Although this unit starts in the Middle Ages, Greek and Roman ideas continued to be widely believed in that time.

**ANCIENT GREECE**

## Natural Beliefs and Treatments – The Theory of the Four Humours

* Hippocrates suggested the body was made up of four humours – blood, phlegm, yellow bile and black bile.

These were linked to the four seasons and the four elements. They need to be in balance for good health.

* Treatments developed from the theory aimed at bringing humours into balance. You could get rid of an excess humour by purging, vomiting or blood-letting.
* This was natural explanation of illness and although wrong, shaped medical knowledge up until around 1800 AD! It was also the first popular natural explanation of illness – an improvement on supernatural ideas.

## **ANCIENT ROME**

Claudius Galen – He wrote 60 medical books!

* Galen was a Greek physician. Like Hippocrates, he believed that illness was caused by imbalances of the four humours. Just as Hippocrates did, he told doctors to observe patients carefully and record symptoms.
* He developed the idea of opposite humours for counter-balancing the body’s humours.
* Galen discovered that the brain, not the heart, controls the speech.
* He found that the arteries, as well as veins, carry blood through the body.
* Proved that animal’s anatomy is different from humans.

### **HOWEVER…**

* Galen made mistakes because he had to use only animals.
* He said there were holes in the septum of the heart which would let blood pass from right to the left side.
* Galen also believed that the blood was consumed rather than circulated.

### **MEDIEVAL ERA – c1200-c1500 AD.**

#### Background Information – The Early Middle Ages

* Wars destroyed the Roman public health systems and medical libraries.
* The rulers of kingdoms built up armies rather than improving medical skills or public health.
* War disrupted trade so countries became poorer.
* Travel became more dangerous, reducing the communication between doctors.

***HOWEVER, BY c1200……..***

* The Christian church set up universities where doctors could be trained.
* Armies took trained doctors to war with them where they gained experience as surgeons.
* Rulers made some – limited attempts to clean up towns.
* Merchants and scholars were once again travelling around Europe, sharing ideas

#### Influence of the Christian Church

* The Christian Church grew stronger in the Middle Ages.
* Monasteries controlled education, priests and monks were the only people who could read. The Church opened medical schools where the ideas of Galen were taught. Dissection was banned at the start of the period and at the end one dissection could be carried out each year by a teacher’s assistant – this restricted knowledge of anatomy.
* The only libraries were in monasteries, the church sometimes banned books they did not want people to read. Galen’s books were encouraged due to his belief that there was a divine designer – God!
* Monasteries made an effort to provide clean running water and toilets for monks – this contrasts with poor public health in Medieval cities.
* The Church encouraged faith healing to earn God’s forgiveness for sin – this discouraged people from looking for natural explanations and treatments for disease. Some believed that pilgrimages to holy shrines could cure illness. Doctors had superstitious beliefs, saying magical words when treating patients and consulting stars.

#### Medieval Hospitals –

#### Medical care for the poor came from hospitals set up by monasteries, and run by monks and nuns.

* The first hospitals appeared in the 11th Century and were more like hospices caring for old people – with care consisting of providing warmth, food and an encouragement to pray. They provided “hospitality” for visitors. At better hospitals herbal remedies might be used.
* The sick were rarely admitted just in case disease was spread amongst the patients.
* The most famous of the early hospitals was St Bartholomew’s in London.
* In the 13th Century trade guilds set up small hospitals for members of their professions.
* Hospitals for lepers, unmarried women and other groups were also set up in small numbers.

#### New Developments in Medieval Medicine

* New techniques included diagnosis by urine sample. This is a good aid to diagnosis, which is done today!
* Doctors also believed the stars caused disease and relied on astrology when deciding on treatments and when they should be used.
* Trained doctors were very expensive. So more people came to rely on wise women using practical remedies, apothecaries and their herbal remedies as well as basic surgery from barber surgeons.

