Cholera theories in 1831

The two doctors in the picture are putting forward their own views about how cholera might be spread.

1. Is either of the theories correct?

2. Look closely at theory A. If someone in your household died of cholera at this time what would this doctor probably want to see happen to the body and the person's belongings?

3. Look closely at theory B. If you were in charge of a local Board of Health and you believed in this theory, what would you have wanted to do in your area to try and prevent an outbreak of cholera?
Public Health 1800-1900

When and why did the government start caring about the public’s health?

In the 19th century the size of many British cities increased rapidly as a result of the Industrial Revolution. Over the century public health gradually improved but it took a long time to change the lives of people in the slums.

Factory towns became more and more crowded as they got bigger and houses were built as closely together as possible. They were damp and overcrowded and dirty; people had to cook, eat and sleep in filthy conditions. There were no sewers and there were piles of waste everywhere.

Disease was a major problem and frequent epidemics often killed thousands in a short space of time. The poor, cramped living conditions meant that infectious diseases spread easily. Smallpox, tuberculosis (TB), typhoid fever and cholera were all major killers. In 1831-32, cholera killed over 21,000 people in Britain and there were frequent outbreaks throughout the century. In the last major outbreak in 1865, 14,000 people in England and Wales were killed. It was outbreaks like these that eventually forced the government to take action and to take some responsibility for the welfare of its people. By taking action, the government gradually ended its policy of 'laissez faire'.
Dr John Snow (1813-1858)

John Snow was the son of a labourer born in York in 1813. He qualified as a surgeon and a doctor in 1838 and stayed in London after qualifying. Snow took a particular interest in the development of anaesthetics and in 1853 he was asked to administer chloroform to Queen Victoria to help with the birth of her eighth child (Prince Leopold).

Dr Snow lived in Frith Street in Soho from 1838 onwards. Following the 1848-49 cholera outbreak, Dr Snow published a pamphlet in August 1849 based on his investigations in London. The pamphlet was called ‘On the Mode of Communication of Cholera’. In this pamphlet Dr Snow claimed that cholera was caused by drinking foul water. However, Dr Snow did not have the hard evidence to support his theory and so it remained until the next major cholera outbreak in 1854.

Dr Snow took a personal interest in the 1854 outbreak of cholera in London. He investigated in great detail the cause of a near by outbreak in Soho. By careful research, Dr Snow was able to prove that there was a link between the outbreak of cholera and the local water supply. He was eventually able to persuade the local Board of Guardians to remove the pump handle from the Broad St. water pump but not before over 600 people had died of cholera in Soho.

In January 1855, Dr Snow spent £200 of his own money publishing an expanded version of ‘On the Mode of Communication of Cholera’ that was six times longer than his original pamphlet and now contained the evidence from his investigation in the Broad Street area. He was now convinced that cholera was spread by drinking water that was contaminated with fecal matter. However, he could still not provide any microbiological evidence to support this view so his views continued to be largely ignored by the government and he died in 1858, three years before Pasteur’s germ theory was published.

What did Dr Snow do in Soho in 1854?

Soho in London was the site of a terrible and devastating outbreak of disease that killed 600 people within a quarter of a mile in the course of a few days in 1854. But thanks to John Snow, this was one of the last great cholera epidemics.

It was assumed that cholera was airborne, but Snow was sure this wasn’t right. As a doctor he attended many patients without getting Cholera himself. Second, he argued that the infection always seemed to affect the gut before the patient felt generally ill, and this suggested that it was ingested. He had published
Towards the end of August 1854, he got the chance to prove his ideas in the most dramatic circumstances. During late August 1854, there were a few cholera deaths in Soho. But during the night of August 31st and September 1st there was what Snow called “a violent increase in the malady”. Fifty-six new cases were reported that night. The next day there were 143 new cases, and on 2nd September, 116. And the deaths followed swiftly: 70 on September 1st, 12th September.

As soon as he heard how awful the outbreak was, Snow determined to investigate it. He was sure the water must be contaminated, and his suspicion immediately fell on the popular pump that stood at the junction of Broad Street and Cambridge Street. He examined it on the 3rd of September, but found only minimal visible contamination. This wasn’t enough evidence. He went to the Register of Deaths and got details of all the deaths from cholera in the Golden Square, Berwick St and St Anne’s, Soho, districts that week. Armed with the places where people had died, Snow returned to the streets to find out what had really happened.

