EDX.MED8 The Cholera Epidemic of 1854 and John Snow's Broad Street Investigation

Total Marks

EDEXCEL 1HI0 · Calculators not allowed · about 65 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Write in full sentences for Questions 15 and 17. You are advised to spend about 65 minutes on this pack. The final 4 marks on Question 17 are for spelling, punctuation, grammar and use of specialist terminology.

1 Give the year of the major cholera outbreak in Soho that John Snow investigated.

(Total for Question 1 is 1 mark)

2 Name the street pump that became central to John Snow's investigation in Soho.

(Total for Question 2 is 1 mark)

3 Give one piece of equipment or technique John Snow used to show the pattern of cholera cases around the pump.

(Total for Question 3 is 1 mark)

4 State two actions taken by John Snow during his Broad Street investigation of the 1854 outbreak.

(Total for Question 4 is 2 marks)

5 Name the local clergyman who helped John Snow by interviewing residents and collecting information about victims and their water sources.

(Total for Question 5 is 1 mark)

6 State one reason why John Snow believed the Broad Street pump was the source of the cholera outbreak.

(Total for Question 6 is 2 marks)

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7 Give the name of the physician who published work rejecting the miasma idea and arguing a waterborne cause for cholera before germ theory was established.

(Total for Question 7 is 1 mark)

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8 Name one immediate effect on public behaviour or local policy after the Broad Street pump handle was removed.

(Total for Question 8 is 1 mark)

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9 State one limitation of John Snow's argument at the time, which slowed wider acceptance of his findings.

(Total for Question 9 is 2 marks)

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10 Give the name of the map feature Snow used to show each death or case on his Soho map.

(Total for Question 10 is 1 mark)

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11 Name one piece of contextual evidence Snow used, apart from the map, to support his case that the Broad Street pump water caused the outbreak.

(Total for Question 11 is 1 mark)

12 State two reasons why mapping and local enquiry were effective methods for Snow's investigation.

(Total for Question 12 is 2 marks)

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13 Explain one way in which John Snow's Broad Street investigation was similar to later epidemiological investigations in public health.

(Total for Question 13 is 4 marks)

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14 Describe two practical steps Snow or his supporters took to demonstrate the pump was unsafe during the 1854 investigation.

(Total for Question 14 is 4 marks)

15 Explain why John Snow's Broad Street investigation was important in the development of public health practice in Britain.

You may use the following in your answer:
- Snow's use of mapping and case enquiries to identify a local source
- the immediate effect of removing the Broad Street pump handle

You must also use information of your own.

(Total for Question 15 is 12 marks)

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16 Give two reasons why many medical professionals in the 1850s continued to support miasma theory despite Snow's findings in 1854.

(Total for Question 16 is 2 marks)

17 'John Snow's Broad Street investigation proved that cholera was spread through contaminated water, and so it changed public health policy immediately.' How far do you agree? Explain your answer. The final 4 marks are for spelling, punctuation, grammar and the use of specialist terminology.

(Total for Question 17 is 20 marks)

Mark scheme · EDX.MED8 The Cholera Epidemic of 1854 and John Snow's Broad Street Investigation

Question 1

- **B1** 1854
- **Answer: 1854**

Question 2

- **B1** the Broad Street pump
- **Answer: The Broad Street pump**

Question 3

- **B1** a dot map plotting deaths or cases
- **Answer: A dot map plotting cholera deaths or cases**

Question 4

- **B1** he plotted cholera cases on a map to show clustering
- **B1** he persuaded local officials to remove the pump handle on Broad Street
- **Answer: He plotted cases on a map to show clustering, and he persuaded local officials to remove the Broad Street pump handle.**

Question 5

- **B1** Henry Whitehead
- **Answer: Henry Whitehead**

Question 6

- **B1** most cholera deaths were clustered close to the Broad Street pump
- **B1** some victims who lived further away had used water from that pump, linking cases to the pump
- **Answer: Most cholera deaths were clustered around the pump, and some victims who lived further away had used water from that pump.**

Question 7

- **B1** John Snow
- **Answer: John Snow**

Question 8

- **B1** fewer people used the pump and cases around it declined
- **Answer: Fewer people used the pump and cholera cases around it declined.**

Question 9

- **B1** the dominant medical view was miasma theory, which many doctors and officials still accepted
- **B1** lack of a known specific germ or laboratory evidence to prove a waterborne agent
- **Answer: Many doctors still believed miasma theory, and there was no identified germ or laboratory proof at the time.**

Question 10

- **B1** dots (dot map)
- **Answer: Dots, creating a dot map of cases**

Question 11

- **B1** detailed enquiries showing some victims drank the pump water even though they lived away from Broad Street
- **Answer: Enquiries showing victims who lived away had drunk Broad Street pump water.**

