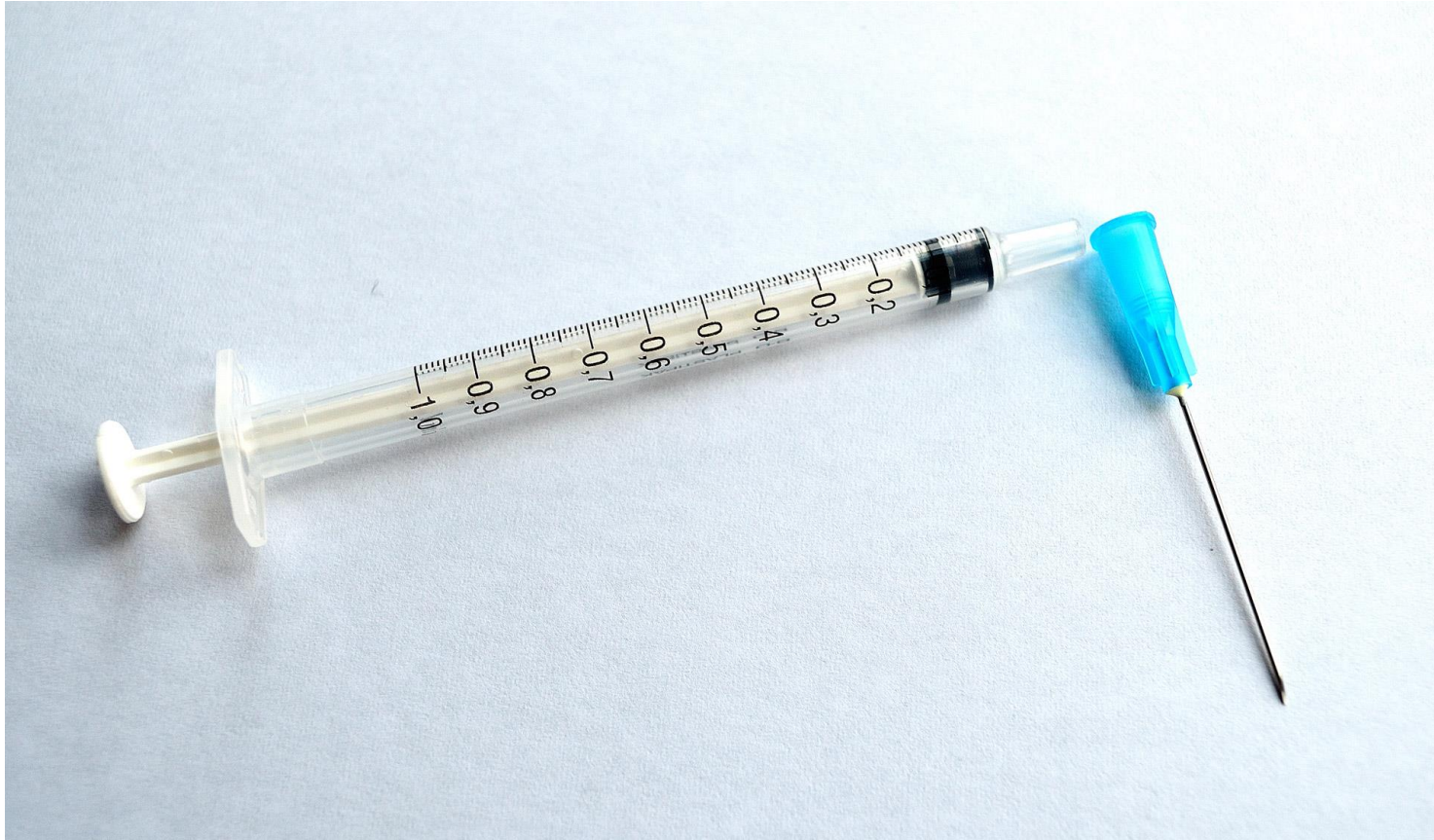


The Four Best Medical Advances

Of The Industrial Revolution

Giana Camele





Smallpox Vaccine

Smallpox was one of mankind's deadliest diseases, until a physician/scientist named Edward Jenner observed that women that regularly milked cows were somehow immune to the smallpox virus. Those women had built immunity by developing a similar, but way less severe, infection to smallpox. Dr. Jenner determined that if all people were injected with a small amount of smallpox, they too would develop immunity. Thus, the vaccine was discovered.

Prior to the vaccine in 1796 smallpox was spread quickly and easily. A simple touch from an infected person could spread this terminal disease. The smallpox vaccination completely prevented the spread of smallpox, it also reduced the amount of deaths due to the disease and the symptoms. Smallpox is caused by the variola virus, not to be confused with the vaccination, vaccinia.

Smallpox could spread by coming close to the sores that were associated with the disease. Signs that you had smallpox were a raised rash on your face and body, and sores formed inside your mouth, throat, and nose. The vaccine works by building immunity to the infection caused by smallpox, they inject you with a similar but way less intense version of smallpox. The vaccine cannot cause smallpox itself, but it can have some side effects like; a fever, you can spread the virus or a severe rash.

