

OxfordAQA International GCSE History (9245)

Scheme of work Medicine and change, c800 – present day

For teaching from September 2026 onwards
For International GCSE exams in June 2028 onwards

Contents

You can use the title links to jump directly to the different sections of this scheme of work
(Use Ctrl and click to follow the link)

Section title	Page
Introduction	3
Assumed coverage and teaching hours	3
Assessment	3
Resources	4
Medieval Islamic Medicine (c800 – c1200)	5
Epidemics in the pre-modern era (c800-c1800)	9
Review (1)	13
19th-Century Medical Advances	14
The Fight against disease in the 20th-Century	18
Review (2)	22
A modern medical revolution (c1880-present)	23
Global Public Health (1850-present)	28
Review (3)	32

Introduction

This scheme of work is intended to help teachers plan and implement the teaching of Medicine and change, c.800 - present day option of the Oxford AQA International GCSE History (9245) specification. The purpose is to provide advice and guidance to teachers, not to prescribe and restrict their approach to the specification. There are obviously many other ways of organising the work, and there is absolutely no requirement to use this scheme. We hope the suggested activities will support your teaching of this topic.

This option explores six significant periods of medical advancement since the middle ages. Students will examine the development of each period of change, their consequences for ideas about the causes and treatment of disease, surgical development, and public health provision, as well as their social and cultural importance on a global scale. Students will also explore the contributions of the men and women from around the world who drove medical advancement since the medieval period, and how and their ideas and inventions shaped - and continue to shape – medicine and healthcare up to the present day.

Assumed coverage and teaching hours

This scheme of work assumes that the OxfordAQA International GCSE History (9245) is taught as a two-year linear course, with a total of approximately 120-140 guided learning hours in total, in line with specification guidance. This equates to approximately two hours of teaching per week over two academic years, although this may vary according to local timetabling arrangements and students' prior experience of. As this optional topic equates to one quarter of the qualification, this scheme of work is designed to be taught in around 30-35 hours.

Work will also need to be completed outside of lessons. The amount of independent study used will depend on the abilities of the students, the curriculum time, the pace of delivery and the extent to which assessment practice and consolidation activities are incorporated into timetabled lessons. The design of these lessons illustrates the use of preparatory reading and note-making before each classroom session. Classroom time is therefore used for tasks that benefit most from discussion, teacher guidance, and structured writing.

Assessment

Assessment points in the learning activity column indicate possible assessment opportunities. These could be short tests of about ten minutes (exam-style questions, short factual tests, source evaluation) or longer assessments (exam-style questions).

The assessment in Section B of Paper 2 is based on a series of short, medium, and extended response questions.

- Question 1 tests AO1 and is worth 3 marks. It requires students to show their knowledge of a given issue.
- Question 2 tests AO1 and AO2 and is worth 6 marks. It requires students to explain one way in which a given issue developed, supporting their explanation with knowledge and understanding. It will focus on the 2nd order concept of cause/consequence or change.
- Question 3 tests AO1 and AO2 and is worth 9 marks. It requires students to explain two changes or two ways/ reasons why a given issue developed, supporting their explanation

with knowledge and understanding. It will focus on the 2nd order concept of cause/consequence or change.

- Question 4 tests AO1 and AO2 and is worth 12 marks. It requires students to construct an extended response with a line of reasoning. It requires students to explain a given cause/ consequence/ change and at least cause/ consequence/ change in the context of a broader development leading to a judgement that evaluates their relative importance. It will focus on the 2nd order concept of cause/consequence or change.

Resources

Research exercises assume students have access to a textbook(s) and / or the internet.

You can supplement textbook(s) by other sources.

OUP support this option with 'Medicine and change, c.800-present day,' published in 2026 as part of the OxfordAQA International series and available in various formats.

Medieval Islamic Medicine (c800 – c1200)

Suggested timing

5 hours

Specification content

Medieval Islamic Medicine: preserving, translating, and passing on ancient and new knowledge from Europe and Asia, the 'Translation Movement'; the development of universities and centres of learning; Islamic physicians - ethics and knowledge, including Al-Razi and Ibn-Sina; hospitals - bimaristans; surgery, tools, techniques, including the work of Al-Zahrawi; developments in public health, hygiene, water supply, and sanitation; innovations in pharmacology, including the work of Al-Baytar, and Al-Kindi; contribution to medicine in Europe and Asia.

Teaching guidance

- The study of Islamic medicine is important from several standpoints. During the time of the Dark Ages in Western Europe, Islam preserved and valued the knowledge of the Ancient Greeks and Romans. In the 11th-Century, this knowledge would be transferred to the universities of Western Europe. However, the contribution of Islamic scholars and doctors to the knowledge of medicine was immense. Muslim doctors not only accepted but also challenged the writings of the prominent physicians of the ancient world such as Hippocrates and Galen.
- Students should learn about the contribution of Islamic physicians such as Ibn Sina, and al-Razi. They adopt a 'scientific' approach to many medical problems. From a teaching point of view, they both had a rational observational approach, which is different based upon superstition or purely religious explanation and relates more broadly to the culture of Islamic scholarship. Al-Zahrawi makes a major contribution to the knowledge of and practice of surgery. The Islamic hospital, the bimaristan, is a very different institution from those which bore the same name in Western Europe. It differed from medieval European hospitals, in that it had trained staff, it separated patients by condition and gender, kept records, and aimed to secure rather than merely care for patients. Islamic scholars also integrated knowledge from Persia, India, and China. In turn, knowledge of Muslim medicine made its way to these places.
- Students will be expected to understand the Translation Movement and the role of the House of Wisdom. Several factors combined to make Islamic medicine flourish - political and financial patronage, the Translation Movement and synthesis of Greek, Persian, Indian, and Chinese knowledge and trade routes that facilitated the exchange of ideas. Students will have opportunities to distinguish between enabling conditions and direct causes of specific advances. A key aspect of the history studied is to evaluate whether Islamic medicine was primarily preservation, refinement, or genuine innovation, so it is helpful to be able to identify areas where Islamic medicine went beyond its inheritance — particularly in surgery, pharmacology, and institutional design.

