penicillins include.

Amoxicillin
Ampicillin
Penicillin G
Penicillin V

2. Cephalosporins

Red and white capsules in blister pack

Cephalosporins are related to penicillins. They both belong to a larger class called beta lactams. Like penicillins, cephalosporins originally came from a fungus—Cephalosporium. There are five generations of cephalosporins. Each generation covers different types of bacteria. As a result, the class can treat a variety of infections, from strep throat and skin infections to very serious infections like meningitis. Because they are related to penicillins, some people with penicillin allergies may also react to cephalosporins. Other common side effects include diarrhea, nausea, heartburn, and abdominal pain. Examples of cephalosporins include.

Cefixime
Cefpodoxime
Cefuroxime
Cephalexin

3. MACROLIDES

Z-pak antiobiotics in blister pack

Macrolides are a completely different class of antibiotics from the beta lactams. But they effectively treat many of the same infections. This includes respiratory, ear, skin, and sexually transmitted infections. So, they are very useful for people with allergies to beta lactams. They are also useful when bacteria develop resistance to beta-lactam antibiotics. However, macrolides have a lot of drug interactions. Be sure your doctor and pharmacist know about all your medications when you take a macrolide. Common side effects include nausea, vomiting, stomach pain, and diarrhea. Examples of macrolides include.
Azithromycin (‘Z-pak’)
Clarithromycin
Erythromycin

4.Fluoroquinolones (broad-spectrum antibiotics)
Close-up of Ciprofloxacin antibiotic in blister pack.
Fluoroquinolones—or quinolones—are active against a very wide variety of bacteria. This makes them useful for treating infections when other antibiotics have failed. They are also an alternative when people have allergies to other antibiotics. They can treat anything from eye infections to pneumonia to skin, sinus, joint, urinary or gynecologic infections and many more. However, this class can be a problem for people with certain heart conditions and with some other medicines. Be sure your doctor and pharmacist know your complete medical history. Common side effects include stomach upset or pain, diarrhea, headache and drowsiness. Examples of fluoroquinolones include.
Ciprofloxacin
Levofloxacin
Moxifloxacin

5. Sulfonamides
Red and yellow capsules spilling out of white pill bottle
Derived from the chemical sulfanilamide, ‘sulfa drugs’ have been around about as long as penicillin. Technically, sulfonamides don’t kill bacteria the way other antibiotics do. Instead, they are bacteriostatic—they stop bacterial growth and your immune system does the rest. They are very good topical treatments for burns and vaginal or eye infections. They can also treat UTIs (urinary tract infections) and traveler’s diarrhea. However, resistance is common with this class. Common side effects include diarrhea, nausea, rash, and sun sensitivity. Allergies are also common with the group. Examples of sulfonamides include.
Sulfacetamide
Sulfadiazine
Sulfamethoxazole-Trimethoprim

6. Tetracycline
Close-up of two red and yellow pill capsules.
These antibiotics come from a species of bacteria called Streptomyces. It seems odd that a bacterium could produce an antibiotic that kills other bacteria, but it’s true. Tetracyclines are bacteriostatic, like the sulfonamides. They treat various infections, such as respiratory, skin and genital infections. They also treat unusual infections, including Lyme disease, malaria, anthrax, cholera, and plague. They have noninfectious uses as well, such as treating rosacea.

Antibiotic Misuse
Antibiotic misuse, sometimes called antibiotic abuse or antibiotic overuse, refers to the misuse or overuse of antibiotics, with potentially serious effects on health. It is a contributing factor to the development of antibiotic resistance, including the creation of multidrug-resistant bacteria, informally called "super bugs": relatively harmless bacteria (such as Staphylococcus, Enterococcus and Acinetobacter) can develop resistance to multiple antibiotics and cause life-threatening infections.[1]

Uses of antibiotics
Antibiotics are used to treat or prevent some types of bacterial infections. They are not effective against viral infections, such as the common cold or flu.

Antibiotics should only be prescribed to treat health problems.
that are not serious but are unlikely to clear up without antibiotics – such as acne that are not serious but could spread to other people if not promptly treated – such as the skin infection impetigo or the sexually transmitted infection chlamydia where evidence suggests that antibiotics could significantly speed up recovery – such as a kidney infection that carry a risk of more serious complications – such as cellulitis or pneumonia.