

Revision

The History of Medicine

There are 5 major time periods to remember

Ancient World	c 10,000BC – 500AD	Prehistoric, Egyptian, Greek and Roman
Medieval	c 500 – c 1400	Islamic
Renaissance	c 1400 – c 1700	
Industrial	c 1700 - 1900	
Modern	1900 – 2014	Future?

What happened in these time periods that affected medicine?

Did medicine progress, stay the same or even regress (went backwards)?

Which factors dominated and why?

There are 3 major themes to study

Disease and Infection (special topic for 2014)
Surgery and Anatomy
Public Health

There are 6 factors to investigate

War
Superstition and Religion
Chance
Government
Science and Technology
Role of Individual

How did each factor help/hinder medical progress?

Why is each factor significant?

There are 35 named individuals to learn

Aristotle, Hippocrates, Galen, Rhazes, Ibn Sina, Paracelsus, Jenner, Seacole, Nightingale, Pasteur, Koch, Blackwell, Garrett-Anderson, Ehrlich, Fleming, Florey and Chain, Crick and Watson, Vesalius, Pare, Harvey, Simpson, Lister, Halsted, McIndoe, Barnard, Chadwick, Snow, Octavia Hill, Booth, Rowntree, Lloyd-George, Beveridge, Bevan

Where and in which time period did these individuals live?

What discoveries/contributions did each of these individuals make?

Which factors helped/hindered them?

How significant were they?

This is measured in how much they changed?

What was medicine like before them compared to after them?

Also, think about the limits of their success (for example Jenner knew how to prevent smallpox by vaccinating people with cowpox but he didn't know about germs so couldn't explain how his idea worked)

Give them a score out of 10 – the higher the score the more significant they were

You can revise these key figures by

- Making top trumps for each one with their details on one side and significance on the other
- Making a PowerPoint page/poster for each one that answers the questions above
- Making flash cards that ask questions about each one with the answer on the back

Name	Time Period/Job	What they did	Factors that helped/hindered	Significance/Limits
Aristotle	Ancient World Greek Philosopher 4 th Century BC	dissected animals/plants (not humans) – used scientific methods – recognised importance of brain and heart	Communication (wrote books) Science & Technology (methods he used) Religion (no human dissection)	Understood importance of brain (new idea) and heart – inspired William Harvey – ideas were wrong
Hippocrates	Ancient World Greek Doctor 5 th Century BC	Hippocratic Oath (doctors promise to do their best to heal people and keep secrets) Natural treatments (he supported natural not religious treatments) 4 Humours (Body made up of black bile, yellow bile, phlegm and blood – when these humours are out of balance within the body the person becomes ill – treatment was to purge the body of the offending humour) Clinical Observation (diagnosis, prognosis, observation, treatment – scientific approach for the role of the doctor)	Communication (wrote ideas down - Hippocratic Corpus) Science & Technology (methods he used) Religion (no human dissection and many Greeks believed that the Gods caused disease)	Clinical Observation and Hippocratic oath still used today so have defined role of doctor in medicine 4 Humours was the base of all medical thinking for over 2,000 years 1 st logical attempt to explain medicine 4 Humours is wrong (not proved wrong until Germ Theory 1861)
Galen	Ancient World Greek doctor to Roman Emperor 2 nd Century AD	Proved that the brain controlled the human body Learnt about anatomy at Alexandria (only place that dissection allowed) and through being doctor to the Gladiators Became doctor to Emperor (taken more seriously, spread his influence further) Observed the plague of 167AD (took careful notes) Treatment of Opposites (developed Hippocrates' ideas on 4 humours by offering cures) Wrote the first comprehensive guide to the human body (dissected apes/pigs etc. but not humans – made over 200 mistakes)	Communication (wrote ideas down in 100s of books, translated into Arabic and then back into Latin and Greek in Medieval times) Science & Technology (methods he used) Religion – Church kept his ideas 'alive' and made them the basis of all medical training Religion (no human dissection and many Romans believed that the Gods caused disease)	Because he was accepted by the Christian Church ('one-creator') and he wrote his ideas down and those books survived he dominated medical training and thought for 1500 years Treatment of opposites idea used by all doctors until germ theory finally proved it wrong 1 st person to try and explain how the human body works in its entirety but made over 200 mistakes (Galen claimed that humans had 2 jawbones (ape) not one, said the womb was the same as a dog, said the heart was like a pigs)
Rhazes	Medieval Islamic Doctor 9 th Century AD	He wrote over 200 books – believed in studying Galen and Hippocrates and kept their ideas alive Described the difference between smallpox and measles using clinical observation	Communication (wrote books in Arabic - translated into Latin/Greek)	Helped keep the ancient ideas alive Helped identify different illnesses Made few 'new' contributions to medicine
Ibn Sina (Avicenna)	Medieval Islamic Doctor 10 th Century AD	Wrote a medical encyclopaedia 'The Canon' that taught doctors until 1600s Known as the 'Galen of Islam'	Communication (wrote the 'Canon')	He and Galen were the two writers that doctors learnt from in Medieval and early Renaissance Made few 'new contributions to medicine – ideas were proved wrong by Germ Theory
Paracelsus	Renaissance Swiss Doctor 16 th Century	Attacked ideas of Galen and Avicenna – even publically burnt their books – said their ideas were wrong including the 4 Humours Believed that illness was caused by chemicals in the body and believed that chemicals were the cure (these chemicals were provided by Gods in	Communication (wrote books) Science and Technology (methods he used) Religion (Church criticised his attacks on Galen)	Openly challenged Hippocrates, Galen and Avicenna – allowed for others, later, to come up with new ideas Not listened to by doctors who lived at the same time Very religious and believed that God sent clues/secret messages called 'signatures' to explain how the body worked Ideas were wrong