Students will learn how the ethics and culture of Islamic scholarship - the value placed on knowledge, observation, and rational inquiry - shaped medical practice. Islamic advancement in medicine contrasts in many ways with medieval Christian European approaches to surgery, public health, and pharmacology. This knowledge then spread reaching Europe and Asia - via translation, trade, and cultural contact through Al-Andalus, Sicily, and Crusader states - where it had a long-term significance for the history of medicine.

- The classroom activities are focused on explaining causation, describing the nature of change, and evaluating significance. There are two Enquiry questions, which act to consolidate reading, note making, class discussion, and other classroom activities. The first Enquiry question is, 'How did the Islamic world become the centre of medical knowledge between 800 and 1200CE?'
- This second Enquiry question asks students to make a judgement about the nature of Islamic medical achievement - and it is deliberately provocative in order to invite debate and challenge. 'Islamic medicine was mainly a preservation and refinement of what already existed. How far do you agree with this statement?'

Possible teaching and learning activities

- Before the lesson, it is expected that students will have done some preparatory reading and note making. They will have read the textbook about the Translation Movement; the development of Centres of learning; bimaristans; and the work of Al-Razi and Ibn Sina. As they read, the students will be required to complete a simple structured note framework with 4 columns, covering the questions, 'what changed?'; 'How did it come about?'; 'Who was involved?'; 'Why did it matter?'

Activity 1: Why did Islamic medicine flourish? — spider diagram and consolidation

- Commence the lesson with a quick factual 10-point test for which they can use their notes. This should remind students of the importance of preparatory reading and note making. Students should be asked to use their research to consider the overarching Enquiry question, 'How did the Islamic world become the centre of medical knowledge between 800 and 1200CE?' Students should understand what the Islamic world inherited from Greek, Persian, and Indian traditions, and why the political, cultural, and institutional conditions of the Islamic world allowed medicine to flourish.
- Ask students to draw directly on their preparation, and work in pairs to construct a simple spider diagram on a single side of paper. In the centre will be the question, 'Why did Islamic medicine flourish?' Around it will be separate subheadings headings, 'inherited knowledge,' 'institutions,' 'culture and ethics,' 'political support.' Pairs of students may briefly compare their diagrams with a pair of students nearest to them adding anything they missed. It may be useful for the teacher to bring the class together for discussion and consolidation of knowledge, perhaps clarifying important features of the study (eg the Translation movement, the House of Wisdom and the operation of the bimaristan, and confirming key terms on the board).

Activity 2: Al-Razi and Ibn Sina — physician profiles

- Students should use their notes again for a study of the significance of al-Razi and ibn - Sina. It is important for them to understand their methods, key writings, and their importance within and beyond the Islamic world. Students should write two short profiles, one for each physician. Each profile should be no more than five sentences and address the following questions, 'What did they contribute?' 'How did they work?' 'Why did it matter?' It is helpful then for students to discuss as a class, potentially around the question: 'What did both physicians have in common in the way they approached medicine?'

Activity 3: Ranking the causes — why did Islamic medicine flourish?

- This should help students develop their understanding of causes and construct a logical argument. Ask students to consider a prepared list of six factors that explain why Islamic medicine flourished – the Translation Movement; political and financial patronage; the bimaristan system; the ethics and culture of Islamic scholarship; trade routes connecting Europe and Asia; and the legacy of classical Greek and Roman knowledge. Students can then rank these in order of importance and write a short two or three sentence justification for their top choice. It is an opportunity for the teacher to distinguish between enabling factors and direct causes. From this work, students could practice writing a response to the initial Enquiry question. They may benefit from being given a simple planning framework. At this stage, it is useful for students to gain confidence by being allowed to use their notes and textbooks. The teacher can use one or two answers to illustrate effective analytical writing.

Activity 4: The most significant contribution — opening discussion and image annotation

- Students should prepare for the next series of lessons covering al-Zahrawi, public health, hygiene, pharmacology and the work of al-Baytar and al-Kindi, and finally the contribution of Islamic medicine to Europe and Asia. They may use the same initial four questions, identifying changes, how they came about, who was involved, and why it mattered, to structure their notes.
- The teacher may choose to assess student preparation with a short 10-point test. However, the first main task to give the students in the lesson is, 'Which single contribution of Islamic medicine to you think was the most significant, and why?'
- Students should study the nature and significance of Islamic achievements in surgery, public health, and pharmacology. The key element is to understand what has changed.
- The teacher may give students a sheet of images depicting the surgical instruments associated with al-Zahrawi's Kitab al-Tasrif and asks them to annotate each instrument noting what it was used for, the problem it solved and what it might suggest about the level of surgical knowledge at the time.

Activity 5: Islamic versus European medicine — comparative table

- A comparative table can be completed as it will help students contrast Islamic and medieval Christian European approaches regarding surgery, public health and sanitation, pharmacology, and the role of institutions.

