

# History of health care: penicillin, stethoscope, vaccination

[Health & Medicine](#), [Healthcare](#)



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## **Discovery of Penicillin**

Penicillin is a group of antibiotics — which includes: penicillin G, penicillin V, procaine penicillin, and benzathine penicillin — that attack a wide range of bacterial infections. Penicillin antibiotics is one of the first medications that is effective against many bacterial infections caused by staphylococci and streptococci.

A man by the name of Sir Alexander Fleming discovered penicillin in 1928. Fleming was a Scottish biologist, physician, microbiologist, and pharmacologist — in 1945 he, along with two others, won the Nobel Prize for Medicine for their discovery of penicillin. Flemings discovery of penicillin was accidental; in 1927. Fleming was doing research on staphylococci — a bacterium of a genus that includes the agents of souring of milk and dental decay, and hemolytic pathogens causing various infections such as scarlet fever and pneumonia. In September of 1928 he returned to his lab and noticed that one of his petri dishes was contaminated with fungus, and the

colonies of staphylococci surrounding the fungus had been destroyed, the ones further from the fungi had remained the same. He later went on to test this new discovery — which he called it “ mold juice” — on other bacteria.

The two ways to revive penicillin are orally — through mouth — and intravenous — through a vein or veins — or intramuscular — administered into a muscle. Penicillin V is the only one taken orally; the other types — Penicillin G, Procaine Penicillin, and Benzathine Penicillin — are taken by intravenous or intramuscular. Patients who would receive penicillin are ones who have a bacterial infection, those can include, strep throat, pneumonia, and Otitis media. Penicillin works to destroy bacterial infections; it does so by damaging the cell walls that have been infected by bacteria as the bacteria is in the process of reproduction. They do this by directly acting on the peptidoglycan-essential structural role in bacterial cell- and create a mesh-like structure that increases in strength to prevent bacteria from entering the cell.

In today's modern medicine, penicillin is one of the most common medications used today. Lack of this antibiotic could cause many deaths due to the fact that the infection could not be treated. The first antibiotic was penicillin, which sparked other scientists — such as Louis Pasteur — to do further research on other antibiotics. Without all of this in play, there would be no cures or treatments for other infections and diseases. Moreover, in today's modern medicine, penicillin has saved many lives; bacterial infections can spread quickly, meaning that antibiotics will help to prevent further spread of the infection.

## **Discovery of the Stethoscope**

The stethoscope is a medical instrument used for listening to internal sounds of an animal or human body. Doctors mainly use stethoscope mainly for listening people's hearts and lungs; before the discovery of the stethoscope, doctors use to place their ear against their patients' body and listen.

A French physician and musician, Rene Laennec, invented the stethoscope in 1816. One of his skills was wood carving, which led him to his discovery of the stethoscope. Laennec felt uncomfortable placing his ear against a women's chest; it also avoided the embarrassment of placing his head near a women's chest. He original got the idea to create the stethoscope when he saw school children playing with hollow logs. The children would hold their ear up to one end of the log and was able to hear the scratching of a pin on the other end; which amplified the sound. After this, he carved out his first model which was twenty-five centimeter with a two-point five-centimeter hollow opening through the wood. He added on three detachable parts, one of which is a funnel shaped cavity to augment sound other then that of the bodies. He later went on to his first clinical trials. He followed his patients from bedside to the autopsy table. By this, he was able to catch sounds with his new instrument. With this invention he was able to be the first physician to coin the terms rales, rhonchi, crepittance, and egophony - terms that doctors now use on a daily basis. He later on presented all of his finding's to the academy of Science in Paris, France, and published his findings in 1819.

There are two types of stethoscopes that are commonly used today; electronic and acoustic. Acoustic stethoscopes operate use a transmission of

sound from the chest to the ear with a air-flow through tubes. Electronic stethoscopes overcome low sound levels by electronically amplifying body sounds. In a regular stethoscope used today, the headset — earpiece, ear tube, tubing — and the chest piece — diaphragm, stem, and bell. The earpiece is the part that goes in your ear to you are able to hear the sound that is received from the chest piece. The ear tube is the metal part that connects the earpiece to the to the stem of the chest piece. The tubing is the soft flexible line that transfers the frequency — sound — to the earpiece. The stem is the part that connects the tubing to the chest-piece. The diaphragm is the large circular end of the chest-piece that allows medical personal to listen to a wider area of the patient's body. Lastly, the bell small circular part at the end of the chest-piece focuses on narrower frequency's that the diaphragm might not be able to pick up.