The most obvious thing was that most of the deaths were close to the pump. In fact, of the 89 who had died by 2nd September, only ten lived closer to any other pump, and in five of those cases he discovered that the dead person actually preferred the water from the Broad Street pump, and sent for it specially.

On Poland Street was the Workhouse, with 535 inmates, and surrounded on three sides by houses in which cholera deaths had occurred. Yet only five people died there. The Work House had its own well. Snow visited Mr Huggins of the Brewery in Broad St. He told him that they, too, had their own well but
that as far as he knew the men never drank water at all - they stuck to beer. There were no deaths in the Brewery. But at the percussion cap factory at No 37 they weren’t so lucky. Two tubs of water were kept for the workers, and 18 of them died. The water came from the Broad Street Pump. The cases that clinched it for Snow concerned two ladies who died not in Soho, but in Hampstead, over five miles away, and in Islington, where there was no outbreak. Puzzled, Snow visited the house where one had died, and was told that every day a cart took a large bottle of water from the Broad Street pump all the way to Hampstead because the lady liked the taste. A delivery of water arrived on Thursday 31st August, and she drank then and on the Friday. By Saturday she was dead. The other lady was her niece, who paid a visit, drank the water, and then died at home in Islington.

By the 7th September, Soho was deserted. Three quarters of the people had fled - which helped to slow the outbreak. But there were still 28 new cases that day. In the evening, Snow met the Board of Guardians of St James’s parish, and told them what he had found. The handle was removed from the pump the next day and the number of cases immediately started to diminish.

Investigation of the Broad Street pump revealed what had probably been going on. The well below the pump was about 28 feet deep. At 22 feet down, within yards of the well, there was a sewer. A few people reported that the water had smell “offensive”, or that it “went off” near the time of the outbreak. Snow was now certain that the well had been contaminated with infected sewage - either from the sewer or the many nearby cesspits. As the outbreak continued, the sewage became more contaminated, and so did the water.

What is important about John Snow is his recognition of the power of statistics. He didn’t know what the organism was that caused Cholera, so instead he gathered what might have been thought of as ‘anecdotal’ evidence - stories. But the cumulative effect of his meticulously gathered data was devastating - and was the beginning of the end for cholera in Britain.

**The Government response to the 1848 cholera outbreak**

In August 1854 in the middle of the cholera epidemic, Sir Benjamin Hall the President of the Board of Health ordered that a scientific inquiry be set up to establish the causes of cholera. The Committee of Scientific Inquiry included some of the leading medical and scientific figures of the time and it spent over a year, gathering evidence before presenting its report to both, Houses of Parliament in July 1855. The report looked at Dr Snow’s work in Broad Street but it concluded: cholera was not contagious and the climate in London in 1854 was perfect for forming ‘poisonous matter’ in the air that caused cholera when it came into contact with foul air or water”. The supporters of miasma theory had rejected the research and evidence of Dr Snow but their belief foul air as the cause did encourage them to build new sewers and provide London with clean drinking water in the 1850s and 1860s and this helped to end major cholera outbreaks in Britain after 1866.
Task

Read the background information on Dr John Snow and the Soho cholera outbreak of 1854 and then using your SHP white text book pages 142-143 and your booklet answer the following questions:

1. By examining the Register of Deaths in 1854 for cholera victims, what did Dr Snow discover?

2. Why according to Dr Snow did only 5 of the 535 inmates of the Workhouse on Poland St. die from cholera?

3. Why were there no deaths among the brewery workers in Broad St.?

4. How did the deaths of two ladies in Hampstead and Islington help to convince Dr Snow that the Broad St. water pump was contaminated?

5. What happened after the handle of the Broad St. water pump was removed on the 8th September 1854 on the recommendation of Dr Snow?
SOURCE 11  Map of the Broad Street area

A widow living in the suburbs, in an area otherwise clear of cholera, died of the disease. It was later discovered that she had a bottle of water from Broad Street sent to her every day because she liked it.

585 people lived in this workhouse. They got their water from another source. Only five died.

70 people worked at this brewery. It had its own water supply and gave its workers free beer to drink. No one died.

200 people worked in a factory here. They got their water from the Broad Street pump. Eighteen died.

SOURCE 12  Plaster-cast bust of John Snow. Snow died in 1858, aged only 45, three years before the publication of Pasteur's germ theory which helped explain the results Snow had recorded.

After collecting his evidence Snow was allowed to remove the handle of the water pump in Broad Street. There were no more deaths. It later came to light that a cesspool, one metre away from the pump, had a cracked lining allowing the contents to seep into the drinking water.
How was the link between Cholera and Unclean Water made?