Activity 6: Timeline — texts, translators, and transmission

- Students may find it useful to construct a timeline identifying major texts, translators, points of contact, et cetera.
- To consolidate students' understanding, they should use their notes to consider whether, as the second Enquiry question posited, Islamic medicine was revolutionary or evolutionary. The question could be posed in an examination format, 'Islamic medicine was mainly a preservation and refinement of what already existed. How far do you agree with this statement?'

Epidemics in the pre-modern era (c800-c1800)

Suggested timing

5 hours

Specification content

Epidemics in the pre-modern era, c800-c1800: major epidemics including Leprosy, Smallpox, Cocoliztli in Mexico, Persian plague; theories of disease in Europe and Asia including miasma, religious explanations, contagion, early germ theory; the Black Death, including its origins and reasons for its global transmission; the impact of the Black Death, including its social, economic, cultural, and political consequences; responses to epidemics, and public health measures.

Teaching guidance

- Students should gain some knowledge of the major epidemics of the period and their broad characteristics. Once they have located these geographically and in time, it is important that they become aware of the competing theories of disease across Europe and Asia (miasma, religious explanation, contagion, and early germ theory). It is important that students should be able to describe the key elements of miasma theory, religious explanation, contagion theory, and early germ theory, explaining what evidence seemed to support each, and what actions each theory led people to take. It is hoped that students will avoid treating pre-modern populations as simply ignorant, and explain what evidence they had access to and why their responses seemed reasonable at the time. During the course of study, students will gain some understanding of how and why these theories arose and what they had in common. Finally, it is important that the nature of contemporary public health responses is examined as well as the reasons why they were largely ineffective.
- Much of this unit of work is given over to a case study of the Black Death. Students will find out about the origins and transmission of the Black Death. They should focus on why it spread so rapidly and so widely from Central Asia to Western Europe via trade routes, coastal cities, the role of rats, fleas, and human movement need to be learnt and the structural reasons for its rapid spread (movement of people and goods, lack of immunity, urban overcrowding, absence of effective quarantine). Having grasped the major features of the disease and the epidemic, it is important to understand the short-term immediate responses of governments, communities, and individuals. Students will be able to assess the effectiveness of pre-modern responses to epidemic disease (eg. quarantine attempts, civic and religious measures). In considering measures taken against infection, it is important to explain not just what was done but why it failed, i.e. linking the failure of responses to the failure of the theories that informed them. The Black Death had profound social, economic, cultural, and political consequences and these should be evaluated. Students will be able to assess the relative importance of, for example, economic change with a focus on the collapse of the feudal labour system

and the rise in peasant bargaining power, or culturally with the emergence of the danse macabre tradition and changing attitudes to death and the Church.

- Students will first consider as an Enquiry question, 'Why did people in the pre-modern world struggle to understand and control epidemic disease?' In doing so, students should avoid dismissing pre-modern responses to disease as ignorant or superstitious.
- A second possible Enquiry question considers the impact of the Black Death, would be, 'The Black Death - catastrophe or catalyst for change?' This question asks students to move beyond the immediate horror of the Black Death - the death toll, the symptoms, the terror — and assess whether it was primarily a catastrophe or a catalyst for change.

Possible teaching and learning activities

- Before the lesson, ask students to read the relevant textbook sections on leprosy, smallpox, the Cocoliztli epidemic in Mexico, and the Persian plague. They should make brief notes under three headings for each epidemic:
 - 'When and where did it occur?'
 - 'Who is affected?'
 - 'What was unusual or significant about it?'

In the lesson, the teacher shares the Enquiry question, 'Why did people in the pre-modern world struggle to understand and control epidemic disease?' The subsequent work will be likely to last for two lessons. In a brief overview of the chronology and geography of the period, the teacher can place the four epidemics on a timeline and also check that the students are prepared to engage with other tasks based on their preparation.

Activity 1: Four epidemics — comparison, scale, and context

- It is possible to draw attention to significant contrasts — for example, that the Cocoliztli epidemic killed an estimated 80% of the indigenous Mexican population, making it arguably one of the most catastrophic disease events in human history, while leprosy in medieval Europe lasted centuries and produced a very different kind of social response.
- Students could then work in pairs for around 20 minutes to complete a comparative grid. Using a structured worksheet with the four epidemics across the top and four analytical categories down the side: scale and geography; the population most affected; the social or political context; what made this epidemic distinctive. This will also give students an opportunity to discuss and refine their understanding with a partner.
- The lesson might conclude with a short whole-class discussion of about 10 minutes, the teacher taking feedback from pairs and using it to draw out one key overarching idea: that these epidemics were separated by centuries and continents, yet they shared a common feature — the populations they struck had no reliable framework for explaining, let alone preventing them. This will lead into the next part of the study period.

Activity 2: Theories of disease — reasonable, but wrong

- In preparation for this learning, students should read about miasma theory, religious explanations, contagion theory, and early germ theory from the textbook. Suggest that they should read with the aim of identifying one piece of evidence or reasoning that supporters of each theory would have used to defend their beliefs. When the students are in class, there is an opportunity for a guided class discussion around a central question of, 'Which theory of disease was most reasonable given what people knew at the time?' This is an opportunity to engage in analytical reasoning and for students to try to apply some period appropriate logic.
- Students may confirm their understanding in table listing the four theories, interrogated by three questions in three columns - 'What did this theory claim?', 'What evidence seemed to support it?' and 'What did it lead people to do in response to disease?'