#### Developments in Surgery

* In the Middle Ages, there was great demand for surgery because of warfare.
* Surgery was held in such low regard that many procedures were often left to untrained barber-surgeons.
* Wine was first used as an antiseptic.
* Surgical treatments were still simple, as major surgery was risky. Amputations were the most frequent kind of operation along with bleeding and sewing up wounds.

#### Public Health Measures

* Towns lacked the public health schemes of the Romans.
* People relied on cesspits and wells. Waste was frequently disposed of into the street.
* People found it healthier to drink beer, than to drink water.

#### The Black Death – 1348

* Spread by coughs and sneezes or by black rat flea bites – black rats were carried overseas by ships.
* Arrived in Britain in 1348. Its victims were struck down suddenly and most died.
* Symptoms included exhaustion, high temperatures, swellings and difficulty breathing.  Ships were made to wait 40 days before landing – they were quarantined.

What did people think caused the plague and how did they treat it?

* Miasma – carried sweet smelling herbs, sat between two large fires.
* God – tried to appease god by praying, or becoming flagellants (whipping themselves as a punishment).
* Humours out of balance – use of opposites, purging, vomiting and blood letting.
* Poisoned water – blamed the Jews.

Quick Summary of Medieval Medicine.

* Doctors followed the ideas of Galen. They believed illness was caused by an imbalance in humours.
* Believed that God and the Devil influenced health. Disease was seen as God’s punishment for sins.
* Astrology became important. Doctors studied star charts because they believed that the movement of the planets affected people’s health.
* The Middle Ages were all about tradition!

**RENAISSANCE c1500-c1750**

##### Background to the Renaissance

* Renaissance means rebirth. It began with close study of classic texts and was critical of old translations. There was a greater interest in how the human body worked based on observation and dissection.
* Artists attended dissections of human corpses and did wonderful illustrations for medical books.
* Return of classical texts led to a renewed faith in the four humours theory and treatment by opposites.
* The invention of the printing press means that more people can read books – leading to a wider spread of ideas.
* This was an age of new discoveries such as Columbus – America. There was a culture of investigation.
* The Reformation split the Christian Church in half (Protestants and Catholics). This weakened the power of religion to control and censor new ideas as they had done in the Middle Ages.

##### Andreas Vesalius – Anatomy (16th Century)

* Studied anatomy, became professor of surgery and anatomy at Padua. He was allowed to do dissections.
* Did his own dissections and wrote books based on his observations using accurate diagrams to illustrate his work. His most famous book was ‘On The Fabric of the Human Body’ written in 1543.
* He was able to point out some of Galen’s mistakes. Vesalius said there were no holes in the septum of the heart and that the jaw bone is not made up of two bones.
* Vesalius encouraged doctors to dissect and look for themselves.
* Although his ideas were accurate there was resistance due to continued support for Galen.

##### William Harvey – Circulation of the Blood (17th Century)

* Discovers the circulation of the blood, disproving Galen’s ideas.
* Identifies the difference between arteries and veins and the one way system of blood flow.
* Realises that the heart is a pump.
* Becomes doctor to the King, his ideas are very influential.
* To spread his ideas he writes “An Anatomical Account of the Motion of the Heart and Blood”.
* However, bleeding operations still continue after Harvey as people are unsure of what else to do.
* Many still refused to accept that Galen was wrong.
* Blood groups are discovered in 1901, which makes blood transfusions successful.

#### Thomas Sydenham - Practical approaches to medicine (17th Century)

* Became known as the ‘English Hippocrates’ because of his emphasis on careful observation.
* He told doctors to build up detailed past medical histories for patients – including symptoms. This would then able doctors to make the correct diagnosis. He felt that specific illnesses had their own specific causes.
* Rest and diet were preferred treatments and he discouraged bleeding, purging and vomiting.

#### Renaissance Hospitals –

* Monastery hospitals were closed down by Henry VIII in the 1530s.
* Some were taken over by local councils, individuals and charities.
* St Bartholomew’s grew - 300 patients by 1660. Herbal remedies were increasingly used and there was an emphasis on treating illnesses, but this was rare.
* Most hospitals still didn’t accept people with infectious illnesses and only provided food, warmth and prayer.