Write an answer this question using the materials you have been given. Your answer must include the following words, numbers and phrases.

<table>
<thead>
<tr>
<th>Dr John Snow</th>
<th>Own supply</th>
<th>200</th>
<th>Cracked</th>
<th>Marked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewer</td>
<td>Poor</td>
<td>18</td>
<td>Clustered</td>
<td>Soho</td>
</tr>
<tr>
<td>1854</td>
<td>Widow</td>
<td>Broad St</td>
<td>Workhouse</td>
<td>Pump handle</td>
</tr>
<tr>
<td>Brewery</td>
<td>Factory</td>
<td>500</td>
<td>5</td>
<td>Mapped</td>
</tr>
</tbody>
</table>

Picture from a humorous magazine published in 1860.
Task

Why did it take so long to improve living conditions in Britain’s industrial towns and cities during the nineteenth century?

At the start of the nineteenth century, living conditions in most of Britain’s towns and cities were appalling...
(booklet)

The government was reluctant to act because of a belief in laissez-faire...
(booklet)

Edwin Chadwick’s report of 1842 into the Sanitary Conditions of the Labouring Population produced some startling statistics and a number of recommendations...
(pages 144-145 sources 16 and 17).

Eventually in 1848, Parliament passed the first British Public Health Act which...
(p145)

One of the weaknesses of the 1848 Public Health Act was that it was not compulsory. Many town councils refused to implement its recommendations because . . .
(p145)

After another cholera outbreak in 1865-66, Parliament passed a much stronger Public Health Act in 1875 which...
(p146)

By the 1870s the case for a laissez-faire approach to public health had been greatly weakened by a series of changes introduced by the government...
(p147)
Laissez-faire

What’s the idea?

- This French phrase loosely translated means ‘leave be’ and formed part of the belief that governments should not interfere in people’s lives.
- The theory was a popular idea in the first half of the 19th century and prevented reforms happening sooner than they actually did.

Edwin Chadwick challenges laissez faire attitudes

After a typhoid epidemic in 1838 Edwin Chadwick was asked by the government to carry out an investigation into sanitation. In his report published in 1842 as 'Report on the Sanitary Conditions of the Labouring Population of Great Britain' Chadwick argued that disease was directly related to living conditions and that there was a desperate need for public health reform. His argument for government intervention was largely an economic one, focusing on the loss of revenue to the government because of the early death of so many of its people.

Chadwick’s report showed that conditions in the industrial towns were so bad that many people’s lives were cut short.

<table>
<thead>
<tr>
<th>Location</th>
<th>Average Life Expectancy</th>
<th>Professional trades</th>
<th>Tradesmen</th>
<th>Labourers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rutland</td>
<td>52</td>
<td>41</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Leeds</td>
<td>44</td>
<td>27</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Liverpool</td>
<td>35</td>
<td>22</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Manchester</td>
<td>38</td>
<td>20</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Bolton</td>
<td>34</td>
<td>23</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

The table above is taken from a 'Report on the Sanitary Conditions of the Labouring Population of Great Britain' published in 1842 and compiled by Edwin Chadwick. He had surveyed different areas around the country and calculated the average life expectancy of people from different classes and areas. Chadwick claimed that people living in the countryside lived far longer than people in towns. He compared Rutland, a rural county with no large towns, with the new industrial cities of the north.
What was sanitation like in an industrial town?

Working class people did not enjoy the benefit of indoor toilets. Privies as they were called were built outside in the yard or back garden, these were often shared between several families. The wooden bench emptied either into a hole in the ground or a bucket that had to be regularly emptied. Sometimes a pipe or channel would be dug to a nearby ditch or water course to carry away the contents. At night chamber pots would be used in the house and emptied each morning into the privy.

Wealthier people did have inside toilets but these usually drained into either an external cesspit or a bucket that would be emptied daily by the servants. People known as ‘night soil’ men earned a living by emptying cesspits and selling the contents as fertiliser to local farmers. The Great Exhibition of 1851 popularized the flushing water closet and offered people the opportunity to ‘spend a penny’ and use one. Wealthier people started to install flushing toilets and connect them to local sewers or drains that often became overloaded.

*Thomas Crapper* did not invent the flushing water closet but he did display his wares at the Great Exhibition and he supplied toilets to the Prince of Wales at Sandringham.
It was a similar unhygienic story with water supply. The wealthy could afford to have their own wells dug or be connected to a water supply provided by a private company but most people relied on either the public water pumps or they bought water from local water carriers. Whatever your water provider you had no means of knowing how safe the water was to use.

