

Patterns of Change: Medicine

Headings	Notes
INTRODUCTION	<ul style="list-style-type: none"> The study of the body and of how to keep people healthy and treat them when they are sick or injured has been a constant concern for humanity. At various points in our history, we have made great strides forward in understanding sickness and disease, finding ways to treat them and making health care more widely available.
HEALTH AND MEDICINE IN ANCIENT GREECE AND ROME	<ul style="list-style-type: none"> Throughout history, humans have often attributed unexplained phenomena to divine beings. This tendency was common across most cultures until the modern era. In Ancient Greece, illness was viewed as a punishment from the gods. Patients believed their best chance of recovery was to make offerings at temples, especially those dedicated to Apollo (the god of healing) or his son Asclepius. Hippocrates of Kos (c. 460-370 BC), known as the 'Father of Medicine,' was the first to write extensively about diseases, illnesses, and their symptoms. For the next two thousand years, his works became foundational to medical practice. He pioneered the use of symptoms to diagnose illnesses. Hippocrates believed sickness resulted from an imbalance among the four humours: blood, black bile, yellow bile, and phlegm.
GALEN OF PERGAMON	<ul style="list-style-type: none"> The work of Hippocrates was built upon by other physicians, especially Galen of Pergamon (AD 129 – 216). Galen practiced during the height of the Ancient Roman Empire's power. Galen believed that to properly treat the body, knowledge of anatomy (the study of the structure of the human body) was essential. Due to a ban on human dissection, Galen experimented on and dissected animals he thought had similar bodies to humans. This led Galen to reach several false conclusions about how human organs worked. These misconceptions resulted in doctors treating people incorrectly for over a thousand years. There is evidence that Roman doctors performed brain surgeries that would not be attempted again for nearly two thousand years.
Keywords	Summary
Divine Beings Ancient Greece Apollo Asclepius Hippocrates of Kos Father of Medicine Four Humours Blood Black Bile Yellow Bile Phlegm	

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PUBLIC HEALTH CARE	<ul style="list-style-type: none"> • Access to health care was largely limited to those who could afford to pay the physicians' fees. • Physicians apprenticed with experienced doctors before setting up on their own. • People who could not afford a doctor would go to healers, who sold herbal mixtures. • Most of these remedies did little to treat the underlying problem, though some provided pain relief. • Temples to Asclepius operated as early medical centres where people could go to the priests for medical advice and treatment.
HEALTH AND MEDICINE IN THE MIDDLE AGES	<ul style="list-style-type: none"> • Medieval medicine was based on the theories of the Ancient Greeks, particularly surrounding the four humours (blood, black bile, yellow bile and phlegm) where it was thought that most sicknesses were due to an imbalance between the humours. • Treatments for imbalances included: <ul style="list-style-type: none"> • Bleeding: cutting the patient so that they bled • Cupping: placing heated metal cups on the skin to draw fluids to the surface • Leeching: using leeches to draw blood or other fluids out of the body • Amputation: cutting off a limb • Common diseases during the Middle Ages included typhoid, leprosy, smallpox, dysentery and influenza. People often died of minor ailments and infections. • Poor diets meant people were less able to fight illness while a lack of hygiene meant that most wounds became infected easily. • Women faced the added danger of childbirth, with many dying due to blood loss or infection. • Herbal medicines were common treatments. • Monasteries often looked after the sick, functioning as the first hospitals in many countries.
THE BLACK DEATH (BUBONIC PLAGUE)	<ul style="list-style-type: none"> • The Black Death (bubonic plague) killed at least one-third of Europe's population between 1347 and 1350. • The plague was carried by fleas on rats that arrived via ships from the Black Sea area.
Keywords	Summary
Physicians	
Four Humours	
Bleeding	
Cupping	
Leeching	
Amputation	
Disease	
Childbirth – Child Mortality	
The Black Plague	
Bubonic Plague	