##### The Great Plague of 1665

* This was the worst of the reappearances of the Black Death. The death toll in London was about 100 000.
* Efforts were made to control the spread of disease. Households were locked in and red crosses were painted on their doors with the words, “Lord have mercy upon us.”
* Carts organised by the authorities roamed the city to the now infamous cry of “Bring out your dead!” collecting corpses for mass burial in “plague pits”.
* People realised disease was contagious, but they still didn’t understand about germs causing disease.
* The Great Fire of London in 1666 effectively sterilised large parts of London, killing the plague bacteria.

##### Public Health

* There were many wars during the renaissance. Warfare gobbled up resources.
* Populations were beginning to increase in the towns and cities, placing more strain on the available clean water supplies and sewage disposal systems.

**1750 TO 1900 - Industrial Revolution**

##### **Background Information**

Why Had They Stopped Reading Galen in the Nineteenth Century?

* New understanding of the body and Galen’s descriptions were incomplete and sometimes wrong.
* The invention of the proved that Harvey’s ideas were right.
* Theory of the four humours no longer accepted. People initially thought that miasma, caused disease.
* Doctors carried out dissections and used microscopes. Galen’s books were no longer important.

##### **Smallpox**

##### Inoculation

* In the 18th century, smallpox was a big killer. Lady Mary Wortley Montagu brought inoculation to Britain.
* She discovered that a health person could be immunised against smallpox using smallpox.
* However, inoculation sometimes led to smallpox and death.

###### Edward Jenner (18th Century)

* Jenner was a country doctor. He heard that milkmaids didn’t get smallpox, but instead a milder cowpox.
* Jenner investigated and discovered people who had already had cowpox didn’t get smallpox.
* In 1796 he took a small boy and injected him with pus from the sores of a milkmaid with cowpox. Jenner then injected James Phipps with smallpox. James didn’t catch the disease!

###### Opposition to the Smallpox Vaccination

* Jenner could not scientifically explain how it worked.
* Inoculators were afraid of losing money.
* Many were worried about side effects; they worried about giving themselves a disease that from cows.
* Some members of the Church believed that vaccination was not natural.
* Opposition was overcome though with the support of the government – who gave Jenner money to set up a vaccination clinic. In 1871 vaccination was made compulsory – which significantly reduced the number of deaths from Smallpox.

##### **Developments in Nursing**

##### Florence Nightingale (19th Century)

* Nightingale brought discipline and professionalism to a job that had a bad reputation at the time.
* From a wealthy background, she became a nurse despite the opposition of her family.
* Went out to the Crimean War to sort out nursing care in the English camp.
* She made huge improvements in the death rate, due to improvements in ward hygiene.
* When she returns home, she writes a book ‘Notes on Nursing’ and sets up a hospital in London. She also set up the Nightingale school for nursing. Her work improved both nursing care and hospital design.

**How Did Scientists Discover the Causes of Disease?**

###### Louis Pasteur’s Germ Theory – 1861

* Scientists thought microbes were caused by disease and appeared because of illness. This was the theory of spontaneous generation. Instead of blaming microbes, people looked for miasmas.
* Louis Pasteur was employed to find out why beer was turning sour. His answer was to blame germs in the air.
* He proved there are germs in the air by sterilising water and keeping it in a flask that didn’t allow airborne particles to enter. This stayed sterile – but sterilised water kept in an open flask bred microbes again.

###### Robert Koch

* German scientist. He began linking diseases to the microbe that caused that specific disease.
* Koch developed a solid medium to grow cultures, and dyeing techniques to colour microbes, which he viewed through high-powered microscopes.
* He identified anthrax spores and the bacteria that cause septicaemia, tuberculosis and cholera.

