



EDEXCEL INTERNATIONAL GCSE (9–1)

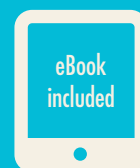
HISTORY

CHANGES IN MEDICINE, c1848–c1948

Student Book

Cathy Warren

Series Editor: Nigel Kelly



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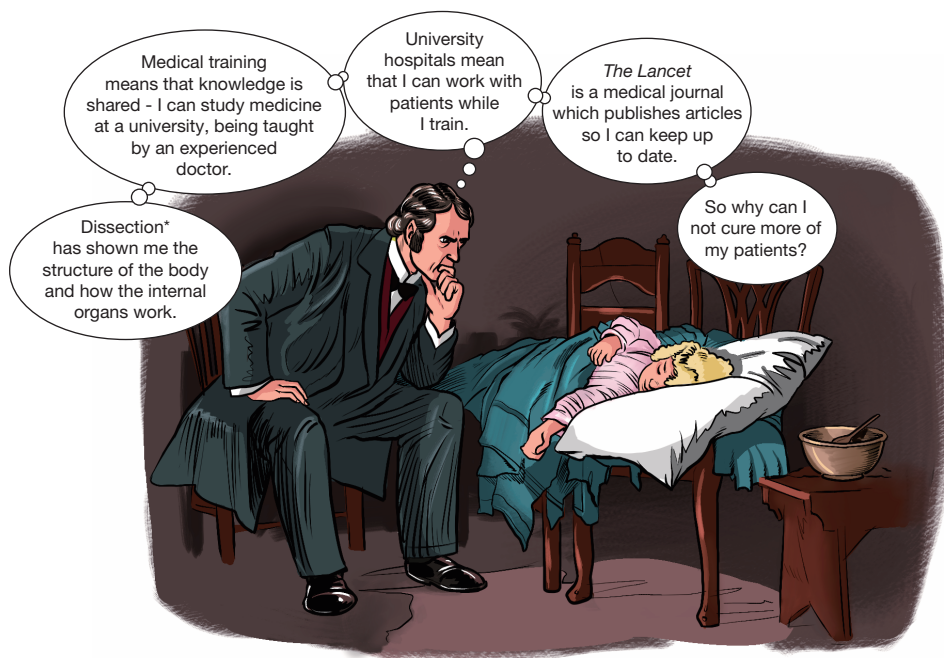
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1.1 WHY HAD MEDICINE NOT MADE MORE PROGRESS BY 1848?

LEARNING OBJECTIVES

- Understand that medical knowledge is linked to scientific knowledge and technology
- Analyse the role of factors affecting progress in medicine
- Evaluate the standard of medicine c1848.



▲ Figure 1.1 The Doctor's Dilemma

Although there had been developments in medicine in the years leading up to 1848, there were a number of reasons why more progress had not been made.

FOUR HUMOURS

Medical understanding of what caused disease c1848 was based on ideas that made sense at the time. However, we now know these ideas were wrong. The idea of **Four Humours** (Figure 1.2) in the body was developed by the Ancient Greeks but it lasted for a very long time because it seemed logical. People knew that blood was an important part of the body and they could see **bile** when people **vomited**. They could also see watery mucus, or **phlegm**, when people had a cold.

They observed illness and saw that sometimes people became hot and flushed, while at other times they were pale and cold; sometimes people vomited and at other times they coughed and sneezed. It made sense to think that illness was caused by an imbalance in the body's **humours** but this prevented people from developing a correct understanding of disease. This, in turn, prevented progress in treatment and prevention. Treatments were based on the **Theory of Opposites** (see Figure 1.3).



▲ Figure 1.2 The Four Humours



▲ Figure 1.3 Examples of the Theory of Opposites

MIASMA

An alternative explanation of disease was based on the idea of **miasma** – that disease was carried in unpleasant smells and harmful **fumes** in the air. People understood that there was often a high rate of disease in poor areas, where people lived in dirty, **unhygienic** – and smelly – conditions. They also knew that disease tended to spread more quickly in hot weather. This made the idea of miasma logical: the bad smells (which got worse in summer) were somehow linked with disease.