		'secret messages' – experimented with treatments		
Jenner	Industrial British Doctor 18 th and 19 th Centuries	Proved that vaccinating people with cowpox prevented smallpox (23 cases tried). Smallpox was a terrible disease that killed and maimed millions He was given £30,000 by Parliament to develop his vaccination Anti-vaccine League campaigned against him and vaccination	Communication –wrote his ideas down and published them Science and Technology (methods he used) Government (gave Jenner research money)	Jenner created the first vaccination – his discovery inspired Pasteur amongst others Napoleon and American President recognised his contribution Jenner couldn't explain how vaccination worked because he didn't know about germs Vaccination not made compulsory and enforced in Britain until 1870s and so smallpox not killed off until 1970s
Seacole	Industrial Jamaican nurse 19 th Century	Worked for free in the Crimea treating gunshot wounds from the war and cholera – championed healthy diet and cleanliness Set up her own hospital called the 'British Hotel' within 5 miles of the battlefield	War – set up her hospital (British Hotel) in Crimea during the war	Helped 1,000s of British soldiers Largely because she was Black she didn't receive the same attention as Florence Nightingale
Nightingale	Industrial British nurse 19 th Century	From a wealthy family – volunteered to serve as a nurse at Scutari in the Crimea She was appalled by the dirty conditions – concentrated on cleaning patients and hospital (the death rate fell from 40% to 2%) Returned to Britain as a national heroine – the 'Lady with the Lamp' Wrote reports on her findings Set up a school for nurses	Communication – (wrote notes on nursing and notes on hospital) – became a national heroine because of the Times newspaper War – served during the Crimean war	Her influence made nursing a respectable profession for women (emphasis on practical skills) and resulted in hospitals being cleaned up (good ventilation, sewers, clean water, lighting – emphasis on cleanliness) Refused to accept germ theory Was more of an organiser than a hands-on nurse
Pasteur	Industrial French Chemist 19 th Century	Worked in industry to prove that germs made milk, beer and wine go off Used his research to prove that germs cause disease in 1861 (Germ Theory) In 1880s building on the work of Koch and Jenner he discovered how vaccines worked and using the process of attenuation developed vaccines for chicken cholera, anthrax and rabies	Communication (published his research – used newspapers to publish his discoveries) Chance (his researcher Chamberland made a mistake that led to the discovery of vaccination) Science and Technology (used scientific methods and swan-necked flask and improved microscopes) Government (gave Pasteur money for his research team) War (French government supported Pasteur against Koch because of war between France and Germany)	Germ Theory explains why people become ill – finally proved 4 Humours wrong Germ Theory inspires Koch to identify individual germs leading to Pasteur developing vaccinations to prevent disease. In turn this leads to the microbe hunters, magic bullets, eventually penicillin and all modern treatments Germ Theory inspires Lister to use antiseptics in surgery making it safer Germ Theory contributes to Government's cleaning up drinking water and public health as well as cleaning up Hospitals
Koch	Industrial German Doctor 19 th Century	Discovered the methods to identify, isolate, stain and photograph individual germs – anthrax and then tuberculosis Discovered septicaemia that caused blood poisoning and infection in surgery	Science and Technology (used scientific methods and improved cameras to photograph germs) Government (gave Koch money for his research team) War (German government supported Koch against Pasteur because of war between France and Prussia)	Bridged the gap between Pasteur's discovery of germ theory and the development of vaccinations Discovery of septicaemia under finger nails encouraged Lister to use antiseptics (carbolic acid) Failed to develop a vaccine for tuberculosis because his government rushed him into declaring his research

