

# Anti-Antibiotics

• Rachel March

*Did the world lose the battle against harmful bacteria? Are antibiotic medications on their last legs?*

*The world has benefited from the wonders of antibiotics for over 80 years. However, it is now established scientific fact that bacteria wiped out by antibiotics have been fighting back. The growth of this resistance has been a slow one, proceeding at an almost unnoticeable rate, yet it has been documented enough to cause the World Health Organization (WHO) to release several strongly worded warnings about an impending danger of unthinkable and literally global proportions.... Is the world heading back to a time when every bacterial infection was a potential catastrophe?*



Not long ago, a mother would stand over the bed of her sick child, wringing her hands wretchedly, knowing that the chances of her child's recovery were slim. The diagnosis? Strep throat or some other infection.

The only methods she had at her disposal to combat the illness were some warm tea, garlic, olive oil and perhaps some fever-reducing powder. In those days the smallest infected cut could have life-threatening implications. In the most frightening scenarios, contagious bacterial infections, such as scarlet fever, would spread from one individual to the next, causing an epidemic.

The emergence of antibiotics changed all of that. It was called a miracle cure. A lifesaving potion.

We now have the medication freely available in all forms and doses to treat anything from ear infections to pneumonia. Yet, all has not been smooth sailing in the journey of antibiotics, and there is a looming threat that its era is coming to an end, due to the increasing prevalence of antibiotic resistance.

Is the world heading back to a time when every bacterial infection was a potential catastrophe?

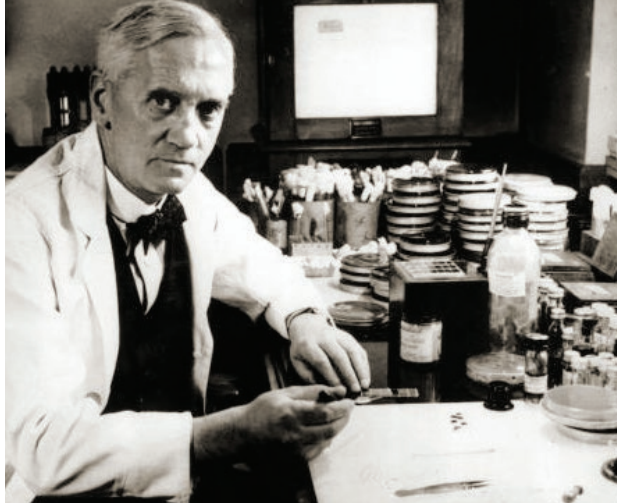
## The Discovery of Antibiotics

Sir Alexander Fleming was a Scottish-born biologist who worked in biochemical



Thanks to **PENICILLIN**  
...He Will Come Home!

During World War II penicillin was used to treat wounded soldiers.



Alexander Fleming, who discovered the wonder drug.

and medical research in the University of London. One morning in September 1928, he returned from vacation and entered his laboratory. To his chagrin, he noticed several dishes on the table that he had neglected to wash before leaving for vacation.