SPONTANEOUS GENERATION

SOURCE A

From a description of a poor area in London written in 1852.

The water of the huge ditch in front of the houses is covered with a scum. Along the banks are heaps of indescribable filth. The air has literally the smell of a graveyard.

We know that disease is caused by **microorganisms** and we understand that different microorganisms cause different diseases. However, microorganisms are too small to be seen without a **microscope** and, although scientists knew they existed, there was little scientific research being carried out on them at this time. People didn't know about the link between microorganisms and disease; instead, a theory developed, called **spontaneous generation**. This theory claimed that rotting material (for example, the remains of food, **excrement**, dead animals, rotting vegetables and plants) created maggots, fleas and disease.

DOCTORS' KNOWLEDGE

Understanding of the body was also limited. Doctors would observe a few **dissections** during their training but most people believed in a life after death and therefore wanted to be buried. The bodies that doctors could use were mainly those of criminals who had been executed. This made it difficult to plan any research on the symptoms of disease or to study particular conditions such as **diabetes** or **arthritis**.

SOURCE B

'The Dissecting Room', an illustration from c1780.

EXTEND YOUR KNOWLEDGE

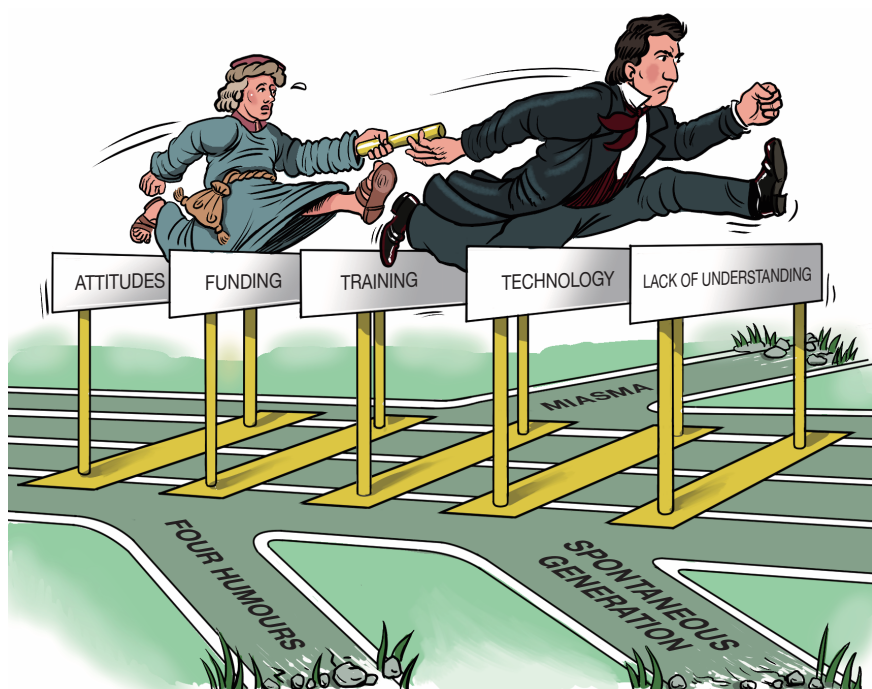
When the number of crimes punishable by death was reduced in 1823, there were fewer criminals' bodies available for dissection. Many medical schools paid cash for corpses, especially if they were fairly fresh. This meant that graves were sometimes robbed so that the body could be sold. Two criminals, Burke and Hare, carried out several murders in Edinburgh in order to sell the bodies.



Lack of understanding of the causes of illness was a key reason for the limited progress in medicine. Because understanding was faulty, doctors' training was also faulty and ideas about prevention and treatment were likely to be ineffective.

FACTORS AFFECTING PROGRESS

- This lack of understanding is closely linked with the level of technology available at the time. If microscopes had been stronger, perhaps scientists would have been more curious about **germs**.
- Other reasons for the lack of progress include the problem of funding for research and the development of new ideas. The government did not feel responsible for issues like this and hospitals usually relied on charity for funding. This meant that little money was left over for research.
- Attitudes were also important. Many doctors wanted to keep on doing what they had always done; they didn't want to have to learn new ways of treating patients.