Ehrlich	Modern German Scientist 20 th Century	Part of Koch's research team Developed the first chemical cure for a disease – a 'magic bullet' – Salvarsan 606 that cured syphilis	Science and Technology (used scientific methods – Salvarsan 606 was the 606 th attempt to find a cure) Government (German government funded his research)	Salvarsan 606 was the 1 st cure for an existing disease it led to the discovery of Penicillin and Ehrlich's successor, Domagk , developed a 2 nd 'magic bullet' that cured blood poisoning
Fleming	Modern British Scientist 20 th Century	Researched ways of killing septicaemia during WWI In 1928 discovered penicillin by chance – wrote about it in a medical journal – failed to realise its potential	Chance (the story of his discovery with the microbe and the mould) War (number of casualties from blood poisoning saw Government pay for his research) Science and Technology (used scientific methods) Communication (wrote his research time)	Penicillin has saved an estimated 200 million lives – killing disease/infection in the body without killing/damaging cells Received the Nobel prize for his research and international recognition Gave up on the research of penicillin and didn't really understand its potential
Florey and Chain	Modern Australian and German Scientists 20 th Century	In 1938 Florey and Chain were studying how germs could be killed – read about Penicillin – tried it and discovered it worked on mice Tried a clinical experiment on a wounded policeman dying of blood poisoning – penicillin worked and then ran out WWII saw American government invest in mass producing penicillin – 2.3 million doses used after D-Day	Science and Technology (used scientific methods) Government US paid for their research because of War (WWII)	Penicillin has saved an estimated 200 million lives Received the Nobel prize with Fleming Didn't receive the same amount of recognition as Fleming at the time of the discovery
Crick and Watson	Modern British Scientists 20 th Century	They were adventurous scientists at Cambridge University who came up with a theory as to what DNA looked like (double helix) In London Franklin worked out how to photograph DNA using x-ray photography They used government funding to prove their theories on DNA	Chance (they only saw the 'double-helix' photo because Franklin lost her temper and pinned it to a door with a rude message) Science and Technology (scientific methods and x-ray photography) Government (paid for their research)	Understanding the structure of DNA has led to mapping out human DNA through the human genome project (took 15-years, research teams from 18 countries, internet used as information would fill 80,000 books) DNA is the future of medicine – will eventually cure/prevent genetic diseases and conditions like Parkinson's, Huntington's, down's syndrome, Alzheimer's and some cancers, allow for customised drugs, predicting future health problems, 'designer babies' and organ growth Crick and Watson only started this process – others have created its potential
Vesalius	Renaissance Flemish Doctor 16 th Century	Studied to be a doctor at Paris and Padua and eventually became professor of surgery at Padua University because they encouraged human dissections Challenged Galen by proving that he made mistakes - performed live dissections in public to demonstrate these mistakes Stole a body of a criminal just to be able to reconstruct a human skeleton Demanded that all of his students should be able to dissect a body if they wished to learn to be a doctor	Communication (wrote and printed 'Fabrica' his book on human anatomy. This was mass-produced because of the printing press) (changed the way that doctors were taught) Science and Technology (benefited from the re-discovery of perspective in Art that allowed accurate drawings to be reproduced in his books) – (also the printing press saw books mass produced, lead to more literacy and therefore better education) – (encourages the scientific	Accurately mapped out the human anatomy and showed how all bones, veins and arteries fitted together – 'Fabrica' is a comprehensive and accurate anatomical book Changed the way that doctors were trained - previously medical training had involved copying out Galen and Avicenna and watching a barber-surgeon cut open a body, Vesalius insisted that dissection should be done by the trainee doctor. Challenged his students to discover things for themselves not just accept what they were being taught (used Galen and his mistakes as an example of this) Proved that Galen made mistakes – began to challenge the control of Christian Church over medical progress