Anesthesia

One of mankind's worst fears, pain, was significantly alleviated in 1800 when Sir Humphrey Davey invented modern anesthesia. Even though this discovery was made, most doctors didn't start using anesthesia until 45 years later! Anesthesia is a medical treatment that prevents patients from feeling pain during a surgical procedure. Before the formal invention of anesthesia was developed, doctors would use herbal remedies along the lines of opium poppies. Opium didn't provide the same numbing effects of anesthesia, opium is a very harsh drug that in bad cases can be overdosed, you may become addicted and can experience withdraw symptoms, whereas anesthetic isn't addictive, has no withdraw symptoms and the dosage is controlled.

There are two different types of anesthesia, general anesthetic and local anesthetic. General anesthetic "puts you to sleep" to do a procedure that can't be done while you're still "awake". General anesthetic must be reversed for the patient to wake up. Local anesthetic is an anesthetic that only freezes one part of the body for a short period of time (enough for the procedure) and eventually wears off.

There are over 100 million surgeries performed with the use of some sort of anesthetic per year. Doctors are not certain what the full risks and long-term effects of anesthesia on the human brain are



Stethoscope



Prior to the industrial revolution, doctors relied on literally pressing their ear to the patient's chest to hear their heart and lungs. The industrial revolution brought the discovery of the stethoscope. The first model of the stethoscope was simply a wooden tube. The stethoscope enabled doctors to listen to patients' chest and bowel cavities with more accuracy and comfort. Doctors were able to more clearly hear their patient's abnormalities, therefore making more accurate diagnosis.

The First Successful Human Blood Transfusion

The first successful human blood transfusion occurred in 1818. Prior to the industrial revolution, there were no solutions for people who had "bled out", they almost always died due to blood loss. The first successful blood transfusion was in 1655 but was performed on a dog. There were many different types of successful transfusions before the industrial revolution, but none had been successful by transfusing human blood to another human.

Blood transfusions allowed doctors to pass blood from one person to another. This saved many lives of patients that hemorrhaged during surgery, childbirth and even those injured in war. Blood transfusions were made even more successful after the industrial revolution with the discovery of blood types.





Suspension Bridge

ADL

Giana Camele

Purpose Of Suspension Bridge

Suspension bridges are less ridged so they can better withstand outside forces such as earthquakes. The purpose of suspension bridges is to have a stronger bridge that can suspend longer than most other bridges. In most cases, they are also much cheaper to make because they are being held up by cables instead of towers.



Main Problem With Suspension Bridges

The main problem with suspension bridges is they are susceptible to wind induced vibrations. The wind vibrations affect the stability of the bridge and there is no way to predict the strength of the wind. The cables that support the bridge let the bridge sway with the wind but sometimes the wind is too strong causing the cables to snap.

After time the cables begin to rust thus making them weak and more susceptible to strong winds resulting in breakage.



Solution In The Modern World

Preventing corrosion (rust) is one of the main concerns when addressing problems with suspension bridges. The rain and the wind that are constantly hitting the bridge cause it to slowly deteriorate. Engineers are working on wire wrapping systems and using weather resistant paint to delay the effects of the environmental elements that wear down the cables over time.



In 50 years

I can imagine there are many possible ways to improve the suspension bridge. If I was responsible for improving these bridges, I would concentrate on creating a magnetic backing for emergencies. The magnets would prevent the bridge collapsing for enough time for everyone to get off the bridge safely. The magnets will be placed in the water and on the bottom of the bridge allowing the bridge to float above the water.

Bibliography for Medical Advances

American Diagnostic Corporation, History of the Stethoscope, (2019)

American Red Cross, History of Blood Transfusions, (2019)

Beckers Hospital Review, The evolution of anesthesia: 20 facts, trends and thoughts on the administration and development of anesthesia, (October 29, 2014), (2019)

Dr. Anaya Mandal MD, History of Blood Transfusion, (February 26, 2019)

DS Medical, Top 10- Stethoscope Facts, (2019)

HealthLink BC, smallpox vaccine (June 18, 2018)

History of vaccines, smallpox (January 25, 2018)

National Institute of general Medical Sciences, Anesthesia (September 2017), (May 3, 2019)

Robinson DH, Toledo AH, Historical Development of Modern Anesthesia (June 25 2012)

World health organization, Smallpox Vaccines (December 2017)

Bibliography for Suspension Bridge

H Katsuchi, Improvement of Aerodynamic Stability of Suspension Bridges with H-shaped Simplified Stiffening Girded, (November 18,2015)

S.R. Chen, Study on Stability Improvement of Suspension Bridge With High Sided Vehicles Under Wind Using Tuned-Liquid-Damper, (May 1,2008)

Theodore Hopwood II, James H Havens, Inspection, Prevention, and Remedy of Suspension Bridge Cable Corrosion Problems, (May 1984)