◀ Figure 1.4 Barriers to progress

ACTIVITY

- 1 Make a set of flash cards for the new vocabulary in this section.
- 2 Based on the knowledge that people had in the mid-nineteenth century, which seems the most sensible explanation of illness – the Four Humours, miasma or spontaneous generation?
- 3 Explain why limited knowledge and understanding of the causes of disease prevented progress in medical treatment.
- 4 Discuss with a partner the importance of each of the problems in preventing progress in medicine, then draw a picture or symbol to represent each problem. The size of each picture should reflect the importance of that barrier to progress.

1.2 WHY DID FLORENCE NIGHTINGALE GO TO SCUTARI?

LEARNING OBJECTIVES

- Understand the actions of Florence Nightingale at the hospital in Scutari
- Analyse the impact of her work
- Evaluate the importance of her work.

Florence Nightingale came from a wealthy middle-class background. Her family was shocked that she wanted to go out to work and even more surprised that she wanted to train as a nurse; this was considered a very low-status job at the time. There was no formal training for nurses in Britain so she visited various hospitals in Britain during the 1840s. She then spent three months in 1851 at a centre in Kaiserwerth, Germany, where training for nurses had begun in 1833.

In 1853, she became superintendent of a small nursing home in London, called the 'Institution for Sick Gentlewomen in Distressed Circumstances'. However, she had met Sidney Herbert, the Foreign Secretary for War, in 1847 and he now asked her to take a team of 38 nurses to work in the military hospital at Scutari. Britain was fighting against Russia in the Crimean Peninsula, in the Black Sea. Many British soldiers were being injured in the Crimean War but a large number of the deaths that occurred were caused by infection rather than the original injuries.

CONDITIONS AT SCUTARI

When she arrived, Nightingale found the hospital was crowded, with almost 10,000 patients in appalling conditions.

- Many men were sharing beds or lying on the floor and in the corridors.
- Their clothes were infested with lice and fleas.
- Diseases such as **typhoid fever** and **cholera** were common.
- Many patients had **diarrhoea**.
- It was difficult to get enough medical supplies (such as bandages and medicine) to the hospital.
- Food supplies were limited and of poor quality.

SOURCE C

A painting from 1857 called 'The Mission of Mercy: Florence Nightingale receiving the Wounded at Scutari'.

- The roof leaked and the wards were dirty and infested with rats and mice.
- The hospital was actually built on the site of an underground cesspool, where human waste collected. This affected both the water supply and the air in the hospital.



NIGHTINGALE'S ACTIONS

SOURCE D

From an official report about the state of the army hospitals in the Crimea.

The nurses' duties included washing the soldiers' wounds and preparing for the morning visits of the medical officer; to accompany the medical officer and dress the wounds. They also had to take his orders about diet, drink, and medical comforts to Miss Nightingale. They had to see that cleanliness, both of the wards and of the person, was attended to. We have reason to believe that the services of these hospital attendants have been extremely valuable.

Nightingale and her nurses scrubbed the surfaces clean and washed all the sheets, towels, bandages. She believed in miasma and the importance of fresh air, so she had windows opened to improve the flow of air. Nightingale and her nurses cleaned the kitchens and improved the quality of the food. A fund of money, a lot of it raised by the *Times* newspaper, meant that she could buy new supplies, including 200 towels, clean shirts, soap, plates and cutlery.

EXTEND YOUR KNOWLEDGE

The situation in the hospital, and Nightingale's work there, was reported in the *Times* newspaper. A wealthy woman called Angela Burdett-Courts was interested in the report. She had already used some of her fortune to provide housing, a school, children's playgrounds and medical care for poor people in London.

When she read about Nightingale's work, she decided to help by providing a £150 drying closet machine, which could dry 1000 pieces of wet linen (such as sheets) in less than half an hour.