Activity 3: The spread of the Black Death — mapping origins and transmission

- In preparation for the students' study of the Black Death, they should read about the origins of the disease and its transmission across Asia. Suggest that after reading they should be able to recognise the route that the plague took across Asia and Europe and suggest at least two reasons why it spread so rapidly.
- In the lesson, introduce students to the Enquiry question, 'How did the Black Death transform the medieval world?'
- Give students a base blank outline map and ask them to annotate it with Europe, the Middle East, and Central Asia, with a small number of key cities and dates for the route of the Black Death epidemic. Add notes to appropriate parts of the map providing answers to some of the following questions – why did it move along trade routes? Why did it reach coastal cities first? What role did rats, fleas, and human movement play?
- Students should then be able to answer a structured examination-style question. 'Identify three features of the way in which the Black Death reached Western Europe from its origins in Central Asia.' A second more analytical question will require students to recall or refer to earlier knowledge, 'Why were the responses of governments and communities in Europe largely ineffective in stopping the spread of the Black Death?' Students should refer to specific measures or actions such as quarantine attempts, flagellant processions, and the persecution of Jewish communities.

Activity 4: The impact of the Black Death — group research and class

- Students may wish to familiarise themselves with information from the textbook about the impact of the Black Death. However, that is not essential as they will be provided with a collection of carefully prepared images, sources, and information cards about the epidemic. In class, they are divided into groups and assigned an area of impact - social, economic, cultural, and political. As a group, they should decide what the main changes were in their area and the significant consequences, classifying them into short or long term.
- The groups may be used to share with each other the key points of the area which they had studied. Bringing all of their research and understanding together can be a class

discussion exercise based on the question, 'The Black Death - catastrophe or catalyst for change?'

Activity 5: Debate Understanding the spread - structured examination questions

- There is a need to bring together all of the knowledge of the students and so, they should be asked in preparation for a lesson, what they think are the three most significant points they have learned about the Black Death. However, the classroom time can begin with a short test of 12 to 15 key terms, which the students should try to explain in one sentence from memory. This may be followed with an examination style question covering the whole unit, 'Why were epidemics in the pre-modern era so destructive? Explain two reasons.'

Review (1)

Suggested timing

1 hour

Specification content

Review and assessment of Medieval Islamic Medicine & Epidemics in the pre-modern era (c800-c1800).

Assessment guidance

- This is the opportunity to develop your students' exam technique and test their learning so far. There is no need to use all the time for assessment. Some of the time can be used for demonstrating or modelling memory and exam techniques.
- You can use exam-style questions based on the content of the Medieval Islamic Medicine (c800-c1200) and Epidemics in the pre-modern era (c800-c1800).
- Students will not have composed a direct answer to the second Enquiry question from the unit on Epidemics in the pre-modern era. Posing that as a question to be answered as an open book exercise allows them to gain confidence with their approach and an opportunity for the teacher to explain about the structure needed for extended pieces of writing.

Resources

Test exercises, Specimen papers, sample responses.

19th-Century Medical Advances

Suggested timing

5 hours

Specification content

19th-Century Medical Advances: theories of disease before Germ Theory, including spontaneous generation; Inoculation in Asia; Edward Jenner and vaccination, including its impact and reasons for opposition; Cholera and John Snow; Louis Pasteur and Germ Theory; the importance of Robert Koch; developments in surgery, including the work of Joseph Lister; developments in public health, including laws and sanitation; women in 19th-Century medicine, including Florence Nightingale, Mary Seacole, Elizabeth Blackwell, Sophia Jex-Blake, and midwifery.

Teaching guidance

- This study examines how understanding of disease, surgery, and public health was transformed during the 19th-Century — arguably the period in which medicine first became a modern scientific discipline. The story moves from pre-scientific theories of disease through the Germ Theory revolution to its practical consequences in surgery and public health reform. Students should be able to explain what people believed about disease before germ theory; trace the chain of discoveries from Jenner through Pasteur to Koch; explain why the cholera outbreaks mattered; and understand how surgical advancements and public health reform followed from new scientific understanding about disease. Note the role of enabling technologies (the microscope), institutional support, and building on prior work. Students should be able to assess the immediate effects: ‘Was a discovery accepted straight away, or was there resistance?’ (eg. Lister’s antiseptic techniques were resisted by many surgeons for years; Snow’s conclusions about the Broad Street pump were initially dismissed). Recognising the future significance of developments is important — Germ Theory made Koch’s bacterial identifications possible; Koch’s work underpinned the later development of targeted treatments.
- A second, intersecting part of the story examines who participated in that revolution, and why the answer was so often determined by gender and, in the case of Mary Seacole, race. Students should be able to assess the significance of key individuals (Jenner, Pasteur, Koch, Snow, Lister, Nightingale, Seacole, Blackwell, Jex-Blake) and the obstacles they faced. Students should understand that Nightingale, Seacole, Blackwell, Jex-Blake, and midwives were not all fighting the same battle — race, class, and strategy produced different experiences.
- The study is built around two Enquiry questions. The first, ‘The greatest obstacle to medical progress in the 19th-Century was not ignorance — it was the resistance to new ideas. How far does the evidence support this view?’ This question challenges the assumption that pre-germ-theory medicine was simply primitive. Spontaneous generation, miasma theory, and humoral theory were reasonable positions. The second Enquiry question, ‘In 19th-Century medicine, what you discovered mattered less than

who you were. How far do you agree?’ seeks to blend together the individuals and the challenges they faced.

Possible teaching and learning activities

- Before the lesson, students will have read the relevant textbook section on disease theories before 1850 and on Pasteur. The initial classroom activity will require knowledge of what people thought caused disease before Germ Theory, and why those ideas seem reasonable at the time. Students will investigate the Enquiry question, ‘Why did understanding of disease change so dramatically in the 19th-Century?’

