How has the fight against Lung Cancer developed in the 21st Century?

Lung cancer is the second most common cancer in the UK. It mainly affects people over the age of 40.

85% of people with lung cancer smoke or have smoked. It is only more recently where there is little doubt as to the connection where this number is starting to fall.

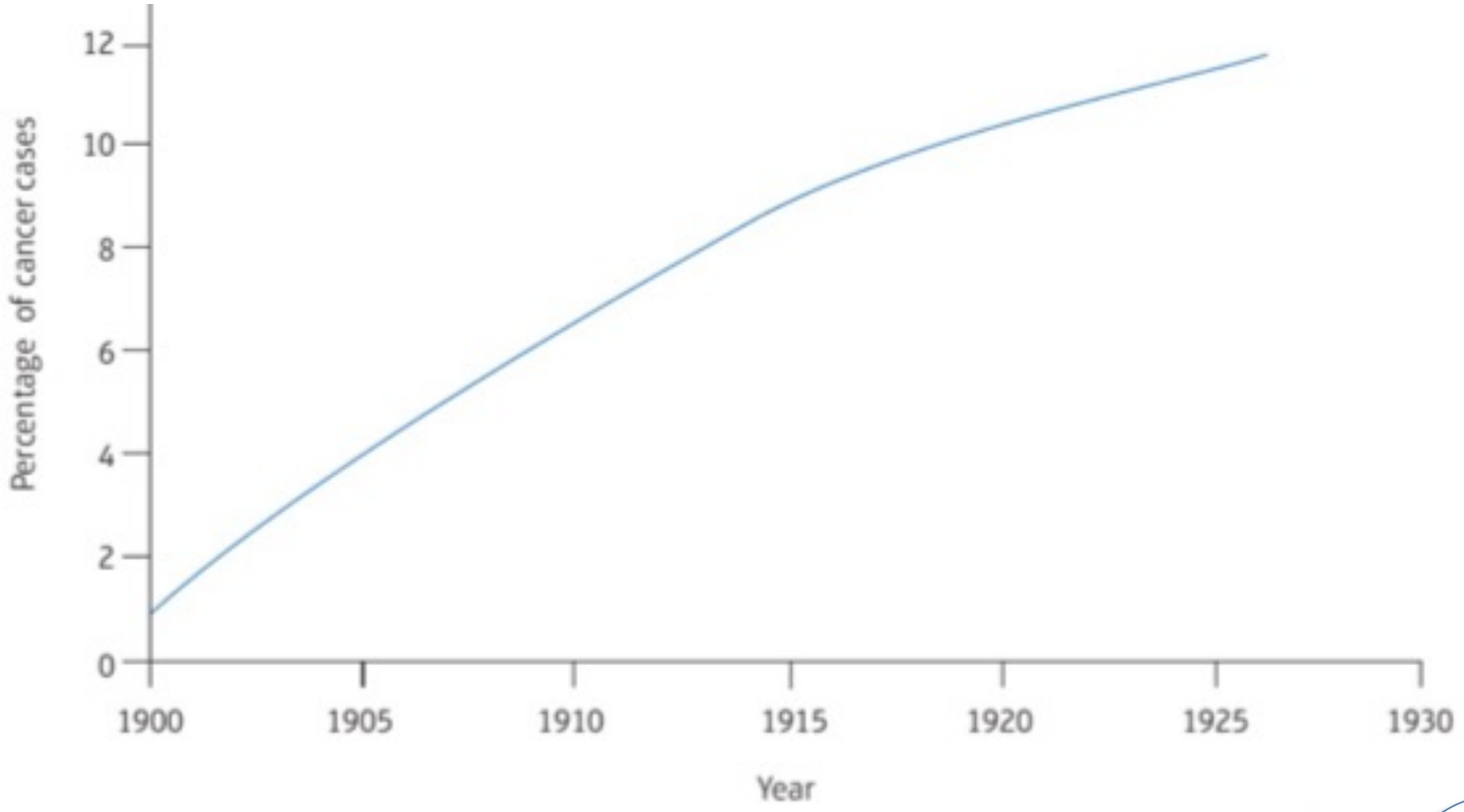
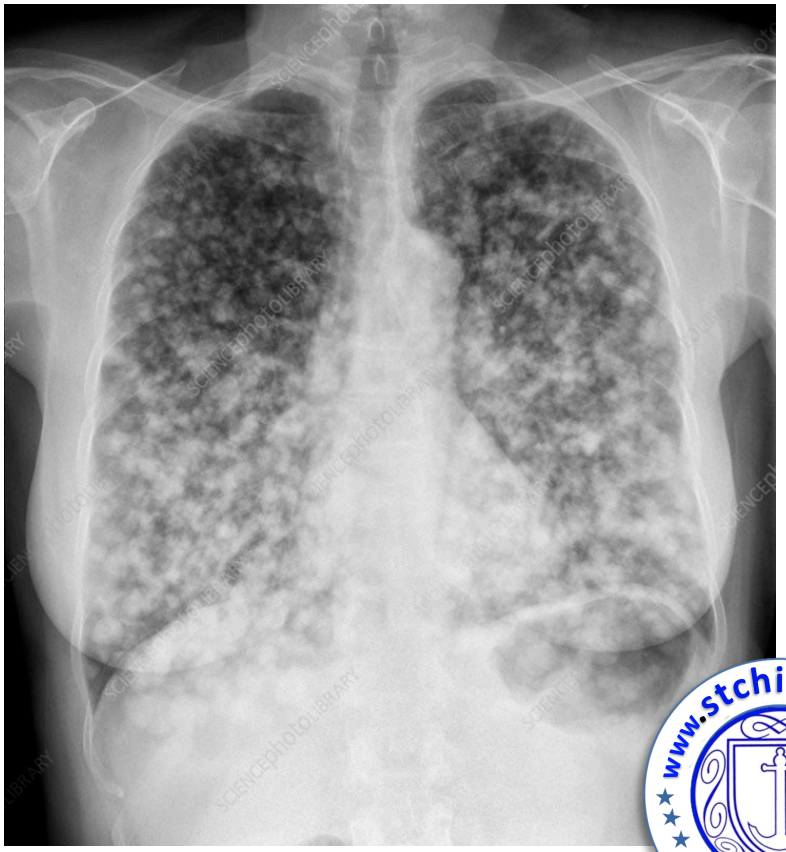