THE IMPACT OF NIGHTINGALE'S WORK

Army medical staff had resisted the idea of nurses coming out to work in the Crimea because they felt that women would not be able to cope with the conditions there. They also felt that the women's medical knowledge was limited; when Nightingale wanted to make changes, they saw her comments as criticism and resented her. However, her habit of making a final round at night, checking on all the patients, gained her the nickname of 'The Lady with the Lamp' and made her very popular with the patients and back in Britain.

Nevertheless, the death rate at Nightingale's hospital was higher than at the other hospitals, even with all her improvements. It was not until 1855, when a government **sanitary** commission repaired the drains and improved the supply of drinking water, that the death rate began to fall dramatically.

ACTIVITY

- 1 What barriers to progress did Nightingale face at Scutari?
- 2 Nightingale believed disease was spread by miasma. How does this explain her actions in the hospital?
- 3 Would she have gained her favourable reputation in Britain if the drains had not been repaired and the water supply improved?

EXAM-STYLE QUESTION

Explain **two** ways in which the situation at Scutari in 1856 was different from the situation when Nightingale arrived. **(8 marks)**

HINT

This question is testing your knowledge by asking you to give two examples of difference. Make sure that in each case, you identify the difference and support it with details about (a) the situation when Nightingale arrived and (b) how the situation changed as a result of her work.

1.3 HOW MUCH PROGRESS WAS THERE IN SURGERY?

LEARNING OBJECTIVES

- Understand the key features of surgery c1848
- Analyse the reasons why there was a low standard in surgery
- Evaluate the extent to which the problems of surgery had been overcome by 1860.

Surgery was not seen as part of medicine until the mid-nineteenth century because the **surgeon** had little training. In fact, surgery was often seen as part of the job of a barber, simply because both jobs involved sharp knives.

Surgical operations were either very basic procedures, such as cutting open a **boil**, or life-threatening ones, such as cutting out a **tumour** or the **amputation** of a **limb**. Amputation was often necessary if a broken bone poked through the skin and the wound became **infected**.

THE PROBLEM OF PAIN

The only types of pain relief available were alcohol, a form of **opium**, or being knocked unconscious. In most operations, the patient was awake and often screaming in pain; the surgeon's assistants, or dressers, had to hold the patient down. The 'best' surgeon was not the one who cut most skilfully but the one who cut the quickest.

SOURCE E

A surgeon describes an operation before the use of anaesthetics.