###### Louis Pasteur – Chicken Cholera Vaccine

* Hearing of Koch’s, Pasteur came out of retirement and competed to find new microbes and combat them.
* Pasteur looked for cures to anthrax and chicken cholera. Both he and Koch worked with large teams of scientists. Charles Chamberland was in Pasteur’s team.
* Chamberland was told to inject chickens with chicken cholera, but it was the day before his holiday and he forgot. He left the germs on his desk and injected the chickens when he returned from his holiday.
* The chickens survived, Pasteur and Chamberlain tried again with new germs, but the chickens survived.
* The cholera had been weakened by being leftout, and the weakened cholera made the chickens immune. Chamberland’s error had produced a chance discovery.

###### Louis Pasteur – Anthrax Vaccine

* Pasteur’s team managed to produce a weakened version of the anthrax spore that would make sheep immune to the disease. They demonstrated this in a public experiment. Other vaccinations were to follow.

**Overcoming the Problems of Surgery**

Surgery in the early 1800s was **dangerous** and **painful.** **Infection** was the greatest danger to patients.

What problems faced surgeons in 1800?

1. **Pain** – patients can die of clinical shock during surgery.
2. **Infection** – people were unaware of microbes that cause infection. Surgeons would wear the same dirty apron for every surgical procedure they carried out, passing on infection between patients.
3. **Bleeding** – patients can die if they lose too much blood during surgery and it couldn’t be replaced as there was no knowledge of blood groups.

How was the problem of pain overcome?

In 1800, surgeons tried various ways to ease the suffering of patients – e.g. getting them drunk, knocking them out and giving them opium.

**Nitrous Oxide** or ‘laughing gas’ was discovered by Sir Humphry Davy. It was never really widely used.

**Ether** used by J.R. Liston during a leg amputation. However, it had very unpleasant side effects.

**Chloroform** used by James Simpson and some friends at his home. They realised that it could be used as during surgery. However, it led to unexplained deaths. The dose given could not be measured or controlled.

Reasons for opposition to anaesthetics:

* They were uncomfortable for patients.
* Some doctors believed that pain was good for healing.
* People didn’t understand how they worked.
* Didn’t understand the side effects that new substances could have on the body.

The final acceptance of anaesthetics:

The final breakthrough came when Queen Victoriaaccepted the use of chloroform as an anaesthetic during the delivery of her eighth child – the role of Government in accepting change.

How was the problem of infection overcome?

Until germ theory in the 1860s, surgeons didn’t take precautions to protect open wounds. They reused bandages, didn’t wash their hands before operations and didn’t sterilise surgical equipment.

Joseph Lister and the discovery of antiseptics:

* Heard that carbolic spray was used on sewage. He knew sewage had a similar smell to gangrene.
* He had read the work of Pasteur on his germ theory. He was prepared to take risks.

Reasons for opposition to Lister:

* Lister’s methods slowed down surgery.
* The spray was uncomfortable for doctors to use, it affected their skin.
* Pasteur’s germ theory was not widely accepted in the early 1860s.
* Surgeons did not copy his methods correctly and were therefore disappointed with their results.

The final development of aseptic surgery:

By the late 1890s Lister’s antiseptic methods led to aseptic surgery. This is the removal of all possible germs from theatres to ensure absolute cleanliness. The following methods were introduced…

* Operating theatres and hospitals were rigorously cleaned.
* All surgical instruments were steam sterilised.
* Sterilised rubber gloves were first used and surgeon’s hands were scrubbed.

How was the problem of bleeding in surgery overcome?

Once William Harvey had discovered the circulation of the blood, the first blood transfusions were attempted. Early blood transfusions often ended disastrously because…

* Blood groups had not been discovered.
* They could not prevent the blood from clotting.
* Infection could be passed on.
* There was no solution to the problem of blood loss in the 19th Century.

##### **Developments in Public Health**

###### Public Health Problems in the Early 1800s

* During the late 1700s and the first half of C19th, conditions in British towns became worse than ever.
* Houses were built as close together as possible as more people crowded into factory towns to work – back to back, court dwellings and tenements were common. These quickly became slum dwellings.
* Towns could not cope with the need to provide people with water and sewage disposal facilities. Cess pits and dung hills were found in streets across the country.
* In these squalid conditions, diseases spread easily and rapidly.
* The conditions were so bad that many people’s health may have even become worse than ever before – with diseases like TB, measles and pneumonia being major killers.