Fascinating fact:
Toilet paper was first used in Britain in 1857. It was sold by chemists but was not on display because people were embarrassed to see it, so it was kept under the counter. Toilet rolls were first sold in 1928. Soft paper was introduced in 1932 but was unpopular at first.

Edwin Chadwick (1800-1890)

Who was Edwin Chadwick?
He was born in Manchester and became a civil servant. In 1842 he published his ‘Report into the Sanitary Conditions of the Labouring Population of Great Britain’. This proved that life expectancy was much lower in towns than in the countryside.

How did he become well known?
Chadwick’s ‘Report’ challenged the ‘laissez-faire’ attitude prevalent at the time. Chadwick argued that it was possible for the government to improve people’s lives by bringing about reform. He was not a ‘do-gooder’, as some people thought he believed that a healthier population would be able to work harder and would cost less to support.

What did he do?
Chadwick sent out questionnaires and investigators to look at conditions in industrial towns in Britain. This statistical information was published as part of a three volume report known as The Sanitary Conditions of the Labouring
*Population* in 1842. This report challenged the dominant *laissez-faire attitude* of the time and argued strongly for the government to act.

Chadwick believed that disease was caused by air pollution from filth (*miasma theory*). This led to a reduced life expectancy for people who lived in the industrial towns and was an economic drain on the country. He recommended that:

- Town councils should be responsible for cleaning away rubbish
- Providing clean drinking water
- Improving sewers and drains
- Medical officers should be appointed for each town
- The cost of these changes should fall on the local ratepayers

Chadwick believed that if all these changes were carried out then the *average life expectancy* for the *labouring classes* would increase by at least 13 years.

**The Public Health Act of 1848**

At first the government refused to act on Chadwick’s recommendations but after much campaigning and another cholera outbreak in 1848 the government did introduce the first public health act. This act:

- Set up a national *General Board of Health* to advise on disease prevention and epidemics
- Allowed towns the right to set up *local boards of health*
- Gave towns the right to borrow money to build *sewers and reservoirs*
- Organise the *removal of rubbish*
- Appoint a *local medical officer*

**Was the act very effective?**

- No because the act only *made recommendations*, it was *not compulsory*
- Towns were reluctant to make improvements because it would be *expensive*
- Many builders, landlords and water companies campaigned against making improvements
- Only 182 *towns* set up *local boards of health* as a result of the act
- In 1854, the government was persuaded to *abolish* the General Board of Health and Chadwick as one of its members was pensioned off.
- After a further cholera outbreak in 1866-67, pressure grew for government action and in 1875 a second *Public Health Act* was passed that made *compulsory* all of the original recommendations in the 1848 Act. Living conditions in Britain’s industrial towns gradually started to improve.
What did the Public Health Act of 1875 say?

Key point: The 1875 Public Health Act was COMPULSORY

It was the work of the Conservative government of the 1870s, which was led by one of the most famous Prime Ministers in British history, Benjamin Disraeli. Most of the work was done by Richard Cross, the Home Secretary. Following the introduction of the act:

All town and councils had to:
- Provide clean water
- Dispose of all sewage cleanly
- Clear away rubbish
- Appoint a medical officer to keep an eye the health of the population
- Make sure that food for sale was not adulterated
- Clear slums, if they wanted to

This was one of the most important laws ever passed. It saved millions of lives. Conditions, although bad, were much improved. After the passing of the act, there were no more cholera epidemics in the United Kingdom.

Why did some people dislike Chadwick?
- He was a leading member of the General Board of Health and tried to persuade town councils to make improvements.
- He was convinced that his views were correct and he was intolerant of other people
- He was arrogant and dictatorial with those who worked for him
- His views brought him into conflict with a number of powerful people who disliked being told what to do by a civil servant like Chadwick
- He was often critical of the town councils and the slow pace of change

Why do we need to know about Chadwick?
- His 1842 report provided detailed information on the appalling conditions in which many people lived
- His report helped to change the laissez-faire attitude at the time
- His report influenced the government and led eventually to the 1848 and 1875 Public Health Acts
- He influenced people to demand improvements in sanitation and housing
- Chadwick was wrong in supporting the miasma theory but cleaning up the towns, improving sanitation and drainage did eventually lead to a better and longer life for many British people
Why did the government slowly end its policy of laissez faire in public health?

