Development of new medicines - a history

- AnnaMaria Roca

As many diseases were able to be cured due to new medicines, new diseases are soaring such as AIDS. However, peoples lives have expanded all around the world due to so many studies that even included drugs. As strange as it sounds, medical drugs became the new thing to cure certain diseases such as tuberculosis. During the time of the 20 th century, the medical advances increased in many areas. The advancement evolved in many areas in biology, chemistry, physiology, pharmacology, and technology. Due to the knowledge that brought to their understanding, diseases got new treatments and cures as more studies grew larger.

“ Toward the end of the 19th century the study of herbal, chemical, and mineral remedies (what was called material medica) was transformed into the laboratory science of pharmacology(Planetseed)”. Plant drugs such as opium were being analyzed and examined. After a while, it was ready to be manufactured due to researchers becoming comfortable of their knowledge about the drugs. The pharmaceutical industry was marketing these products near the start of the 20 th century. This is when aspirin was invented as the company Bayer used a systematic chemical named acetylsalicylic acid.

Paul Ehrlich studied in pharmacology and created the first effective treatment for syphilis. He manufactured the arsenic-based compound Salvarsan in 1909. Ehrlich also created the word “ chemotherapy” and due to that, formed the first antibiotic drug. Later on, a guy named Gerhard produced the first useful sulfa drug which is also an antibiotic. This was used to treat streptoccal, strep, and diseases, including meningitis.

Even though viral diseases weren’t being cured by antibiotics, antiviral vaccines did. Smallpox and polio were important to the vaccines that cured them. Polio, which is mainly a disease of childhood, causes paralysis. Jonas Salk and Albert Sabin were two scientist that worke to develop a polio vaccine. However, two different versions of this vaccine were developled, which were brought into the world in the mid-1950s. Salk’s developed the vaccine that was used on the deadly virus, while Sabin’s was used on the live one. Both that were used resulted in success. Polio was mostly put to rest by the end of the 20th century.

In the 1920s, Alexander Fleming studied mold samples and found something that could be very important in the medical field. Mold was growing on bacteria samples which killed them. He recognized the mold as penicillin. During World War II, they used this with their extended research on injured soldiers to test it out the new drug. It proved very effective against anthrax, tetanus, and syphilis. This was also the first drug that worked against pneumonia.

“ Antiretroviral drugs were developed in the 1980s to combat AIDS. (Retroviruses are a class of virus.) Viruses mutate so quickly, however, that developing antiviral (and antiretroviral) agents has proved very difficult (Planetseed)”. So due to this, the multiple studies and hard work to develop a vaccine for malaria and AIDS are unsuccessful. Other antiviral vaccines were also developed to cure measles, chickenpox, and influenza. Vaccines against human papillomavirus and shingles became available in 2006. The first antiviral drug in the 1970’s were acyclovir that helped against some forms of herpes. However, this doesn’t cure herpes but its useful for not

breaking out in herpe sores or blisters. Researchers have used many different approaches to develop drugs for patients. One major revolution in treating illnesses was a new understanding of theimmune system.

The advancement in immunology has brought progress to all of the autoimmune diseases. The autoimmune diseases include type 1 diabetes, lupus, muscular dystrophy, and rheumatoid arthritis. the research has led to the development of immunotherapy. That would the use of drugs to modify the immune system. As immunosuppressive drugs help treat autoimmune diseases, it also is a great success in the area of organ transplantation. First transplant to occur where the kidneys and then soon later become the first heart transplants. However, those patients didn’t survive that long due to their body’s immune system rejecting the new organs. Cyclosporins was then created as the first effective immunosuppressive drug to fix that problem. This advanced even further for todays modern surgery that allows any organ of the human body to be transplanted from one individual to another. AIDS brought the science of immunology to new studies. AIDS was considered a death sentence since it destroys the immune system as it resists infection. However, antiretroviral drug treatments extends the lives of individuals for years who are infected for many years, but it still doesn’t have a real cure.

Studies in the immunological medical search also dealt with genetics. The body’s cells and organisms that could infect it were studied. They then understood the roles of genes, the chromosomes and cell metabolism. Deocyribonuclei acid, also known as DNA is located at the core of the chromosome. After the study of the body’s cells, the biggest breakthrough then happened. A biochemist Frank Crick, and biologist James Watson were

able to interpret the structure of DNA and were then able to use it in medicine. They found out that many diseases can be drawn to genes or defective chromosomes. Due to these findings, it is now possible to be tested for diseases like cystic fibrosis, huntingtyons chorea and forms of breast cancer. Genetic engineering even allows us to generate new drugs such as insulin, interferon, human growth hormone, and other hormones used to stimulate blood cell production.

Physicist Wilhelm Conrad Roentgen discovered X-rays and made it capable to look at the internal organs of the body. This resulted in easier diagnoses for broken bones, cancer, and other diseases. Later on a physiologist, invented the first electrocardiograph. This was used for people with heart problems which the device was used to record electrical activity of the heart muscles. Tubes were then used to drain fluids or used to put in medicine were put into the heart and liver. The technologies that were discovered were ultrasound imaging, computerized tomography scans, positron emission tomography scans and magnetic resonance imaging.

X-rays are a form of radiation which you would consider very dangerous to the body. After a while Radiologists realized that x rays were a form of radiation and are very dangerous to the body which resulted in them now using the lowest doses possible. They also became more knowledgeable about the use of X-rays to destroy unwanted cells. Radiation has become a treatment for cancer. Technology also helps people who need surgery. It allows the surgeon to look into further of the body which also allows radical invasive surgeries. Flexible endoscopes also became useful for hernias, gall bladders, kidneys, and knees. It is based on a fiber optic technology which is

used for a keyhole surgery. It is a scope that has a laser which can cut like a sharp knife which makes a tiny incision. During the mid 20 th century, a heart-lung machine was manufactured. It keeps patients alive by maintaining blood circulation while a surgeon is operating on an unbeating heart.

Artificial organs are also a development that became useful for many individuals. Due to the fact that there aren't enough organs for people, artificial organs help them to survive until one is found for them. Hemodialysis which was developed by a scientist named Willem Kolff. It helps patients live longer with kidney failure. Missing limbs were also being helped due to the development of prosthetics. Artificial limbs use to be made of metal and wood which later on turned into plastic that was developed in the mid-20th century. " But now, advanced materials, such as carbon fiber, high-tech plastics and metals, have enabled researchers to create devices that operate by electronic attachment to the muscles(Planetseed)".

In otherwords, Individuals lives have expanded all around the world due to so many studies of different things. The medical advancement evolved in many areas in biology, chemistry, physiology, pharmacology, and technology. Due to the knowledge that brought to their understanding like the medical drugs becoming a factor of helping people. As the studies grow, the more treamtns and cure grow because that is the key factor to it all. Studying and learning and eventually achieving what you've been working hard for doesn't only help yourself but other lives as well.

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