###### The Battle to Improving Public Health

* Some thought that the government should force local councils to clean up their towns.
* However, many believed that the government shouldn’t interfere – this attitude is called laissez-faire.
* They believed the government should allow each local area to control its own affairs.
* This meant that local ratepayers made all the decisions. Local ratepayers didn’t want the government to force them to pay for improvements to their towns.

###### Edwin Chadwick

* In 1842 he was asked by the government to report on the living conditions and health of the poor.
* Chadwick concluded that poverty was caused by ill health which was caused by the terrible conditions in which people lived.
* He said that ratepayers can cut their taxes and save money in the long-term by looking after the poor and to spend money improving their health.
* In his “Report on the Sanitary Conditions of the Labouring Population” he said industrial towns should:

o Organise drainage and refuse collection o Provide a pure water supply o Appoint a Medical Officer of Health

For over 30 years an argument went on about the need for town councils or the government to take action. Towns such as Liverpool and Manchester did start to build sewage and water-supply systems.

###### 1848 Public Health Act

* The government did nothing at first about Chadwick’s recommendations.
* However, in 1848 there was another outbreak of cholera, this put pressure on the government to do something. Parliament reluctantly agreed to pass Public Health Act.
* Although it was **not** **compulsory.** The government set up a Board of Health to encourage, but not to force, local authorities to improve conditions.
* They gave local authorities money to make improvements in their areas if they wanted to and had the support of local ratepayers.
* Only a few local authorities took any new measures.
* By 1872 only 50 Medical Officers of Health had been appointed.
* The Board of Health was abandoned in 1854.

###### 1853 John Snow

* In 1854 John Snow proved that there was a link between cholera and water supply. He used research, observation and door-to-door interviews to build a detailed map of a cholera epidemic in Broad Street.
* Nearly all the deaths had taken place within a short distance of the water pump.
* Near to the pump, there was a brewery and none of the people there had cholera. The brewery had its own water pump, and the men had been given free beer. They didn’t use the Broad Street Pump at all.
* After collecting evidence, John Snow removed the handle from the Broad Street pump.
* There were no more deaths. It later came to light that a cesspool near to the pump had a cracked lining which allowed the contents to contaminate the drinking water.
* Snow put pressure on water companies to clean up their water supplies.

###### 1858 Great Stink

* For years human waste made its way from the latrines in London into the River Thames.
* In 1858 the hot weather caused a ‘great stink’. The putrid smell was right under Parliament’s nose.
* Parliament considered moving and had to coat their curtains with a deodorant to get rid of the smell.
* The Great Stink prompted Parliament to sort out London’s sewage and drainage system and to clean up the River Thames.
* Within a year Sir Joseph Bazalgette had begun to build an extensive system of sewers and drains that are still in operation today.

###### 1867 Second Reform Act

* Working class men were given the right to vote.
* For the first time, it wasn’t just the ratepayers who got a say in improving public health.
* MPs were forced to improve the living conditions of the poor.

###### 1875 Second Public Health Act

Unlike the 1848 Public Health Act, the 1975 Public Health Act actually **forced** local authorities to introduce the following measures:

* Provision of clean water
* Proper drainage and sewage
* The appointment of a Medical Officer of Health

The Public Health Act of 1875 was very effective. By 1900 most British towns had built effective hygiene and water systems.

###### Result of the Public Health Act of 1875

* Improved the standards of housing
* Stopped the pollution of rivers from which people got water
* Shortened working hours in factories for women and children
* Made it illegal to add ingredients that made food unhealthy .

**20TH CENTURY**

###### **The Discovery and Development of Penicillin**

1 Fleming discovered mould killed germs. Writes articles but publishes them in book with an obscure name. 2 Chain and Florey begin research in Oxford after reading an article by Fleming. They experiment with mice.

1. Penicillin is first tested on a human being in Oxford.
2. U.S. and Britain fund production of penicillin.
3. Enough penicillin is produced to treat all the allied forces wounded in the D-Day invasion of Europe.