Activity 1: Wrong, but not stupid — theories of disease before germ theory

- Initially students may be presented with two or three pre-germ-theory ideas — spontaneous generation, miasma theory, humoral theory. And under the title ‘Wrong, but not stupid,’ discuss why an intelligent, educated person in 1800 would have believed in these theories.

Activity 2: The germ theory timeline — discovery, method, change

- Turning attention to Pasteur and Germ theory, students complete a timeline (approximately 1796 to 1883) with key dates marked, students should use their preparatory reading and the textbook to fill in and annotate. For each entry student should write down, perhaps using different colours, (a) what happened, (b) how the discovery was made. Emphasise that it is important to mention the role of observation, experiment, and the scientific method. Ensure that students should also note briefly (c) what the old explanation was that each discovery displaced.
- In any whole-class discussion, consider Germ Theory, stress the role of factors resistant to change (professional conservatism, cost, entrenched belief) and those that promoted change for example scientific, social, technological et cetera. For example, the role of the microscope, government and university support for science, and the increasing importance of experimentation.

Activity 3a: John Snow, cholera, and the case for evidence

- Students will undertake three case studies on cholera, surgery, and public health. This may be distributed to subgroups or pairs of students. Each case study relates in some way to an understanding of Germ Theory.
- The outbreak of cholera in the 19th-Century will need some brief and careful scene setting by the teacher mentioning, for example, urban overcrowding, the state of London's water supply, prevailing miasma beliefs.
- Using a short account of John Snow's work in London in 1854 either prior textbook or a teacher prepared summary, identify what John Snow did, his methodology, and his conclusion. Remind students that he did not know about germ theory but used a careful study of the evidence to identify the source.

Activity 3b: Surgery - Germ Theory applied

- In much the same way as students completed a study of cholera, turn attention to the textbook section on the developments in surgery and Lister's use of antiseptic technique. Use a table to compare surgery before Lister, with surgery after Lister. Identify conditions under which operations were carried out, the methods that Lister employed, and the reasons why both states of affairs existed.
- It is important for the teacher to point out to students that the problem of pain and the problem of infection were tackled separately. Further emphasise that Lister's work was only possible because of the connection to Germ Theory and that Pasteur showed that microorganisms caused infection.

Activity 3c: Germ Theory - germ theory applied

- Students should be shown the two major UK Public Health Acts of the 19th-Century in 1848 and 1875. Once the basic provisions and differences are established, possibly through preparatory reading. The key question that students should inform their study is, 'Why did governments act?' Set the students the task of finding answers. They should be able to identify a combination of new scientific understanding, fear of disease, and political considerations. This will help to explain why change was slow and uneven.

Activity 4: Germ Theory - A turning point

- As a concluding exercise, students should tackle an examination question on a topic fundamental to the unit. To build confidence, this may be done as an open book exercise but should be under timed conditions. Use the question, 'Why was Pasteur's Germ theory a turning point in the history of medicine? Explain two reasons.' Remind students that in their answers they should try to include what came before, what Pasteur reasoned and how he showed it, and crucially give two reasons why it mattered for what came next or was significant.
- In introducing the second Enquiry question, 'In 19th-century medicine, what you discovered mattered less than who you were. How far do you agree?', build upon the discoveries and changes studied so far. They have all involved specific individuals. The question is whether it matters who they were.

Activity 5: Expert profiles and comparison

- In preparation for the lesson students should research one assigned individual from the following list: Jenner, Pasteur, Koch, Snow, Lister — using the textbook and, if available, internet research. They should aim to prepare a written profile of no more than 300 words covering their background, the problem they addressed, what they discovered or changed, how they did it and what oppositional difficulties they faced. Students will bring this profile to the lesson.
- In groups composed of students who have each studied a different one of the five figures, students present their profiles to the group. The group then completes a shared comparison grid about the factors, which best explain each figure's success – individual skill and insight, luck and timing, access to resources, and building on prior work. It is important for students to understand the different ways in which medical developments

and progress occurred - Jenner built upon folk knowledge about cowpox already circulating amongst rural communities, Pasteur had a well-equipped laboratory, prestige and national backing, Koch's work depended upon improved microscopes. After the discussion, students should consider which of the five individuals made the most significant contribution to 19th-Century medicine and why.

Activity 7: Women pioneers — structured reading and comparison table

- Having studied the five men previously, begin by asking students to suggest the obstacles that prevented women from contributing to medicine. Students might, in pairs, try to identify three obstacles or reasons. The following points will probably emerge – legal exclusion from medical education, professional hostility, social expectations about gender roles, or lack of access to examining bodies.
- Students will use short accounts that include primary source-based material about Florence Nightingale, Mary Seacole, Elizabeth Blackwell, Sophia Jex-Blake, and the history of midwifery. After reading, students will complete a structured table with columns for:
 - Who were they?
 - What did they achieve?
 - What obstacles did they face?
 - Why does their story matter?
- In the discussion, teachers may prompt students to notice important distinctions within this group, for example: Nightingale worked largely within the system and used social connections strategically; Seacole faced both gender and racial prejudice and was largely written out of the official record until recently; in the cases of Blackwell and Jex-Blake they fought directly for access to formal medical qualifications; in the field of midwifery women had long practised but faced professionalisation pressures that sought to exclude them.