Figure 4.6 A graph showing the increase in lung cancer cases between 1900 and 1926.

How have Science and Technology helped in DIAGNOSIS?

Lung cancer is hard to treat because usually, by the time it is found, its already too late. Lots of people often mistake their symptoms for something else. Previously, in the 20th Century, lung cancer was diagnosed using an x-ray – looking for a tumour. This wasn't ideal as there are often other things in the body that could be mistaken for a tumour, like an abscess. Furthermore, the x-rays just weren't detailed enough.



Diagnosing Cancer today:

Copy this diagram as it is revealed

- Patients are likely to be given a more detailed type of x-ray scan called a CT scan.
- Often patients are injected with a dye before the scan takes place. It helps the lungs to show up more clearly on the scan.

If the CT scan shows cancer might be present in the lungs, the doctor will do one of two things.

1
- If the cancer does not look very advanced, the patient will be given a PET-CT scan.
- This is like a CT scan except a small amount of radioactive* material is injected into the body instead of dye.
- This helps doctors to identify cancerous cells in the body.

2
- The patient will be given a bronchoscopy.
- This is when a camera on the end of a long, thin tube is passed down into the patient's lungs, where it collects a sample of the cells for testing.

After carrying out these tests, the doctor will be able to determine what type of cancer the patient has and how far advanced it is. This makes is possible to draw up a treatment plan to attack the cancer.

