

# NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR



## BIOMEDICAL ENGINEERING ASSIGNMENT

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# Evolution of Modern Healthcare

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*Submitted By:*

Name : Bhavesh Gayakwad

Roll No. : 21111014

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Branch - Biomedical  
Engineering

*Under The Supervision Of:*

Dr. Saurabh Gupta

Department Of Biomedical  
Engineering  
NIT Raipur

# 1 Introduction

Between the years 1750 and 2000, healthcare in the World evolved from a simple system of home remedies and itinerant doctors with little training to a complex, scientific, technological, and bureaucratic system. The evolution of this complex includes the acceptance of the "germ theory" as the cause of disease, professionalization of doctors, technological advancements in treating disease, the rise of great institutions of medical training and healing, and the advent of medical insurance. Governmental institutions, controls, health care programs, drug regulations, and medical insurance also evolved during this period. Most recently, the healthcare system has seen the growth of corporations whose business is making a profit from healthcare.

## 2 How Healthcare started?

- Healthcare industry started with home remedies. It began as a purely reactionary, medical practice in which people learnt about the medicinal properties of a plant through trial and error, documented it and passed on to others. The use of plants as healing agents is a long-standing practice
- Then In the medieval age, surgical practices inherited from the ancient masters were improved and then systematized in Rogerius's The Practice of Surgery
- Military doctors advanced the methods of trauma treatment and surgery
- Then some medical universities were build,the systematic training of physicians began there,during the researches the humans built the understanding of anatomy,as a result we built microscope and first 'germ theory' was invented.
- Then Public healthcare was developed,different hospitals were built
- Public health measures were developed especially in the nineteenth century as the rapid growth of cities required systematic sanitary measures. Advanced research centers opened in the early twentieth century, often connected with major hospitals

### 3 Key improvements on healthcare

year	improvement field	key person
1854	Quality improvement documentation	Nightingale
1861	Sanitary commissions	Barton
1862, 1918	Improvisation	innovation Pasteur
1879	Sterilization	Chamberland
1895,1956, 1960	Technology	Rontgen, Safar, Laerdal
1910	Education	Flexner
1881–1955	Pharmaceuticals	Pasteur
1883–1945	Healthcare financing	Bismark, Beveridge, KaiserA
1908	The role of industry and mass production	Ford

### 4 Evolution To Modern Healthcare

There are several aspects in healthcare which played a key role in revolutionising the healthcare system which became today as modern healthcare system. The journey from home remedies to modern technical healthcare system was not easy. The steps included to improve healthcare were...

#### 4.1 Advancement in Medicine with Technology

The advancement of medical care was moving hand in hand with technological advancement. Besides basic knowledge of 'biomedical' processes, technology was the main implementer of that knowledge. The twenty-first century could be characterized by the phrase "Biology is the new Physics". the "marriage" of biology and engineering that brought about such possibilities

#### Developments in Medicine

- Vaccination- to reduce epidemic diseases At the beginning of the 20th century, infectious diseases such as smallpox, measles, diphtheria, and pertussis were widely prevalent. Since there were few effective measures available, death tolls were high. The development of vaccines eradicated those diseases.
- Medical devices-Between 1900-2000 There were Several Biomedical invention which shaped the modern healthcare system-Between 1900-2000 The Several medical devices which has helped to transform the

healthcare and ease the work of doctors for monitoring the data and Diagnosing the disease-

- X-Ray,ECG,MRI,Stethoscope,CT Scanner,Dialysis Machine,EEG topography,Ultrasound,LASIK,IVF,PET Scanner
- Advances in Cancer Treatment-In the 20th century, both chemotherapy and radiotherapy were developed as treatments for cancer. Before the development of these treatments, the vast majority of people who developed cancer died of the disease without any hope of being cured.
- Robotic Surgery-Blending industrial robotics with medicine, the invention of robotic surgery allows patients to enjoy minimally invasive surgeries with fewer incisions and more precision than ever before!
- The transplantation- of several organs of Human body started saving lot of lives and giving new hopes ,the organs we can transplant as of now are Liver. Kidney. Pancreas. Heart. Lung. Intestine. Corneas. Middle ear. Skin. Bone. Bone marrow. Heart valves. Connective tissue.
- 3-D printing and Artificial organs- The shortage of Organs for organ Transplantation led to the discovery of 3-D printing which can create exact body parts with the help of biomaterials and sustainable cells,As of now with the help of 3-D printing skull and Heart are created.Artificial organs are the organs which tend to replace the defected organs in the body some Artificial organs we can make are-(I) Bone/Joint Replacements (e.g. hip, knee, finger, total limb), (II) Skin/Soft Tissue Replacements (e.g. skin, breast, muscle), (III) Internal Organs (e.g. heart, kidney, blood vessels, liver, pancreas), and (IV) Sensory Organs (e.g. eye, ear)
- Fitness tracking and data information- the Fitness tracking devices use is been incresing since last 5 years,it can track all our data which can help to track our health and can be utilised in development of healthcare system

## 5 conclusion

The Evolution of healthcare system states that how health is the most important aspect of our life and why it wil continue to remain most important.