

Then + Now: How Chemistry Has Improved

Our Health in the Past 125 years

from **Celebrating Chemistry**



Scientists using chemistry have discovered many of the medical breakthroughs and technologies that allow us to live longer, happier, and healthier lives. Here are some of their significant contributions to health and medicine from 1876 to today.

Then

In 1876, when people became sick or injured, doctors could do little more than comfort them and keep them clean.

The idea that medicine is a science—something that we take for granted today—was new to most people. Few people knew how to stay healthy before they got sick. If you did become sick or injured, you would need a strong body and plenty of luck to survive. Though doctors and scientists knew that germs cause disease, they did not completely understand how they were spread or how to destroy them until the French scientist Louis Pasteur made some important discoveries that led to changes in how hospitals and doctors practiced medicine.

1905: German chemists Felix Hoffman and Hermann Dreser synthesized Aspirin, which is still used today to fight pain and swelling.

1909: German scientist Paul Ehrlich developed the first drug, named Salvarsan, to cure a specific illness by killing the germ that had invaded the body.

1915: American doctor Joseph Goldberger noticed that not getting enough vitamins and nutrients in food can cause a person to get sick.

1922: Canadian doctors Frederick Banting and Charles Best found out that diabetes can be managed by giving insulin to people whose bodies cannot make it. Before this

discovery, there was nothing that doctors could do to treat diabetes.

1935: German biochemist Gerhard Domagk discovered a drug named Prontosil to cure previously deadly streptococcal infections.

1942–1945: A potent substance that could kill bacteria was studied in the laboratory by the English physician Alexander Fleming in 1928. A drug based on this discovery, called Penicillin, was created and used throughout World War II to fight infection. We now call this type of drug an antibiotic because it fights bacteria. Unfortunately, the new Penicillin was expensive and only available in certain areas, so many chemists continued their hard work over these years looking for a better way to make the drug.

1950: Chemists Gertrude Elion and George Hitchings created an anticancer drug when Elion discovered a chemical that prevents new leukemia cells (one type of cancer) from being formed in the body.

1952: Microbiologist Jonas Salk created a vaccine against polio by studying the flu vaccine and working with many other scientists to stop the spread of this deadly childhood disease.

1978: Work by scientists in nearly every country meant that the last cases of smallpox in the world occurred in 1978. Smallpox is the first—and so far the only—disease removed by medical science.

1980–present: Medicine was challenged by a new deadly disease called Acquired Immune Deficiency Syndrome (AIDS). In 1987,

Zidovudine (also called AZT) was made to treat AIDS, and scientists continue to create better drugs and search for a vaccine and a cure.

Now: Doctors heal patients by using many medicines and techniques to cure diseases and repair injuries, but some diseases are still incurable. People are living much longer lives and know how to stay healthy, but being poor and living in an unclean environment still makes many people sick around the world. Antibiotics are important tools to fight illness, but some bacteria change, so new and better drugs are needed to kill them. The medicines and options that doctors use to treat or cure sickness do help thousands of people each year, but it costs a great deal of money to treat everyone who needs it. Reducing the costs of medicine and fighting new diseases continue to challenge scientists. Many chemists continue their everyday work to make medical breakthroughs and technologies that allow us to live longer, happier, and healthier lives.
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