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<p>THE BLACK DEATH (BUBONIC PLAGUE)</p>	<ul style="list-style-type: none"> • Symptoms included oozing swellings all over the body, discoloured skin and the lungs filling with phlegm. • It was extremely contagious, spreading via sneezing or spitting, or by touching dead bodies, which were often left in the streets to be collected. Those infected had a 70-80% chance of dying within a week. • Many believed the disease was caused by God's anger at human sin. Others blamed groups of 'outsiders' such as Jews or Moors.
<p>THE IMPACT OF THE BLACK DEATH</p>	<ul style="list-style-type: none"> • The death of so many people in such a short space of time changed Europe forever. • The feudal system, especially serfdom, went into decline because many serfs left their manors to replace people in the towns. This meant that the peasants who remained on the manors could demand better treatment because there was now fewer of them left to do the work. • Doctors had failed to find a cure for the bubonic plague and began to question their practices. This led to significant changes in medicine during the Renaissance.
<p>MEDICINE DURING THE RENAISSANCE</p>	<ul style="list-style-type: none"> • In the 1500s, doctors such as Andreas Vesalius began to investigate anatomy (the study of the human body). Vesalius wrote On the Structure of the Human Body. This book was full of accurate information and very detailed sketches of human anatomy. Thanks to the Printing Press it was printed and widely read, allowing surgeons to operate more effectively on their patients. • Doctors also dissected bodies to learn about the human bones, muscles, veins and organs. William Harvey discovered that the heart pumped blood around the body. • The combination of these advances resulted in improvements to the methods used during surgeries.
<p>TWENTIETH-CENTURY MEDICINE</p>	<ul style="list-style-type: none"> • Life expectancy increased dramatically in the twentieth century, as did the quality of life. This was due to medical discoveries and inventions that were able to control or cure many diseases and conditions.
<p>Keywords</p> <p>Phlegm</p> <p>Swellings</p> <p>Jews</p> <p>Moors</p> <p>Andreas Vesalius</p> <p>Anatomy</p> <p>Printing Press</p> <p>William Harvey</p> <p>Life Expectancy</p>	<p>Summary</p>

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MEDICAL DISCOVERIES	<ul style="list-style-type: none"> • 1910 – Histamine (Antihistamines were discovered in 1937): a substance produced by the body when it suffers an immune reaction. Antihistamine drugs are now used to treat symptoms of mild allergies such as runny noses and watery eyes. • 1912 – The Discovery of Vitamins: micronutrients essential for good health. Doctors identified what levels of each vitamin are needed to avoid deficiency diseases such as scurvy (vitamin C) or rickets (vitamin D). • 1921 – Insulin: a hormone that breaks down sugar in the bloodstream. People with Type 1 diabetes cannot produce insulin naturally and must inject it instead. • 1928 – Penicillin: the first antibiotics, discovered by Alexander Fleming on bread mould. Penicillin is still used to treat many kinds of bacterial infection. • 1953 – DNA (Deoxyribonucleic Acid): a double-helix molecule present in the nucleus of cells. It contains the genetic information that allows all forms of life to function, grow and reproduce.
MEDICAL INVENTIONS	<ul style="list-style-type: none"> • 1798 – Vaccination: a vaccine is a type of medicine that trains the body's immune system so that it is ready to fight a disease it has not encountered before. Smallpox, which devastated the peoples of the Americas, has now been eradicated worldwide due to a vaccine first developed by Edward Jenner in the early nineteenth century. Vaccines protect people against many types of serious diseases such as polio, mumps and Covid-19. • 1853 – Endoscope: a thin fibre-optic cable with a tiny camera on one end which allows doctors to view inside the body to investigate symptoms or to guide surgery. • 1914 – Portable X-Ray Machine: Marie Curie improved the x-ray discovered by the German engineer Wilhelm Conrad Röntgen in 1895, creating a portable x-ray machine that was first used in World War I to treat wounded soldiers on the frontline. • 1956 – Ultrasound: High-frequency soundwaves are used to 'see' inside the body. Ultrasound is used to scan internal organs and tissues. Since the 1970s, they have also been used to monitor pregnancies harmlessly.
Keywords Histamine Vitamins Scurvy Rickets Insulin Penicillin Alexander Fleming DNA Vaccinations Smallpox: Edward Jenner X-Ray Marie Curie Ultrasound	Summary