			approach of enquiry and discovery)	Many doctors refused to believe that Galen could be wrong Vesalius offered no changes to treatment – doctors had to still use Galen’s treatment of opposites
Pare	Renaissance French Surgeon 16 th Century	Learnt surgery at the Hotel Dieu in Paris. Worked as an army surgeon for 20-years. Wrote lots of books on surgery. Changed the treatment of gunshot wounds – rather than burning oil he used egg yolk, rose oil and turpentine. He used ligatures of silk thread to stop bleeding rather than cauterisation. Designed and made false limbs for wounded soldiers. Proved that the bezoar stone didn’t cure poisons.	Communication – Pare wrote all his ideas down and his books were very popular. Chance – Pare only used his new treatment for gunshot wounds because he ran out of oil. Science & Technology – crow’s beak tool used to help tie up arteries	Ligatures were a huge breakthrough for patient care but didn’t consistently work because Pare didn’t know about germs and needed to use a better antiseptic than turpentine. Pare’s improvements are minimal compared to the surgical breakthroughs of the C19 th – anaesthetics, antiseptics etc.
Harvey	Renaissance English Doctor 17 th Century	Studied medicine in Cambridge and Padua. Became doctor to Charles I. Proved that the heart acted like a pump, pumping blood around the body. He proved that Galen and the 4-humours were wrong because the blood was re-used and you couldn’t have too much.	Communication – published his book explaining blood circulation in 1628. Science & Technology – he used scientific methods to prove his discoveries. He based his ideas on the heart on a new invention, the mechanical water pump. He used regular dissections of humans and animals to reach his conclusions.	Harvey was the first person to explain how the heart worked. Without his discoveries, surgery wouldn’t have developed. He proved the importance of dissections. He proved that the 4-humours were wrong. Harvey didn’t explain everything about blood (blood groups etc.). His ideas were only gradually accepted. His discoveries did not change treatments – people continued to use Galen’s treatment of opposites long after Harvey.
Simpson	Industrial Scottish Surgeon 19 th Century	Was professor of midwifery at Edinburgh University. In 1847 he was looking for a better anaesthetic than ether when he discovered chloroform He used it for surgery and childbirth.	Communication – wrote his ideas down and publicised them. Chance – discovered the anaesthetic effects by luck.	Chloroform was a much better anaesthetic than ether. However, it was very dangerous since a fraction too much of it could kill a patient – particularly the young and anxious. These concerns were finally addressed by John Snow (doctor to Queen Victoria) who invented a safe way of giving chloroform
Lister	Industrial Scottish Surgeon 19 th Century	Was a surgeon at Glasgow University. Discovered that carbolic acid that was used to treat sewage in Carlisle worked as an antiseptic and killed germs. Had read and studied the work of Pasteur and Koch. He used carbolic acid in a spray form in all of his operations.	Communication – wrote and published his discoveries.	Lister was building on the research of Pasteur and Koch and owed a lot to them. His use of antiseptics led to aseptic surgical ideas being used into the C20 th and ended the ‘Black period’ of surgery. More complex operations were now possible. Used antiseptic ligatures. Antiseptics saved countless thousands of lives after surgery since the process prevented blood poisoning. His ideas were not accepted by his fellow surgeons – operating with carbolic acid was awkward because of the moisture and the acid often irritated the eyes and skin.
Halsted	Modern American Surgeon 20 th Century	Used the first rubber gloves in surgery because his sweetheart, Caroline Hampton, was suffering from the effects of carbolic acid.	Communication – spread the idea of using rubber gloves in surgery – first aseptic surgical technique.	Only a relatively small step forward compared to other like Lister.