Activity 6: Were they part of the same story? — evidence, statements, and debate

- Students will respond to a set of statements about women's participation in 19th-Century medicine. They should find specific evidence to support or refute the statements. Statements will be based around the question of whether Nightingale, Seacole, Blackwell and Jex-Blake were part of the same story, or were they fighting different battles? The statements might be for example: (a) 'Nightingale, Seacole, Blackwell, and Jex-Blake were all fighting the same battle.' (b) 'Women's exclusion from medicine was about gender, not ability.' (c) 'By 1900, women had made real progress in gaining recognition in medicine.'
- This activity will allow students to consider individuals as agents of change. Students should be encouraged to reflect upon not just what a significant person did but their unique talents, insights, and personal qualities. An interesting debate would centre around whether individuals were unique catalysts or whether progress would have happened anyway at some time for other reasons, for example, government intervention, urbanisation, improvements in science, or public health crises.

- Students may welcome the opportunity to answer the second Enquiry question, 'In 19th-Century medicine, what you discovered mattered less than who you were. How far do you agree?' Using their understanding of the role of the individual but also bringing in other factors that bring about change.

The Fight against disease in the 20th-Century

Suggested timing

5 hours

Specification content

The Fight against Disease in the 20th-Century: Paul Ehrlich and magic bullets; Gerhard Domagk; Alexander Fleming and Penicillin; Howard Florey and Ernst Chain, warfare, America and mass-produced Penicillin; women in 20th-Century medicine, including Gerty Cori, Gertrude Elion, and Virginia Apgar; the development of the global pharmaceutical industry, including the work of Dorothy Crowfoot Hodgkin; antibiotic resistance; the development of national healthcare systems, including the influence of warfare.

Teaching guidance

- In this period of medical advancement students should understand the nature of each breakthrough (what problem it solved, how it worked as a treatment), the process of discovery (chance, collaboration, funding, war), and how each development built upon or departed from earlier approaches. Students should be able to name and accurately date key events (eg. Salvarsan 606, 1909; penicillin clinical trials, 1941; the creation of the NHS in the UK, 1948), as well as to identify key individuals — Ehrlich, Domagk, Fleming, Florey, Chain, Cori, Elion, Apgar, Hodgkin — and say specifically what each contributed.
- Throughout the study of Medicine and change students will be asked to assess the relative importance of different factors across different developments. This is illustrated in the way in which penicillin was transformed from a laboratory curiosity into a mass-produced treatment. The history of penicillin shows the influence and role of warfare, individual genius, chance, industrial funding and manufacturing, and government. An awareness of the way in which developments have future significance is helpful, for example, Hodgkin's crystallographic methods (including the structure of penicillin and insulin) underpin modern drug design; Elion's targeted drug approach shapes contemporary oncology; the NHS model has influenced healthcare systems worldwide. Students should link past discoveries to present practice.
- Students should understand the contributions of specific women scientists (Cori, Elion, Apgar, Hodgkin) and be able to connect those contributions to broader developments in pharmaceutical science and applied medicine. It should be possible to understand the reasons and barriers - in scientific institutions, funding bodies, and wider society — that delayed or denied recognition of their work. It is important in studying 20th-Century medicine to understand how and why national healthcare systems (with particular focus on the British NHS) came into being and how warfare acted as a catalyst for social change as well as medical change. Furthermore, the understanding that antibiotic resistance, public health funding pressures, and global health inequity are problems

produced in part by the success of medicine itself. The history of medicine includes both achievements and unresolved failures.

- The first Enquiry question focuses plainly on the people and scientific discoveries that have assisted medical progress: 'Alexander Fleming deserves most of the credit for the development of penicillin as a medicine. How far does the evidence support this view?' This question challenges the assumption that a single moment of discovery - Fleming's observation of mould killing bacteria in 1928 - explains the emergence of penicillin as a treatment.
- Enquiry question 2 asks them to make a judgement about the overall record of 20th-Century medicine. It is framed as a paradox: the very success of medicine - the development of antibiotics, the growth of the pharmaceutical industry, the extension of life - has generated challenges that science and policy have struggled to meet.

Possible teaching and learning activities

- In the classroom students will be introduced to the Enquiry question, "Alexander Fleming deserves most of the credit for the development of penicillin as a medicine. 'How far does the evidence support this view?'"

Activity 1: From Ehrlich to Fleming — the chemical medicine revolution

- Students will have completed reading of the relevant textbook pages in advance of the lesson to obtain factual information about Ehrlich, Domagk, and Fleming, making short notes under the headings Discovery, Treatment, Significance. The central story runs from the development of targeted drug therapy from Ehrlich through to the mass production of penicillin. Students should be confronted with the proposition that 'Alexander Fleming was the most important figure in the development of penicillin.' This will allow the teacher to evaluate class preparation and the quality of understanding amongst the students.
- Students should work in pairs on a structured timeline-annotation activity. They are given a visual timeline spanning 1900–1945 with key dates marked. Their task is to annotate each event with two things: a brief explanation of the discovery, and one factor (other than individual genius) that helped make it possible. The textbook is available throughout. Summarising discussion the factors and patterns that emerge.

Activity 2: Florey, Chain, and the transformation of penicillin

- Before the lesson students may be instructed to read the textbook pages on Florey and Chain however initial reading may be incorporated into the lesson. It is important to devote an appropriate amount of time to understanding the story of how penicillin was transformed from a laboratory curiosity into a mass-produced treatment. This will enable students to appreciate both the role of warfare and industrial-scale manufacturing in that process.
- A classroom activity that may encourage student analysis would be a writing task with scaffolding. Students may be given a framing question: "Why was the Second World War essential to the development of penicillin as a medicine?" They are provided with a writing frame that prompts them to address: (a) what Florey and Chain contributed that

Fleming had not; (b) why the war created urgency and funding; (c) why America, not Britain, became the centre of mass production; (d) whether the war should be seen as the cause of mass-produced penicillin or only as an accelerant. The responses once completed could be shared and compared with a partners, identifying points that were not originally considered and then contributed to a plenary classroom discussion.