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<p>MEDICAL INVENTIONS</p>	<ul style="list-style-type: none"> • 1960 – Hormonal Contraception: the contraceptive pill for women was invented in the 1960s and rapidly transformed society by giving women control over their fertility. Women began to graduate from universities and advance their careers at much higher rates once pregnancies could be planned. • 1967 – CT Scan: a special x-ray machine that takes multiple images to produce a 3D picture of the inside of the body. It is often used after accidents, or to check for blood clots or unusual growths. • 1977 – MRI (magnetic resonance imaging): strong magnetic fields and radio waves are used to create detailed images of the organs and tissues. MRI scanning can detect areas of disease. • 1978 – In vitro fertilisation (IVF): a technique used to help achieve a pregnancy when the natural method has been unsuccessful. Fertilisation takes place in a laboratory and the embryo is transferred to a woman’s uterus after several days.
<p>SURGICAL ADVANCES</p>	<ul style="list-style-type: none"> • Blood types: the four blood types (A, B, O and AB) were discovered before World War I. This made blood transfusions possible and blood donation schemes were set up. • Skin grafts and plastic surgery: both were known in earlier times but became very advanced in the twentieth century due to their usefulness in treating war injuries. After World War I, skin grafts (healthy skin taken from elsewhere on the patient) were used to help reconstruct faces that had suffered burns or shrapnel damage. During World War II, plastic surgery was likewise used to help repair faces. • Transplant surgery: the first successful kidney transplant took place in 1954 while the first successful heart transplant took place in 1967. • Laser surgery and keyhole surgery: these are less invasive surgical methods, which lower the risk of infection and greatly reduce recovery time.
<p>Keywords</p> <p>Hormonal Contraception MRI CT Scans In vitro fertilisation Blood Types Skin Grafts Plastic Surgery Transplant Surgery Laser Surgery Keyhole Surgery</p>	<p>Summary</p>

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Keywords	Definition
Amputation	<ul style="list-style-type: none"> • Cutting off a limb.
Anaesthetics	<ul style="list-style-type: none"> • Drugs that makes a person unable to feel pain.
Antibiotic	<ul style="list-style-type: none"> • A substance used to fight bacterial infection in the body.
Antiseptics	<ul style="list-style-type: none"> • Make clean or free of germs.
Beveridge Report	<ul style="list-style-type: none"> • British Government report during World War II that led to the establishment of the welfare state.
Bleeding	<ul style="list-style-type: none"> • Cutting the patient so that they bleed.
Bloodletting	<ul style="list-style-type: none"> • Taking blood from a sick person to cure or heal them.
Child mortality	<ul style="list-style-type: none"> • The death of children over one month and under the age of five.
Contraceptive Pill	<ul style="list-style-type: none"> • Contains hormones that temporarily prevent pregnancy (when taken correctly and regularly), allowing women to control their fertility.
Cupping	<ul style="list-style-type: none"> • Placing heated metal cups on the skin to draw fluids to the surface.
Four humours	<ul style="list-style-type: none"> • Four major fluids in the body - blood, yellow bile, black bile, phlegm - which Ancient Greeks and Romans believed to cause disease if they were not in balance.
Germ theory	<ul style="list-style-type: none"> • The discovery that germs spread disease.
Inoculation	<ul style="list-style-type: none"> • Giving a weak form of a disease to a person by injection to protect against that disease (vaccination)
Leeching	<ul style="list-style-type: none"> • Worms used for bloodletting.
Organ transplantation	<ul style="list-style-type: none"> • The replacement of failing organs with the healthy ones.
Pandemic	<ul style="list-style-type: none"> • Worldwide spread of a new disease.
Pattern of change	<ul style="list-style-type: none"> • How changes occur in a particular area of history over a period of time.
Penicillin	<ul style="list-style-type: none"> • The first antibiotic, used to treat many kinds of bacterial infection.
Pharmaceutical drugs	<ul style="list-style-type: none"> • Manufactured medications developed through experimentation.
Public health	<ul style="list-style-type: none"> • The overall health of the population, as protected and improved by the actions of government.
Vaccination	<ul style="list-style-type: none"> • Giving a person a vaccine to prevent them from developing a disease (inoculation)
Vaccines	<ul style="list-style-type: none"> • Medicines designed to prompt the immune system to develop the necessary antibodies to fight off a particular disease by exposing it to a non-dangerous version of the disease.
Welfare States	<ul style="list-style-type: none"> • Programmes where governments sought to greatly expand access to education, health care and other social services, often making these free of charge.