In today's medical world, the stethoscope is used almost every time you visit a physician. Without the invention of the stethoscope, a medical personal would not be able to properly diagnose peoples conditions. If we still used the method of putting our ear up to someone's chest, we would not only hear the sound we are looking for, but also noises around the area. Having the stethoscope in today's medical practices help medical personals to hear only the sound they are looking for—without it, people might be given the wrong diagnoses.

## **Discovery of the Vaccination**

Vaccinations are products that protect people from serious or deadly diseases; they are like a training course for our immune system. Vaccines

carries dead or weakened bacteria that stimulate our bodies immune system and help our body prepare to fight disease without exposing it to the diseases symptoms.

Edward Jenner discovered the first vaccine in 1796. During this time period a very fatal disease called smallpox, a very fatal disease, was a major global endemic disease. Jenner, at the time, was trying to figure out how to prevent the disease. He discovered that Milkmaids were immune to the deadly disease, and noticed that the milkmaids got small rashes on their hands while milking the cows; often called cowpox. The blisters caused by cowpox were similar to those of smallpox; this made Jenner believe that they were related. To find out if this was true Jenner extracted cowpox from a milkmaid and injected the sample into his gardener's son. Several months later he injected a sample of the smallpox into the boy and the boy did not become ill. He then repeated the same experiment on other people —to prove his hypothesis was correct — and found all results were the same. Thus, creating the vaccine for smallpox and the first ever vaccine.

Children would be the most beneficial to get vaccines. Teenagers, adults and older people would benefit more from HIV, Hepatitis B and Hepatitis C, and flu vaccines. To understand how a vaccine works you need to look at how the body's immune system works. There are many bacteria's and diseases in our body, but not all of them harmful. However, some are able to get inside our bodies and multiply, which can make us ill. There are barriers that stop this from happening, but if some get through our immune system is quick to notice the intruders. The proteins and sugars on the bacteria's surface has

different shapes than the ones in the human body. Anti-bodies can stick to the bacteria to either kill it or disable it; the antibodies have to be the exact shape of the bacteria to work, like a key fitting a lock. Once the right cells are activated, the antibodies quickly divide to fight off the harmful bacteria —Vaccines work in the same way. Dead or weakened pathogens are injected in our body; our immune system will see these as invaders and go through the same process. After, our body will remember the pathogen. So, when the real bacteria comes around, our antibodies will know how to defeat them without people getting sick.

In today's world, vaccines are very important. Whether it is just a flu shot or a booster shot. Vaccines prevent us from contracting diseases, fatal or not. If Edward Jenner did not create the first vaccine to prevent smallpox, the world we live in might not be what it is now. The health care we have today would not be the same if, Louis Pasteur never created a vaccine for rabies — as he was inspired by Jenner. And all the people inspired by Pasteur would never have made their discoveries

## **The Future of Health Care**

I think that within the next fifty years, there will be a cure for cancer. It is said that one in two Canadians will be diagnosed with cancer, and about one in four will die of cancer. In this year alone, it is estimated that 220, 400 people will be diagnosed with cancer and 82, 100 people will die from cancer. Cancer is one of the world's top three causes of death. Currently we have radiation therapy, chemotherapy, surgery, and targeted therapy as forms of treatment for cancer. Scientists and doctors have done studies to

prove there are ways to prevent cancer — healthy diet, no smoking — but they have no cure for it. There are one hundred types of cancers out there — some more advanced than others — but if there was a development in finding the cure, even if its only for one percent of cancer, it would change the way of health care. There would be less people around the world who would die from cancer, hospitals would have more nurses and surgeons available for other patients, and hospitals would not have to spend millions of dollars yearly to buy technology. Additionally, so many people would be able to receive the cure and not go into debt. All in all, in the next fifty years if there is a cure, even for one percent, of cancer, it would change the way of health care and the world that we live in.

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