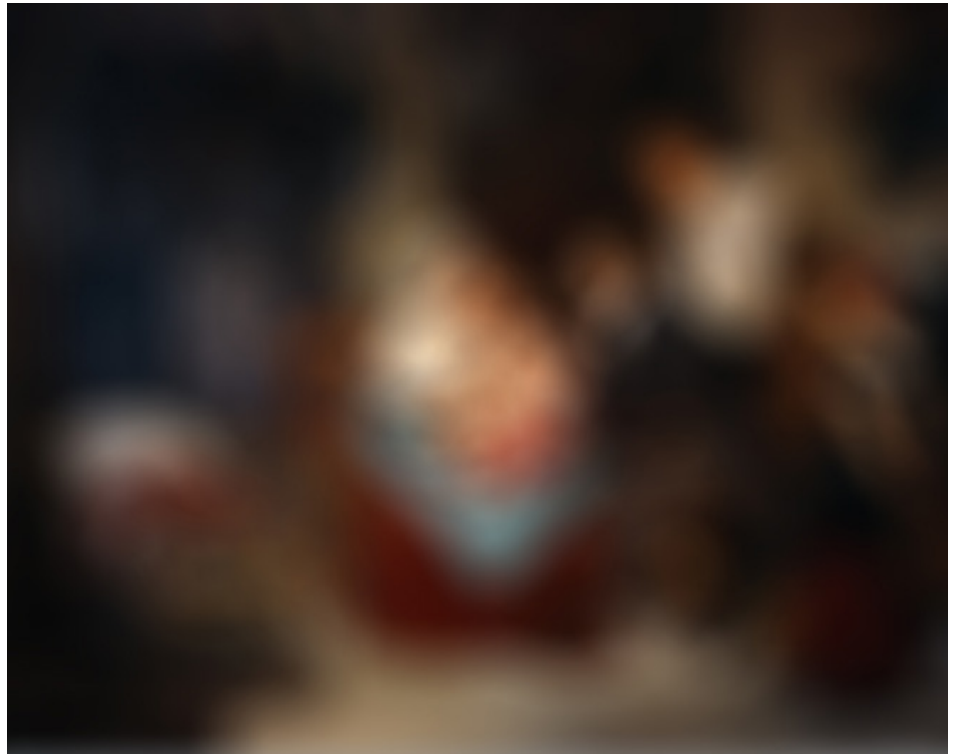
SOURCE F

A painting from the first half of the nineteenth century. It shows an operation to remove a tumour being carried out in the patient's home.

EXTEND YOUR KNOWLEDGE

Robert Liston was widely regarded as one of the best surgeons for two reasons. Firstly, he was very strong (he could compress the **artery** with one hand while using the amputating knife with the other). Secondly, he was very quick – his record time for an amputation was 28 seconds!

However, he is often remembered today for a couple of operations that went wrong. In one case, he was working so quickly when amputating a leg that he cut off the patient's **testicles** as well. In another case, he accidentally cut off two of his assistant's fingers. The assistant later died from infection; a spectator – who was spattered in blood – had a heart attack and died; and the patient died as well!



BLOOD LOSS AND INFECTION

ACTIVITY

- 1 Explain why the lack of effective pain relief was a barrier to progress in surgery.
- 2 Explain why the lack of understanding of infection increased the death rate among patients.
- 3 Draw a spider diagram summarising the problems of surgery in the mid-nineteenth century. You could include ideas such as pain, speed, infection and blood loss.

Blood loss was obviously a problem so a **tourniquet** would be used to reduce the flow of blood in the artery. However, even when patients survived the operation, a high percentage of them died afterwards as a result of infection.

Many operations were carried out in the patient's home, which was not **hygienic** – although conditions in hospitals were often far worse! There was little understanding of how infection happened and the surgeon would wear old clothes that were already stained with blood and **pus**, rather than spoil decent clothes. If patients were lucky, the surgeon might wash his hands before the operation. Equipment was wiped clean or washed briefly between patients; it was not sterilised. The sponge used to wipe away blood was just rinsed out, and bandages were washed and then re-used. In addition, there were often lots of people in the operating theatre, as well as the surgeon and his assistants: medical students and wealthy people who supported the hospital with money would watch the operation, making infection even more likely.

JAMES SIMPSON AND PAIN RELIEF

Nitrous oxide (laughing gas) was known to make people unaware of pain; it was used in dentistry in the USA in 1844–45 by Horace Wells. However, it was not considered suitable for a surgical operation. In 1846, William Morton, a dentist in the USA, experimented with the gas **ether** and found that it had a stronger effect on the patient.

THE USE OF ETHER

SOURCE G

From the diary of a nineteenth century surgeon .

1 May 1847

Went to Bartholomew's Hospital and witnessed two operations under the influence of Ether: the first I have seen. The loss of feeling on both occasions was complete: the patient had no consciousness of the operation. But the effect on the patient afterwards was appalling, although brief.

Robert Liston, in Britain, heard about Morton's work. Later in 1846, Liston used ether during an operation to **amputate** a leg. The people watching were astonished that the patient did not need to be held down and even more astonished when he woke up and seemed unaware that the operation had taken place.

Ether seemed to be a wonderful form of pain relief but there were problems. It sometimes caused vomiting and it irritated the lungs, making the patient cough. Another problem was that ether could leave the patient asleep for hours or even days. The gas was also highly flammable which was dangerous when the operating theatre was lit by candles or gas.

James Simpson wanted to find a better **anaesthetic** and carried out experiments, **inhaling** various gases. He was sometimes quite reckless – on one occasion he tried a gas on some rabbits and, seeing that they appeared to be peacefully unconscious, he was ready to try the gas himself. An assistant persuaded him to wait until the next day, when they found that the rabbits had died overnight!

SOURCE H

A drawing c1850, of Simpson and his friends waking up after using chloroform.