Question 12

- **B1** mapping revealed a clear spatial pattern that pointed to a local source
- **B1** local enquiries provided individual case details that linked victims to the pump even when they lived further away
- **Answer: Mapping showed a spatial cluster pointing to a local source, and enquiries provided case details linking victims to the pump.**

Question 13

- **B1** identifies similarity, e.g. use of mapping or data to find patterns
- **B1** supporting detail for B1, e.g. later epidemiology also uses geographic mapping and statistical analysis to locate sources of disease
- **B1** identifies a second linked detail, e.g. reliance on case investigation and interviews
- **B1** supporting detail for the second detail, e.g. modern investigations still gather individual exposure histories to confirm links between cases and a suspected source
- **Answer: Both Snow's work and later epidemiology use mapping to detect spatial patterns and collect case histories to link victims to a suspected source.**

Question 14

- **B1** identifies step 1, e.g. plotting cases on a detailed street map
- **B1** supporting detail for step 1, e.g. placing a dot for each death to show the cluster around Broad Street
- **B1** identifies step 2, e.g. persuading local authorities to remove the pump handle
- **B1** supporting detail for step 2, e.g. the removal physically stopped people using that pump and allowed comparison with case numbers afterwards
- **Answer: They plotted deaths on a map to show clustering around Broad Street, and they persuaded authorities to remove the pump handle, reducing its use.**

Question 15

- **Level 1** (1-3): Identifies one or two simple reasons why Snow's investigation mattered, with little or no supporting detail.
- **Level 2** (4-6): Identifies and begins to explain one or two reasons, supported by some accurate detail and showing some links between cause and effect.
- **Level 3** (7-9): Explains several reasons clearly, each supported by accurate and relevant detail, and begins to place Snow's work in a wider context.
- **Level 4** (10-12): Provides a well-developed explanation of several reasons why Snow's investigation was important, supported throughout by precise and accurate detail and showing clear links between Snow's methods, immediate effects and longer term influence on public health practice.
- **Indicative content:**
  - Snow introduced systematic data collection and mapping to identify the likely source of an outbreak, an approach that underpins modern epidemiology.
  - His local enquiries and case histories provided evidence linking individuals to a water source, showing how combining qualitative and spatial evidence strengthens causal claims.
  - The removal of the Broad Street pump handle provided a practical intervention that coincided with a fall in local cases, demonstrating the value of targeted public health action.
  - Although Snow's waterborne theory did not immediately overturn miasma thinking, his methods influenced later sanitary investigators and public health officials who began to use evidence-based approaches.
  - Snow's work helped shift attention to the role of contaminated water supplies, contributing to later improvements in water and sewage provision even before germ theory was fully accepted.
  - A top answer will link Snow's methods and immediate success with the gradual change in public health practice, explaining both direct and indirect consequences rather than simply asserting importance.

Question 16

- **B1** miasma theory was long established and widely taught, so many doctors trusted it
- **B1** there was a lack of microbiological evidence identifying a specific germ to explain cholera transmission
- **Answer: Miasma theory was long established and trusted, and there was no microbiological proof of a specific germ at the time.**

Question 17

- **Level 1** (1-4): Shows limited relevant knowledge and offers a simple, unbalanced judgement with little supporting evidence.
- **Level 2** (5-8): Shows some relevant knowledge and offers a partly developed judgement, but the argument lacks depth or balance.
- **Level 3** (9-12): Shows good relevant knowledge, evaluates both the extent of Snow's proof and the speed of policy change, and reaches a supported judgement with some analysis.
- **Level 4** (13-16): Shows precise and well-selected knowledge, gives a balanced evaluation of the strength of Snow's evidence and the pace of change in public health policy, and reaches a sustained, well-supported judgement, using specialist terms accurately.
- **Indicative content:**
  - Arguments agreeing with the statement: Snow's mapping and enquiries provided strong local evidence that the Broad Street pump was linked to the outbreak, and removal of the pump handle coincided with a fall in local cases, showing immediate practical effect.
  - Snow presented a clear causal explanation based on spatial and case data, which anticipated later epidemiological methods and focused attention on water contamination as a likely route of transmission.
  - Arguments disagreeing with the statement: Snow did not identify a causal microbe, and many medical professionals continued to believe miasma theory, so his findings did not lead to immediate, nationwide policy change.
  - Acceptance of Snow's ideas was slow; broader policy shifts in water and sewage infrastructure developed over subsequent decades and were influenced by many factors beyond the Broad Street case.
  - Balanced points: Snow's work was an important early demonstration that localised, evidence-based interventions could work, but the change to public health policy was gradual, dependent on further evidence and institutional shifts rather than on a single study.
  - A strong answer will weigh Snow's clear local success against the limited immediate impact on national medical consensus and policy, and will explain why the case influenced later developments without producing an immediate nationwide policy transformation.