Activity 3: The four women — expert presentations and structured discussion

- In preparation for this work students should research one of the four figures before the session and prepare a written summary (approximately 150 words) covering what the person discovered or developed, why it mattered medically, and one obstacle they faced that a male colleague in the same field likely would not have encountered. This will focus students' attention on the question, 'How did the work of women scientists change medicine — and why did it take so long for their contributions to be recognised?' In class students should be formed into groups of 4 with one specialist per figure, each presenting their summary and fielding questions. A prompt card will sharpen the focus on the Enquiry question, 'Looking at all four women: what kinds of barriers did they face?'

Activity 4: Examination practice — recognising and explaining women's contributions

- The second half of the session is given over to two structured written tasks related to the Enquiry question but based upon examination questions. Firstly, students are given the examination-style question, 'Explain one example in which a woman contributed to medical development in the 20th-Century.' Secondly, pose the question, 'Why has the contribution of women to 20th-Century medicine been hindered? Explain two reasons.' Remind students that they should give accurate factual knowledge – dates, names, places and use technical terms wherever possible to back up their explanations.

Activity 5: The pharmaceutical industry — from fundamental science to global business

- In tackling this enquiry based on the question, 'Has the development of modern medicine created as many problems as it has solved?', students should be aware that the under recognition of women's contribution to medicine and the inequitable distribution of healthcare along with antibiotic resistance are some of the problems of 20th-Century medicine that they will have encountered.
- Briefly remind students how fundamental science is to the development of medicine and effective treatments, as the industrial development of penicillin and later medicines illustrate. This provides the positive case that students will need to weigh against what follows. By reading the relevant textbook pages on the pharmaceutical industry and antibiotic resistance, students will be able to complete a worksheet and a brief Internet search. The central questions to this work are:
 - 'How does resistance arise biologically?'
 - 'Which human practices accelerated it?'
 - 'What is the current scale of the threat?'

- 'Why is it so difficult for the pharmaceutical industry to solve?'
Consolidate student findings in a brief class discussion.

Activity 6: The NHS — healthcare systems and the limits of progress

- Students should prepare by reading textbook pages on healthcare systems and the NHS in the UK. Present students with two contemporary accounts of healthcare before and after the NHS. Focus students on which groups of people got good healthcare in Britain before the NHS. Students then work individually on a short-answer exercise (20 minutes) covering: (a) how the Second World War changed public and political attitudes to state-provided healthcare, (b) what the NHS offered that had not existed before and who it reached, (c) how other countries developed different models. It is worth pointing out that there is an issue about developing and mass-producing medicines and creating a national system capable of paying for and distributing them equitably.
- Finally, students should be given an opportunity to respond to the Enquiry question, 'Has the development of modern medicine created as many problems as it has solved?' There are many important points to be made here. For example, the extraordinary success of antibiotics is precisely what created the conditions for resistance and the wealth of treatments available through scientific medicine exceeds the ability of nations to pay for them. Students might choose to note into columns the strongest arguments for and against the proposition that modern medicine has created as many problems as it has solved.

Review (2)

Suggested timing

1 hour

Specification content

Review and assessment of the 19th-century medical advances and the fight against disease in the 20th-Century.

Assessment guidance

- This is an opportunity to develop your students' exam technique and to test their learning of the 19th-century medical advances and the fight against disease in the 20th-Century.
- You could use this as an opportunity to develop their understanding of how to answer AO1/AO2 questions such as the 6 and 9-mark questions and the bullet point 12-mark evaluative question.
- It is always helpful to give students an opportunity to prepare for a short test of factual recall. This may include material from all the units covered so far.
- A useful way of demonstrating or modelling performance in examination questions is to supply two sample answers. There is no need the answers to be from the same topic. For example, one answer could be about the 19th-century medical advances and the other could be about the fight against disease in the 20th-Century. At a simple level, just determining which answer is the better answer is helpful. This then leads to an understanding of why one answer is better than another. Introducing the mark scheme to students at this stage then helps them to further refine their understanding of the demands of the question.
- Having acquired an understanding of the demands of the question, it may be helpful for the students to take the weaker answer and improve it.

Resources

Test exercises, Specimen papers, sample responses.

A modern medical revolution (c1880-present)

Suggested timing

7-8 hours

Specification content

A modern medical revolution, c1880-present: Marie Curie and x-rays; pain management - local, balanced, and safe; developments in surgery, including aseptic surgery, blood transfusions and storage, brain surgery including the work of Harvey Cushing; organ transplants – heart, liver, organ donation, controlling rejection, Henrietta Lacks, and the HE-LA cell line; genetic medicine, including the work of Rosalind Franklin; modern innovations, including key hole, and robotic surgery.