This doesn't seem to have worried Simpson. He continued to experiment and discovered **chloroform** was an effective anaesthetic: he and his friends woke up one morning slumped around the table where they had inhaled chloroform the night before.



SIMPSON AND THE USE OF CHLOROFORM

Chloroform did not seem to have the same **side-effects** as ether and Simpson, who was Professor of Medicine and **midwifery** at Edinburgh University, used it in 1847 for women in childbirth. Shortly afterwards, he became the official physician to Queen Victoria in Scotland and she used chloroform when she had her eighth child in 1853. Partly as a result of newspaper publicity about this miracle pain relief, and partly as a result of royal approval, patients began to ask for chloroform in their operations and it became much more widely used.

SOURCE I

A drawing showing the unveiling of the statue of Simpson.

When Simpson died in 1870, 50,000 people lined the route of his funeral and money was collected to put up a statue in his honour.



ACTIVITY

- 1 Write a letter or a newspaper article describing Liston's use of ether. Make sure you include comparisons with a normal operation so that ether is clearly shown to be a wonderful discovery.
- 2 Which of the problems associated with ether do you think would matter most to:
 - (a) the patient
 - (b) the surgeon?
- 3 Do you think Simpson took necessary risks in order to investigate the effects of gases on humans or was he reckless, risking his own death and that of his friends?
- 4 Which of the following points is the clearest evidence that Simpson's work was seen as a major breakthrough in dealing with the problems of surgery?
 - (a) Other doctors elected him President of the Royal College of Physicians of Edinburgh in 1850.
 - (b) He was knighted for his services to medicine and when he died, his family was offered a burial spot in Westminster Abbey.
 - (c) Thousands lined the streets for his funeral and a public collection paid for a statue to be erected.

THE IMPACT OF CHLOROFORM

Chloroform seemed to have solved the problem of pain in surgery but there were problems associated with its use:

- The Christian Church was opposed to the use of chloroform in childbirth because the Bible says that after Adam and Eve were made to leave the Garden of Eden, Eve was told childbirth would be painful.
- Many doctors were opposed to its use in childbirth because it was not known how chloroform might affect the baby.
- It was difficult to get the dose of chloroform right – enough to put the patient to sleep but not so much that they died.
- Chloroform affects the heart and had a greater effect on patients who were young and physically fit, with the result that a number of them died.
- Some doctors felt that a patient who was unconscious was more likely to die than one who was kept awake by pain.
- By using chloroform, many surgeons felt confident enough to attempt longer and more complicated operations, often deeper inside the body.



SOURCE J

From a notice issued in 1855 by Dr Hall, the Chief of the Medical Staff of the British Army during the Crimean War.

Dr Hall would like to caution Medical Officers against the use of chloroform to treat serious gunshot wounds. He thinks few patients will survive where it is used. He knows that public opinion, based on mistaken kindness, is against him. However, he feels that the pain of the knife is a powerful stimulant, and it is much better to hear a man shout loudly than to see him sink silently into the grave.

EXTEND YOUR KNOWLEDGE

The problem of getting the dose right was seen in the death of Hannah Greener in 1848. She was a 14-year-old girl who was having an ingrowing toenail removed; this was a minor but painful operation, so she was given chloroform. However, she died almost immediately.

SOURCE K

Snow's chloroform inhaler, invented in 1848.

John Snow was able to solve this problem by inventing a chloroform inhaler in 1848. This controlled the dose of chloroform, but the problems of infection and blood loss remained. Indeed, the death rate rose, to the extent that the next few years have been called the 'Black Period' of surgery.

THE PROBLEM OF INFECTION

Chloroform gave surgeons more time to work, so they could carry out more complicated operations, often going deeper inside the body. However, they still did not understand about **hygiene** and infection. The surgeon's bloody hands and the unhygienic equipment now took germs right into the body, causing infection. The bedsheets and the dressings (bandages) had usually been used before – often, they still had stains and germs on them – and they also passed infection to the patient. As a result, many patients developed **gangrene** around the surgery wound. This infection often developed into **sepsis**, until the patient died. The increased length of operations also caused other problems. For example, if the blood supply to a part of the body was cut off for too long during an operation, this increased the risk of gangrene.

