



Your Health

Antibiotic Resistance: What Is It, And How Do We Stop It? ©

by Jack Grierson

Welcome to Your Health, provided by The Medical Frontier, Medical news, simplified.

Today's medical news is filled with stories about cancer, mental problems and obesity, but there is a category that is very often under-reported; it's called antibiotic resistance. During this report we aim to show you what antibiotics are, what antibiotic resistance is, why is it a problem and what we're doing to stop it.

Antibiotics have been used for around 70 years and are used to clear many infectious diseases. Penicillin and other antibiotics are very important for curing life-threatening diseases like pneumonia, a very serious lung infection. They work by killing the bacteria that cause disease in two ways: either they kill the bacteria by breaking its cell walls (these are called bactericidal antibiotics) or they can stop the bacteria from multiplying so that your immune system can kill them (these are called bacteriostatic antibiotics).

The biggest problem today is that these antibiotics have been so successful in the past that they are over-prescribed by doctors. Very often they are given for illnesses that don't need antibiotics to clear the infection. The most common example is a cold. A cold is a virus and not bacteria, so antibiotics cannot kill the cold virus and won't make you feel better at all. Giving people antibiotics for diseases that don't need them can cause antibiotic resistance.

So how does antibiotic resistance happen, and why is it a problem?

When you take an antibiotic – it kills the harmful bacteria inside you, which makes you feel better. Doctors will put you on a *course* of antibiotics, which means that you have to take your pills for a certain amount of time to make sure that all the bacteria have been killed. What often happens is that people start to feel better half way through the course and stop taking them. If you don't finish your course, this can leave some bacteria still alive. These bacteria will start to multiply and grow in numbers, making you sick again. But this time, the bacteria have been exposed to antibiotics and know how it works. As a result, the bacteria have changed the way they grow so that *that* antibiotic can no longer kill it! These bacteria are now antibiotic-resistant and the antibiotic you were taking no longer works.

A way to get around antibiotic resistance is to give a different antibiotic, but the problem is that if you catch an antibiotic resistant bacteria, you have to try lots of different antibiotics to see which one will kill it. This unfortunately caused a new generation of bacteria groups called superbugs. These superbugs are resistant to many antibiotics and in some cases – all of them. You may have heard of MRSA in hospitals, the superbug that has become resistant to lots of antibiotics!

So how do we stop the problem?

Hospitals and doctors are trying to stop multiple resistant bacteria through several methods. The main method that's been around for many years is to keep a special antibiotic that is used only for multiple resistant bacteria. This means that the bacteria hasn't seen this antibiotic before and can be killed.

New antibiotics are also being researched to try and create an antibiotic that can kill harmful bacteria but protect the good bacteria that we all have in our bodies.

Finally, the most exciting developments that may save us from superbugs are mechanisms that are completely different to antibiotics! Research is being made into enzymes (proteins) that can attack specific bacteria and vaccinations against superbugs. With these methods we won't have to worry about the bacteria becoming resistant.

This week's advice: Always remember to finish your course of antibiotics.

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