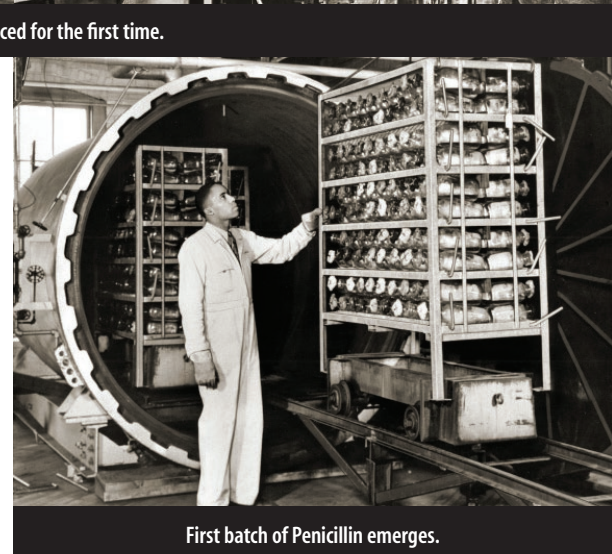
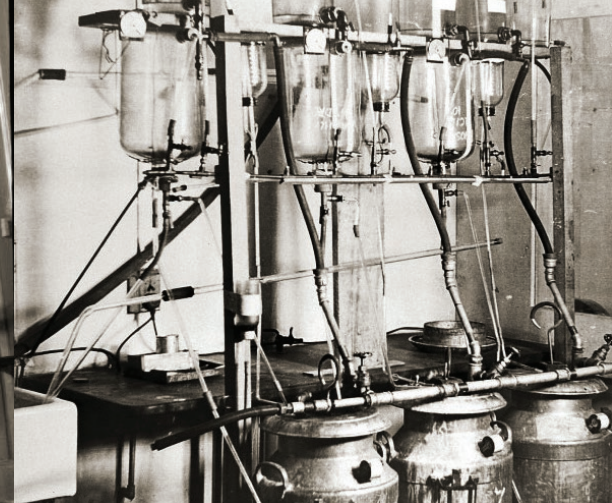
Fortunately, he decided to have a closer look at the dishes before washing them. Placing them under his microscope, he made a surprising discovery. Several strains of bacteria had begun growing on the plates. Around the bacteria, fungi had sprouted, and a yellow liquid that seeped out of the fungi had arrested the growth of the bacteria. This yellow liquid was the substance that would soon become known as penicillin.

It was a eureka moment for Fleming. Sitting in a dish right in front of him was a substance capable of killing harmful, deadly bacteria! He began collecting samples of the mysterious yellow liquid and pairing it with different colonies of bacteria in his lab. The experiments were successful in eradicating the bacteria, and a new class of medications was born: antibiotics.

There was still a long journey ahead for the scientists who tried to grow the fungi and mass produce the wonder medicine. In the 1940s penicillin was produced in powdered form and transported to the soldiers fighting on the front lines of World War II. Bullet wounds, which frequently caused fatal infections, were treated with the miracle powder and survival rates jumped by leaps and bounds.



Penicillin is mass-produced for the first time.



First batch of Penicillin emerges.

Since then, the medical establishment has become much more sophisticated, with most surgeries and procedures using some kind of computerized scans and high-tech equipment. Some surgeries are even being performed by robots (an article in itself!). Yet almost every operation—from the removal of an ingrown toenail to heart and lung transplants—is accompanied by antibiotics. While technology is helpful in the most complicated procedures, it's the humble antibiotic that successfully fights the dangerous and fatal bacteria which are sure to attack.

## The End of an Era?

It is no longer something that is known only to a minority in the medical establishment. Antibiotic resistance is a growing phenomenon that threatens to reduce the effectiveness of antibiotics to virtually nil, potentially bringing us to an era of catastrophe, where bacteria run amok among us. The overuse and abuse of antibiotics has come back to haunt us, as certain strains of bacteria have developed a resistance to antibiotics and are notoriously difficult to get rid of.

The phenomenon of bacterial resistance was already discovered by Fleming himself, when he realized that in the later stages of his experiments, some bacteria managed to survive the onslaught of antibiotics. Not only that, but the few surviving bacteria

then developed into entire colonies that remained resistant to the penicillin's effort to eradicate them!

When the use of antibiotics became more widespread in the 1940s, researchers noticed a trend where approximately 1 in 15 patients treated for strep throat with antibiotics died because of resistant microbes that survived the antibiotic treatment. In the 1950s antibiotic-resistant strep bacteria caused an even greater percentage of deaths, but scientists weren't too concerned, as the antibiotics were still doing a great job in the overwhelming majority of cases.

Geneticists were unique in their concern for antibiotic resistance. They warned that microbe mutation would eventually lead to colonies of bacteria that would be resistant to whatever anti-microbial agents would