<table>
<thead>
<tr>
<th>Date</th>
<th>Reason</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1837 onwards</td>
<td>The government had started to collect statistics on a regular basis: for example all births and deaths had to be registered with the government.</td>
<td>These statistics continued to provide evidence that urban areas were unhealthy. The link between bad living conditions and poor health was made again and again.</td>
</tr>
<tr>
<td>1842</td>
<td>Chadwick's report provided overwhelming evidence of the appalling conditions in which many people lived. He argued for improved sanitation.</td>
<td>Chadwick's economic argument to justify spending government money was controversial but slowly gained acceptance.</td>
</tr>
<tr>
<td>1848</td>
<td>The first Public Health Act was partly a response to another cholera epidemic which it was thought might have been avoided by improving sanitation.</td>
<td>This act made recommendations, not compulsory. The funding for this legislation had to be provided by local councils not the government.</td>
</tr>
<tr>
<td>1854</td>
<td>John Snow had discovered the link between dirty water and cholera. People continued to believe in the miasma theory which led them to get rid of foul odours by building sewers thus improving living conditions etc.</td>
<td>Snow's theory about how cholera was caused was slowly accepted. After the 'Big Stink' of 1858, a network of sewers was built across London between 1858 and 1865.</td>
</tr>
<tr>
<td>1861</td>
<td>Pasteur had discovered the link between germs and disease: his Germ Theory.</td>
<td>People now knew that germs caused disease. They also knew that germs existed where 'dirt' was. So, it was obvious that the way to increase health, and limit disease, was to clean towns up.</td>
</tr>
<tr>
<td>1865</td>
<td>Cholera had come back again.</td>
<td>Once people started dying from cholera again, more people wanted something to be done about Public Health. And this time they knew how to solve the problem: clean up the towns - however expensive it might be for rate payers.</td>
</tr>
<tr>
<td>1867</td>
<td>More people, some of whom were poor, were allowed to vote in national elections for the first time.</td>
<td>A law of 1867 increased the number of people who could vote in national elections. Now that some poor people had the vote, politicians and governments had to start passing laws that benefited them. If they didn't, they would lose power.</td>
</tr>
<tr>
<td>1875</td>
<td>The second Public Health Act made all of the recommendations of the First Act compulsory.</td>
<td>Local authorities had greatly increased powers to provide sewers, reservoirs, public baths and public conveniences. By 1900 the death rate had fallen dramatically and most towns</td>
</tr>
</tbody>
</table>
Edwin Chadwick and Nineteenth Century Public Health Reform

This work is based on pages 144-147 in the SHP textbook and your booklet.

1) Write a brief outline of Edwin Chadwick's life from his birth in 1800 until 1834.

2) What famous report was Chadwick responsible for publishing in 1842?

3) Look at Source 17 on page 145. What three measures did Chadwick believe were necessary to reduce the death rate in towns?

4) Why did the government ignore the recommendations of Chadwick's report until it reluctantly approved the Public Health Act of 1848?

5) Why was the Public Health Act of 1848 not particularly effective?

6) What four changes were compulsory in the Public Health Act of 1875?
Cholera in Britain

Cholera was one of the killer diseases of the nineteenth century. It arrived in Britain in 1831 having spread across Asia and Europe from India. The 1831-32 outbreak in Britain killed over 32,000 people and many more were to die in the outbreaks of 1848 (62,000 deaths), 1853-4 (20,000 deaths) and 1866-67 (14,000 deaths). The rapid growth of insanitary housing during the Industrial Revolution meant that the disease could spread rapidly.

Cholera caused great fear among ordinary people because of its painful symptoms and the speed with which it struck. Symptoms included vomiting, diarrhoea, fever and a blueish-purple skin colour. Death usually occurred within twenty four hours. The percentage of fatalities varied between 40%-60%, no one was safe from the disease as it affected all classes in society.

Cholera is spread by drinking polluted water and to a lesser extent eating foodstuffs contaminated by the faeces of a sufferer of the disease. Typhoid was a similar killer disease spread by contaminated water. These diseases were no respecter of social class and in 1861, Prince Albert the husband of Queen Victoria had died from typhoid probably caused by drinking contaminated water at Windsor Castle.

The cause of cholera remained unknown until 1883, when the German scientist Robert Koch identified the germ which caused the disease. However, after 1866 outbreaks of cholera had become rare in Britain due to Government action to improve public health and advances in medical knowledge.

Ellen Isabella Hazard, one of the first victims of cholera in England in October 1831.