

Antibiotics

Antibiotics are a group of medicines that are used to treat infections caused by some germs (bacteria and certain parasites). They do not work against infections that are caused by viruses – for example, the common cold or flu. Antibiotics are normally only prescribed for more serious bacterial infections, as many infections get better on their own. Correct use of antibiotics is absolutely essential to help reduce antibiotic resistance. Germs become resistant to antibiotics over time, which then makes them less effective.

What are antibiotics?

Antibiotics are a group of medicines that are used to treat infections. They can be taken by mouth as liquids, tablets, or capsules, or they can be given by injection. Antibiotics are also available as creams, ointments, or lotions to apply to the skin to treat certain skin infections. Occasionally, a viral infection or minor bacterial infection develops into a more serious secondary bacterial infection. In this case, antibiotics would be needed.

There are various antibiotics available and they come in various different brand names. Antibiotics are usually grouped together based on how they work. Each type of antibiotic works against certain types of bacteria or parasites. This is why different antibiotics are used to treat different types of infection. The main types of antibiotics include:

- Penicillins - for example, phenoxymethylpenicillin, flucloxacillin and amoxicillin.**
- Cephalosporins – for example, cefadroxil and cephalexin.**
- Tetracyclines – for example, tetracycline, doxycycline and lymecycline.**

- Aminoglycosides – for example, gentamicin and tobramycin.
- Macrolides – for example, erythromycin, azithromycin and clarithromycin.
- Clindamycin.
- Sulfonamides and trimethoprim – for example, co-trimoxazole.
- Metronidazole and tinidazole.
- Quinolones – for example, ciprofloxacin, levofloxacin and norfloxacin.
- Nitrofurantoin – used for urinary infections.

How do antibiotics work?

Some antibiotics work by killing germs (bacteria or the parasite). This is often done by interfering with the structure of the cell wall of the bacterium or parasite. Some work by stopping bacteria or the parasite from multiplying.

When are antibiotics usually prescribed?

Antibiotics are normally prescribed for more serious infections with germs (bacterial and some parasitic infections). Most common infections are caused by viruses, when an antibiotic will not be of use. Even if you have a mild bacterial infection, the immune system can clear most bacterial infections. For example, antibiotics usually do little to speed up recovery from most ear, nose, and throat infections that are caused by bacteria. However, you do need antibiotics if you have certain serious infections caused by bacteria, such as meningitis or pneumonia. In this situations, antibiotics are often life-saving. Urine infections also commonly need antibiotics to prevent spread to the kidneys. Antibiotics can also be prescribed to treat acne – a less serious condition. For acne, antibiotics can be taken by mouth or applied directly to the skin.

Which antibiotic is usually prescribed?

The choice of antibiotic mainly depends on which infection the patient has and the germ (bacterium or parasite) his doctor thinks is causing his infection. This is because each antibiotic is effective only against certain bacteria and parasites.

There are other factors that influence the choice of antibiotic. These include:

- How severe the infection is.
- How well the kidneys and the liver are working.
- Dosing schedule.
- Other medications the patient may be taking.
- Common side-effects.
- A history of having an allergy to a certain type of antibiotic.
- If the patient is pregnant or breastfeeding.
- Pattern of infection in the patient's community.
- Pattern of resistance to antibiotics by germs in the patient's area.

When taking an antibiotic?

It is important the antibiotics to be taken in the correct way. For example, some of them need to be taken with food and others should be taken on an empty stomach. If the person does not take his antibiotics in the right way it will affect how much of them get into his body (their absorption) and therefore may not work as well. So, the person must follow the instructions as given by his doctor and on the leaflet that comes with the with the antibiotic he is prescribed. The patient must take the entire course of antibiotics as directed by his doctor. Even though he may feel better before his medicine is entirely gone, he must follow through and take the entire course. This is important for his healing. If an antibiotic is stopped in mid-course, germs (bacteria) may be partially treated and not completely killed. Bacteria may then become resistant to that antibiotic. Overuse of antibiotics has led to some bacteria

changing their form or structure and becoming resistant to some antibiotics, which may then not work when really needed.

What are the possible side-effects?

Antibiotics are screened for any negative effects before their approval for clinical use, and are usually considered safe and well tolerated. However, some antibiotics have been associated with a wide extent of adverse side effects ranging from mild to very severe depending on the type of antibiotic used, the microbes targeted, and the individual patient. Side effects may reflect the pharmacological or toxicological properties of the antibiotic or may involve hypersensitivity or allergic reactions. Adverse effects range from fever and nausea to major allergic reactions, including photodermatitis and anaphylaxis. Safety profiles of new drugs are often not as well established as for those that have a long history of use. Common side-effects include diarrhea, resulting from disruption of the species composition in the intestinal flora. Antibacterials can also affect the vaginal flora, and may lead to overgrowth of yeast species of the genus *Candida* in the vulvo-vaginal area. Additional side effects can result from interaction with other drugs, such as the possibility of tendon damage from the administration of a quinolone antibiotic with systemic corticosteroid.

What is the resistance to the antibiotics?

The emergence of resistance of bacteria to antibiotics is a common phenomenon. Emergence of resistance often reflects evolutionary processes that take place during antibiotic therapy. The antibiotic treatment may select for bacterial strains with physiologically or genetically enhanced capacity to survive high doses of antibiotics. Under certain conditions, it may result in preferential growth of resistant bacteria, while growth of susceptible bacteria is inhibited by the drug. Resistance may take the form of biodegradation of

pharmaceuticals. The survival of bacteria often results from an inheritable resistance, but the growth of resistance to antibacterials transfer is more likely to happen in locations of frequent antibiotic use.

What is the usual length of treatment?

The length of treatment varies a lot. It depends on what kind of infection you have, how severe it is and how quickly you get better after starting treatment. Treatment can be:

- For just a few days (urinary tract infection).
- For one or two weeks (pneumonia).
- For a few months (bone infections).

Who cannot take antibiotics?

It is very rare for anyone not to be able to take some type of antibiotic. The main reason why a person may not be able to take an antibiotic is if he has had an allergic reaction to an antibiotic in the past. Even if he has had an allergic reaction to one antibiotic, his doctor or health professional will be able to choose a different type of antibiotic, which he will be able to take.

Make a summary of this text.