Quick Questions:

1. Identify and describe the most common cause of lung cancer
2. Explain why lung cancer is difficult to treat
3. How is science and technology helping in the diagnosis of lung cancer

How have Science and Technology helped in TREATING lung cancer?

If lung cancer is diagnosed early enough, doctors can perform an operation to remove the tumour and affected part of the lung. This can range from a small part of the lung to the whole lung.

Lung cancer patents are now likely to be treated using a mixture of surgery, radiotherapy and chemotherapy. For example:

1. Surgery to remove the tumour
2. Chemotherapy or radiotherapy to tackle any remaining cancerous cells

Copy this diagram for TREATMENT

Transplants

It is possible to replace lungs that have cancer in them with the healthy lungs of a person who has died.

Genetic research

- It is not yet possible to use genetics to treat lung cancer.
- Scientists are studying the genes of cancer sufferers to see if some treatments work better on people with certain genes.

Radiotherapy

Radiation waves can shrink tumours. A patient receives the radiation either through beams from outside the body or through a thin wire inserted into the lungs next to the tumour.

Chemotherapy

A patient is injected with many different drugs that either shrink the tumour or reduce the symptoms of the cancer if the tumour cannot be operated on.

How are the British government trying to prevent lung cancer?

The government was slow to respond to the evidence that smoking was linked to lung cancer. Smoking related deaths cost the NHS a huge amount, but they made more money from tax on the sale of cigarettes. Many UK jobs depended on the tobacco industry too!

There are questions also on whether the government should be able to take away a person's freedom to smoke!!

However, as time went on, it became clear, the death rate was too high!

Changing behaviour

When the government passes laws to **force** people to change behaviour that damages their health.

In 2007, the government **banned smoking in all workplaces**.

In 2015, the **ban was extended to cars** carrying children under the age of 18. There is significant evidence to suggest that other people's smoke has a negative impact on health, particularly among children.

In 2007, the government **raised the legal age for buying tobacco** from 16 to 18. It did this to try to reduce the number of teenagers who start to smoke.

Tax on tobacco products was increased.

Influencing behaviour

When the government uses communication to **persuade** people to change behaviour that damages health.

Limits on tobacco advertising began with a ban on cigarette television advertising in 1965. Over time, the government banned cigarette advertising in more and more places, until it banned cigarette advertising entirely in 2005.

The government has produced many **campaigns* to advertise the dangers of smoking** over the past decades. Education to discourage young people from smoking is now included in schools.

Now, all cigarette products in shops must be **removed from display**.

Case study comparison: government action against cholera vs government action against lung cancer

Government action	
Cholera	**Lung cancer**
Slow response initially. John Snow presented his findings about the link between dirty water and cholera in 1855, but a new sewer system took 20 years to be completed (and was not a direct response to Snow's findings).	**Slow response initially.** The first evidence linking smoking to lung cancer was published in 1950, but government did not directly intervene until death rates became too high to ignore.
More direct response in late 19th century. The 1875 Public Health Act forced cities to be cleaner to stop the spread of cholera. This was after more proof that Snow's findings were true.	**More direct response in early 21st century.** Government tried to both force and persuade people to change smoking behaviour. Smoking bans were introduced in 2007 and changes were made on how tobacco could be advertised.

Quick Questions:

1. How is science and technology helping in the treatment of lung cancer?
2. How have the government tried to ENCOURAGE smokers to quit?
3. How have the government tried to PREVENT people from becoming smokers?
4. How have the government tried to protect non-smokers from the dangers of second-hand smoke

Summary

- Lung cancer became a much more common disease after 1900.
- In 1950, scientists proved that smoking was linked to lung cancer.
- Lung cancer patients are diagnosed using a combination of scans and analysis of cells from the lung.
- Treatments including surgery, radiotherapy and chemotherapy have been developed. However, there is not yet a conclusive cure for lung cancer.
- Since the 1950s, the government has taken more action to combat smoking.