How Was Penicillin Discovered?

* The discovery of penicillin is a great example of a chance finding helping science.
* One day in 1928 Fleming came to clean up some old culture dishes he had been growing bacteria for his experiments on. By chance, a fungal spore had landed and grown on one of the dishes.
* He noticed that colonies of bacteria around the mould had stopped growing. The fungus was identified and the substance given the name penicillin. It produced a substance that killed bacteria.
* Fleming was unable to take his work further. The industrial production of penicillin still needed work.

How Was Penicillin Developed?

* In the 1930s two Oxford scientists, Florey and Chain, became interested in Fleming’s 1929 paper.
* In 1939 they gathered a skilled research team and three days after the outbreak of the Second World War Florey asked the British Government to fund the team’s research into penicillin.
* British chemical firms were too busy making explosives to start mass production – so Florey went to US.
* America helped to mass produce penicillin, the casualties of the Second World War added to the urgency.
* By 1944 mass production was sufficient for the needs of the military medics. Fleming, Florey and Chain were awarded the Nobel Prize in 1945.

Factors Leading to the Development of Penicillin

* Government – British government funded Florey’s research, U.S. government funded mass production.
* Technology – microscopes and bacteria growing mediums.
* Scientific experiment – testing on mice.
* Individuals – Florey and Chain were skilled scientists supported by a skilled team of researchers.
* War – the growing casualties of World War Two added to the urgency to mass produce penicillin.
* Chance – Alexander Fleming discovered penicillin by chance in 1928.

Impact of the Second World War

* Blood transfusion –blood could be stored for longer, civilians donated blood.
* Diet – rationing improved some people’s diet, government encouraged healthy eating.
* Drugs – penicillin was developed as the first antibiotic.
* Poverty – evacuation took children out of urban areas. Highlighted contrast between rich and poor.
* Surgery – developments in the use of skin grafts and treatment of burns.
* Hygiene – government posters education people about health and hygiene.

###### **The National Health Service**

Influence of WW2

* WW2 broke down social distinctions and brought people together.
* The raising of armies made powerful people take notice of the health problems of the poor.
* Evacuation of children increased awareness of how disadvantaged many people were.
* After the Second World War people looked for improvements in society. Such feelings led to the 1945 victory for the Labour Party.

Introduction of the NHS

* Sir William Beveridge published his famous Beveridge Report in 1942. In it he called for the state provision of social security “from the cradle to the grave”. The report became a bestseller.
* Aneurin Bevan was the Labour Minister for Health who introduced the National Health Service.
* National Insurance was introduced to pay for the NHS. Doctors and dentists were wooed with a fixed payment for each patient. They were also allowed to continue treating private fee-paying patients.

The NHS Still Has A Few Problems…

* Governments have reduced how much of the NHS is free – charging for prescriptions and dental health.
* Long waiting lists and doubts about the quality of treatment have led to paying for treatment outside NHS.
* Longer life expectancies have meant more need for care of the elderly and increased costs for the NHS.

Improved treatments.

Hundreds of high-tech medical and surgical treatments are now being carried out.

* Advanced x-rays: e.g. radiotherapy that can shrink tumours
* Smaller cheaper machines: helps provide dialysis to those patients who need it, as well as allowing heart bypasses.
* Robotics: prosthetic limbs which have helped people of bomb attacks, war injuries as well as road traffic injuries
* Microsurgery: reattach tiny nerve endings and blood vessels
* Keyhole surgery: surgeons can operate through tiny incisions – quicker healing, less trauma, quicker recovery time
* Robotic surgery: brain surgery – smaller cuts, computers to control instruments

Improved understanding of the causes of illness

* Pasteur’s breakthrough in the 19th Century that bacteria was the cause of illness – was continued to be accepted in the 20th and 21st centuries.
* However the work of Watson and Crick has demonstrated that genetics also play a significant role in health.

What factors helped the development of genetics?