McIndoe	Modern New Zealand Surgeon 20 th Century	Served as surgeon to the Royal Air force in WWII. Did over 4,000 operations on burns victims using skin grafts that had first been used in WWI.		Pioneered this new surgical procedure that is commonplace today, mainly for cosmetic purposes. Was building on the work of many other surgeons during WWI.
Barnard	Modern South African Surgeon 20 th Century	Carried out the 1 st successful heart transplant in 1967.	Communication – shared his ideas and inspired others.	Patient only survived for 18-days but he inspired other surgeons to try transplants and today they're relatively common.
Chadwick	Industrial British Politician 19 th Century	Worked for the Government and wrote his Report on Poverty in 1842 that said that poverty caused illness and people should pay higher taxes to help the poor. He wanted the government to improve drainage and sewers, remove waste from streets and houses, provide clean drinking water and medical officers. His Report led to the 1 st Public Health Act of 1848 that suggested councils did some of the above.	Communication – his report began the process of change in Government involvement in public health.	Chadwick's report started the process by which government improved public health. He was one of the first to state that people could not help being poor and therefore needed help. Unfortunately Chadwick was an unpopular man – arrogant and rude – and there was lots of opposition to his ideas. The 1 st Public Health Act was only voluntary and not compulsory and therefore most councils around the country did not act upon its recommendations. Chadwick later refused to believe germ theory
Snow	Industrial British Doctor 19 th Century	He was Doctor to Queen Victoria – eased her birth pains with her 4 th child by using chloroform. Invented a safe way for chloroform doses to be given. After a cholera epidemic on Broad Street in London in 1854 he proved that dirty water had caused people to catch and die of cholera.	Communication – published his ideas and was taken seriously because he was the Queen's Doctor. Science & Technology – used scientific methods to prove the link between dirty water and cholera. Influenced the Government to improve Public Health further.	Built upon the ideas of Simpson and Chadwick and hinted at Pasteur's discovery of Germ Theory. However, didn't make any lasting or accurate discoveries of his own – his ideas on dirty water were close to the truth but not accurate.
Octavia Hill	Industrial British campaigner 19 th Century	Over her lifetime bought and cleaned up over 2,000 slum houses in the poorest parts of London so that poor people could have a healthier life.	Communication – campaigned in newspapers to force the Government to take Public Health more seriously.	Her campaigns encouraged others to do the same and in 1875 she convinced the government to pass a law to allow councils to knock down slum housing. Greatly influenced Charles Booth. Others made a greater contribution to Public Health.
Charles Booth	Industrial British campaigner 19 th Century	He used his own money to investigate poverty in London in 1886. Discovered that 35% of East End Londoners were living in terrible poverty. He argued that government must do more to help poor people and suggested a pension for old people.	Communication – Booth's report shocked the country and was published in the national newspapers. People began to put pressure on the Government to pass more laws.	Booth's report helped persuade Lloyd-George and others to pass the liberal social reforms. These reforms were not passed for another 20 years and Booth was not actively involved in making these new laws.
Rowntree	Modern British campaigner 20 th Century	Chocolate factory owner from York who used his own money to investigate poverty in the city. A third of people in York were living in terrible poverty and their health was suffering as a result. In 1941 he carried out a further study that showed a 50% improvement in the lives of York's poor because of government changes.	Communication – Rowntree's report shocked the country and was published in the national newspapers. People began to put even more pressure on the Government to pass more laws.	Rowntree's report helped persuade Lloyd-George and others to pass the liberal social reforms. These reforms were not passed for another 20 years and Rowntree was not actively involved in making these new laws.
Lloyd-George	Modern British politician	Chancellor and then PM who was the main politician in pushing through the Liberal Social Reforms at the	Government – Lloyd-George changed the way that government's treated	The Liberal Social Reforms are still used today and protect the poorest and weakest people in society from terrible poverty.