EXAM STYLE QUESTION

Explain **two** causes of the Black Period in surgery.

(8 marks)

HINT

A cause is something which directly leads to change, not simply something that happened before change occurred. You need to be able to show the link between the causes you identify and the changes in surgery.

▼ Problems and solutions in surgery

▼ PROBLEM	▼ SOLUTION	▼ EVALUATION
Pain	Ether solved the problem of pain but had side-effects. Chloroform solved the problem of pain and appeared to have fewer side-effects, especially once the inhaler meant that dosage could be controlled.	Solving the problem of pain was a major breakthrough; without this, few people would be willing to undergo surgery and other developments would have little effect. Surgeons were now encouraged to try more complex operations.
Infection	This had not been solved.	The death rate actually rose because there was more risk of infection in more complex operations.
Blood loss	This had not been solved. Tourniquets were used to restrict the flow of blood but there was a risk to the patient if the blood supply was restricted for too long.	This meant that surgeons still could not do lengthy operations.

ACTIVITY

In groups of four, prepare a news interview for the year 1860. One of you should be a doctor who thinks anaesthetics should be used. Another person should be a doctor who is opposed to anaesthetics. A third person is a nurse who has cared for patients after operations both before and after the use of anaesthetics. The fourth person is the interviewer. All of you will need to know good and bad points about the use of anaesthetics in order to ask and reply to questions and convince the readers. You might want to give examples of operations or include quotes from patients.

RECAP

RECALL QUIZ

- 1 Explain three different ideas about the cause of disease in the mid-nineteenth century.
- 2 Name three problems Florence Nightingale found at the army hospital in Scutari.
- 3 Give three examples of improvements made by Nightingale.
- 4 Explain three barriers to progress in surgery c1840.
- 5 Why did people prefer to use chloroform rather than ether in operations?
- 6 Why did the use of anaesthetics lead to the Black Period in surgery?
- 7 What was a court in an industrial town?
- 8 What were the terms of the 1848 Public Health Act?
- 9 How did John Snow prove there was a link between infected water and cholera?
- 10 How did the Great Stink push the government into taking action on the issue of public health?

CHECKPOINT

STRENGTHEN

- S1** Explain why a lack of understanding of the causes of disease prevented progress in medicine.
- S2** Explain the importance of Simpson's use of chloroform.
- S3** Explain why disease spread so quickly in industrial towns.

CHALLENGE

- C1** In which aspect of medicine had there been most improvement between c1848 and 1860?
- C2** Why were parliament and local authorities so slow to take action to improve public health?
- C3** What barriers to progress in medicine still existed in 1860?

SUMMARY

- There was little understanding of the causes of disease c1848 and therefore it was difficult to make any progress in medicine.
- Florence Nightingale made many improvements to the care of injured soldiers in the army hospital at Scutari.
- Her work was publicised in Britain, drawing attention to problems in medicine.
- Surgical operations needed to be quick because there was no effective pain relief.
- Simpson discovered that chloroform was an effective anaesthetic.
- The problems of blood loss and infection had not been solved so progress in surgery was still limited.
- Edwin Chadwick wrote a report highlighting the appalling housing conditions in industrial towns.
- The Public Health Act 1848 was an important move towards improving public health but its terms were not compulsory.
- When there was a cholera outbreak in 1854, John Snow proved that it was spread by infected water.
- Despite some practical improvements in surgery and public health, medicine did not progress very far as people still did not understand how disease was spread.

EXAM GUIDANCE: PART (B) QUESTIONS

Question to be answered: Explain two causes of improvements in surgery in Britain in the years c1848–60. (8 marks)

A01

SKILLS ADAPTIVE LEARNING

1

Analysis Question 1: What is the question type testing?

In this question, you have to demonstrate that you have knowledge and understanding of the key features and characteristics of the period studied. In this particular case, you need to show your knowledge and understanding of changes in surgery.

There is a focus on improvement, so you have to show that these changes made surgery better. You also have to explain why the changes occurred. There must be a clear link between the reason you give for each change and the specific improvement that took place.