1. TECHNOLOGY: Discovering the shape of DNA, and then mapping the individual genes has been made possible through improvements in technology. Advances in electron microscopes and the ability to produce higher-powered images enabled scientists to identify the DNA and then start to examine how it is formed.
2. SCIENCE: Understanding DNA required a lot of collaboration on the part of the scientific community.

The impact of science of genetics

* Better understanding of DNA and how each part of the genome affects the body, helped scientists to recognise genetic disorders
* Not a current treatment – good understanding of genetics has helped doctors to better understand what causes diseases and illnesses, but the science is not yet at the stage where treatments of this nature are widely available for man diseases

Lifestyle and health and its impact on health

|  |  |
| --- | --- |
| Smoking | Became popular in the 1920s. By the 1950s, doctors started to notice a worrying rise in the number of men suffering from lung cancer, and this was linked with smoking. Doctors now recognise that smoking is associated with an enormous variety of diseases (high blood pressure, cancer, heart disease, gum disease and tooth decay). Smoking is the biggest cause of preventable diseases in the world. Causes problems if inhaled second-hand – government introduced laws to prevent adults smoking in cars when under 18s are present |
| Diet | Due to the Four Humours, our medieval ancestors believed that what we ate had a huge impact on your health – we now recognise what you eat and how much of it, has a huge impact on your health – but in very different ways to what was suggested in the Middle Ages.  Most people are familiar with the usual advice about a healthy diet – plenty of fresh fruits and vegetables, most other things in moderation. Two importance substances when it comes to health are sugar and fat – too much sugar can cause type two diabetes and too much fat can lead to heart disease |
| Alcohol | Drinking too much alcohol can lead to liver/kidney problems and disease |

What new methods have been used to diagnose disease and illness?

* Development of machines and computers has enabled doctors to have a better understanding of a patient’s symptoms. X-rays and CT scans mean doctors no longer have to use surgery to diagnose all disease.
* Routine checks and health MOTs have helped to diagnose illnesses early.

Overview of lung cancer

* Second most common cancer in the UK
* Most lung cancers are caused by external factors e.g. 85% of cases are people who smoke or have smoked.

Use of science and technology in diagnosing lung cancer

* By the time lung cancer is detected it is usually very advanced.
* There is no national screening for lung cancer, no routine testing like breast cancer (mammograms) or cervical cancer (smear tests)
* Tests are not always accurate enough to outweigh the negative effects of the screening (exposed to radiation)
* Before, lung cancer was diagnosed using an x-ray machine – lung abscesses could be mistaken for cancer, or cancer could be mistaken for something less threatening

How do you treat lung cancer?

There are several different ways to treat lung cancer, depending on the type and how early it is caught.

1. If caught early, then doctors can perform an operation to remove the tumour and the infected part of the lung.
2. Transplants: replace lungs with a transplanted healthy donor.
3. Radiotherapy: concentrated waves aimed to shrink the tumour. If it is a small tumour, this means it is likely that no surgery would be needed, if it is a large tumour, it can prevent it becoming bigger.
4. Chemotherapy: injection of drugs to either shrink the tumour before surgery, prevent it reoccurring or to provide relief from symptoms if surgery is not possible.
5. Genetic research: cannot use genetics to treat but can test tumours as some chemotherapy drugs work better in lung patients whose tumours have certain genetic mutations.

How have the government tried to prevent lung cancer?

Government has been slow to respond to the evidence that smoking is linked to lung cancer – the evidence was first published in 1950. By 1985, smoking-related deaths cost the NHS £165 million a year (although they earnt 4 billion from tobacco tax)

|  |  |
| --- | --- |
| Changing behaviour | Influencing behaviour |
| * 2007 government banned all smoking in all workplaces, including pubs, cafes, restaurants and offices * 2015 the ban was extended to cars * 2007 the age to buy tobacco increased from 16 to 18 * Increased taxation on tobacco products | * Ban on tobacco advertising starting with cigarette advertising in 1965 * Banned cigarette advertising entirely in 2005 * Campaigns to show the dangers * All cigarette products in shops removed from display |