	20 th Century	beginning of the C20th. These included free school meals for children, pensions for the elderly and National Insurance for workers. This was the beginning of the Welfare State and the end of terrible poverty in Britain. After WWI Lloyd-George campaigned for 'Homes for Heroes' where council estates were built to replace all of the slums in cities.	poor people. For the last 100 years governments have tried to protect people from poverty not claim that the problem was not theirs to solve.	The health of the people of Britain improved significantly after these laws. Lloyd-George was one of many Liberals who passed these laws. The laws didn't make healthcare cheaper and most poor people still couldn't afford to visit a Doctor.
Beveridge	Modern British politician 20 th Century	Politician who wrote a Report on poverty in 1942 that suggested that the government set up a NHS – free healthcare from 'cradle to grave'. The Report sold over half a million copies during WWII. The Labour party promised to introduce the NHS and the conservatives didn't. As a result, despite Churchill being a war hero, in 1945 the people voted him out of office and Labour won the election.	Communication – a government report that became a best-seller! Government – the report was so popular that its contents dictated the results of the 1945 General Election.	The NHS is one of Britain's greatest achievements and has significantly improved Public Health. All hospital and Doctor care was free, paid for by taxes. Many people went to see a Doctor for the 1 st time. Life expectancy has improved rapidly since the NHS was created in 1948. Beveridge only wrote the report; the work to introduce the NHS was done by others.
Bevan	Modern British politician 20 th Century	Minister for Health in the Labour government that brought in the NHS in 1948. Had to fight to get it accepted by Doctors and other health professionals.	Government – arguably the man responsible for introducing the most significant public health event in history.	The NHS is one of Britain's greatest achievements and has significantly improved Public Health. All hospital and Doctor care was free, paid for by taxes. Many people went to see a Doctor for the 1 st time. Life expectancy has improved rapidly since the NHS was created in 1948. Bevan was only one of many Labour politicians campaigning for the NHS.
Blackwell	Industrial British female Doctor 19 th Century	Born in Bristol but had to go to USA to qualify as a Doctor which she did in 1849. Set up a hospital in New York for poor women and children staffed entirely by women.	Communication – news of her success as the first female Doctor inspired many other women to get involved in medicine including Elizabeth Garrett-Anderson.	She inspired women to become Doctors and was the 1 st British woman to work as a Doctor. She only worked in USA so her impact was minimised in Britain.
Garrett-Anderson	Industrial British female Doctor 19 th Century	She was the 1 st woman to qualify as a doctor in Britain and became a pioneer for countless thousands of women since. She completed all of her training but was not allowed to take her medical exams. She had to struggle her whole adult life to be recognised as a doctor and took the male run colleges of doctors to court for not allowing her to become a member. She won her case.	Communication – her struggle became an example for others to follow.	In 1876 a law was passed allowing women to complete all medical qualifications. Today, in this country, more women are qualifying as doctors than men. The struggle for recognition and equality continued for many years and included lots of other women such as Sophie Jex-Blake.