2

Analysis Question 2: What do I have to do to answer the question well?

Obviously, you have to write about changes in surgery but don't simply write everything you know. You have to show why each change was an improvement and why that change happened. If you just write about surgery, you are unlikely to do this. You should start by identifying an improvement and then providing detail to explain why that improvement happened. If you were writing a plan, your key points would be: identify the first change; why it was an improvement; why it happened; identify the second change; why it was an improvement; why it happened.

In this case, you might consider how Simpson's work in developing the use of chloroform, and Snow's work in developing an inhaler to regulate the dosage, both made surgery better. You can gain 4 marks for explaining the causes of improvement, and 4 marks for your use of accurate and relevant supporting detail. However, if you only talk about one cause, you cannot get more than 4 marks in total.

3

Analysis Question 3: Are there any techniques I can use to make it very clear that I am doing what is needed to be successful?

This is an 8-mark question and you need to make sure you leave enough time to answer the part c question fully, as that is worth 16 marks. This is not an essay and you don't need to give a general introduction or conclusion. However, it is helpful to structure your answer as two separate paragraphs, making it clear to the examiner that you are explaining two causes. It can also be helpful to use phrases like *'One improvement in surgery was... The problem was... The improvement was caused by...'*, *'Another improvement...'* and so on.

There are three levels in the mark scheme. At Level 1, you provide general information about surgery and make a simple statement about the cause of improvement. At Level 2, you can explain the cause(s) of improvement and you include some specific supporting detail. To get Level 3, you need to make the connection between the cause and the improvement very clear; you must support your answer with specific details.



1

This answer does not clearly identify two improvements in surgery, although it implies chloroform and the inhaler made surgery better. There is little supporting detail and it lacks a focus on explaining why the improvement took place.

This is typical of a Level 1 answer: it is about the general topic (surgery) but it has no specific explanation of improvement. The supporting detail, although accurate, is fairly general.

2

This is an excellent answer. Each paragraph begins by stating a change and explaining why it was an improvement. The student has included specific details to show what changed and why each change was an improvement. It would be likely to receive full marks.

Note: this question is only about improvements in surgery. It does not ask 'how far' surgery improved, so there is no need to discuss other problems like the Black Period in surgery.

The mark scheme has a range of marks within each level. If you cover one cause of improvement better than the other, your mark will be at the lower end of the level awarded. To get full marks, you need to give a clear explanation of **each** cause of improvement **and** you need to provide good supporting detail.

Answer A

Surgery was very painful c1848. People had to be held down during the operation and the surgeon was expected to work quickly. In 1847, Simpson experimented with the use of chloroform. However, sometimes people died so John Snow invented an inhaler.

Answer B

One improvement in surgery was the use of anaesthetics. The problem was that surgery was very painful c1848 and so people only agreed to an operation as a last resort. In 1846, the use of ether was found to deaden the pain and meant that surgeons could take more time over their operations. There were side-effects to the use of ether and this led Simpson to experiment in order to find a better alternative. He found that chloroform seemed to be an effective anaesthetic with fewer side-effects than ether. Simpson's determination and experiments made the situation better for both the patients and the surgeon.

Another improvement in surgery was Snow's chloroform inhaler, which he invented in 1848. One of the problems with chloroform was the difficulty in regulating the dosage and this led to some sudden deaths, as in the case of Hannah Greener. Improvements in technology meant that it was easier to produce equipment and the inhaler allowed the surgeon to control the dosage more accurately, which made it less likely that too much chloroform would be used. This improvement was caused by Snow's desire to prevent deaths from chloroform and improvements in technology that made it possible to produce the inhaler.

Challenge a friend. Use the textbook to set a part (b) question for a friend. Then look at the answer. Does it do the following things?

- ☐ Identifies two changes
- ☐ Provides detailed information to explain why these changes were improvements
- ☐ Provides detailed information to show why these changes happened

If it does, you can tell your friend that the answer is very good!

EDEXCEL INTERNATIONAL GCSE (9–1)

HISTORY

CHANGES IN MEDICINE, c1848–c1948

Student Book

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