Teaching guidance

- This unit traces the transformation of medicine from the late 19th-Century to the present day, concentrating on the period of most rapid and far-reaching change. Students work through a sequence of interconnected developments — from the birth of imaging and safer surgery, through the biological revolution in blood and transplantation, to the genetic and robotic innovations reshaping medicine today.
- Students should be able to name and place key events, eg. first heart transplant, 1967, Barnard, Cape Town. They should know about key individuals eg. Curie, Landsteiner, Cushing, Barnard, Lacks, Franklin. With regard to each development, students need to be able to explain the prior problem, the individual or team involved, the method used, and what made the discovery possible (prior knowledge, technology, wartime pressure, etc). Some evaluation is required such as: did it save lives straight away, or was its impact delayed? Was it accepted immediately, or was it seen as controversial? For example, Barnard's heart transplant attracted massive attention but early patients still died within weeks. Students should appreciate that there are clear links between the developments studied and contemporary practice. For example, HeLa cells are still used today; Rosalind Franklin's X-ray data underpins modern genomics; blood banking from World War II shaped all subsequent trauma medicine. It is hoped that students will be able to evaluate the relative importance of different factors. For example, individual genius, technology, institutions, chance etc. Students will be aware as the stories of Lacks and Franklin show in terms of consent, recognition and equity; medical progress does not always benefit all people equally. The history of medicine includes injustice as well as achievement. This will be evident in aspects of the next study of Global Public Health.
- The unit is built around two Enquiry questions. The first focuses on how medicine became dramatically safer and more precise in the operating theatre — asking students to assess what drove that change and how far it depended on key individuals versus wider scientific and technological progress.

- The second broadens the focus to the body itself: how understanding of blood, organs and genes opened up treatments that would previously have been unthinkable, and what new ethical and social questions those breakthroughs created.

Possible teaching and learning activities

- Students should consider, 'The story of modern surgery is really the story of a few exceptional individuals. How far does the evidence support this view?' In preparation for the first lesson, students should read the textbook sections on Marie Curie and X-rays, pain management, and anaesthesia; and aseptic surgery. Suggest they make brief notes under three columns: What changed?; How did it come about?; What difference did it make? Students should write one sentence in answer to the question: 'Was Marie Curie's work typical of how medical change happens or was she an exception?'

Activity 1: X-rays and Marie Curie — discovery, application, sacrifice

- In the classroom after a brief discussion of the students' one-sentence answers from their preparation, ask students to work in pairs on structured questions covering curious discovery, application, and personal sacrifice.

Activity 2: Making surgery bearable — the evolution of anaesthesia

- Turning to anaesthesia and making surgery bearable, students use their preparatory notes and the textbook to complete a structured worksheet comparing three stages of anaesthetic development:

	General anaesthesia (early era)	Local anaesthesia	Balanced anaesthesia
How it worked			
Who was associated with it			
Risks and limitations			
Significance at the time			
Legacy or later impact			

- After completing the table, students write a short paragraph (three to four sentences) explaining why the concept of “balanced anaesthesia” represented a more significant shift than simply finding a new drug.

Activity 3: From Lister’s carbolic spray to the sterile operating theatre — antiseptic vs. aseptic surgery

- It is helpful if students are briefly reminded about the key distinction between antiseptic and aseptic practice. Students should understand that aseptic surgery did not replace Lister’s insight — it extended and systematised it.
- Remind students of their study of the advancements that Lister made in the 19th-century. To aid recall, show them an illustration of his operating theatre and contrast it with a modern operating theatre. This can be done as a class exercise or with images given to the students for them to label.

Activity 4: Keyhole and robotic surgery — precision in the present

- Students might read a short teacher-prepared summary or part of the textbook describing how laparoscopic (keyhole) surgery works and how robotic-assisted surgery (eg. the da Vinci system) extends it. They then work individually on short-answer questions about the main differences, advantages and technology involved. After students have completed this, it is useful if they are put together for a short discussion about how modern surgery is a product of many developments that converge – not a single discovery. This will lead into a final task.

Activity 5: ‘The story of modern surgery is really the story of a few exceptional individuals.’ How far does the evidence support this view?

- Students should complete a structured written response (one paragraph per point, roughly 150–200 words in total) addressing the Enquiry question directly. It is helpful to give guidance to the students that they should aim to name at least three specific developments, one key individual and explain their contribution, and evaluate individuals versus other factors with the reason for their opinion.
- Introduce students to the second Enquiry question, in which they will consider how in the later 20th-Century a cluster of extraordinary developments transformed what medicine could achieve but with human, ethical and social costs - ‘By the end of the 20th-Century, medicine had transformed what could be done with the human body — but always at a price. How far do you agree?’
- Students should prepare for this work by reading textbook chapters on blood transfusions and storage, organ transplants, Harvey Cushing, Henrietta Lacks and the HeLa cell line, Rosalind Franklin, and DNA. It is helpful if they make notes under the following headings: What changed; Who was involved; Who benefited — and who did not? Furthermore, ask students if they can find out one additional fact about either Henrietta Lacks or Rosalind Franklin that is not in the textbook and be ready to share it.

Activity 6: Blood — from uncertain transfusions to the modern blood bank

- Students should work in pairs on a cause-and-effect chain task. They are given a prompt card with these events:
 - Karl Landsteiner identifies ABO blood groups (1901)
 - Early transfusions during the First World War — experimental, sometimes fatal
 - Discovery that adding citrate stops blood clotting, enabling storage
 - First blood banks established — Soviet Union (1930s), then during the Second World War
 - Refrigeration technology enables large-scale blood storage and transport
- Each pair must: (a) arrange the events in order, (b) draw arrows showing which developments made the next step possible, and (c) annotate two arrows with a brief explanation of the connection.

Activity 7: Brain surgery and Harvey Cushing

- Give students a brief introduction to Harvey Cushing and the techniques he developed. Students respond individually to two questions, then compare answers with a partner:
 1. Why is Cushing's reduction of mortality rates a more useful measure of his significance than simply listing his new techniques?
 2. Cushing is sometimes described as the “father of modern neurosurgery.” What would a historian need to consider before accepting or rejecting that label?

Activity 8: Portrait gallery — who shaped 20th-Century medicine?

- Teachers might use this activity to introduce key figures that the students will encounter later on. Provide students with a set of six portrait photographs or images, one per figure, with a brief name caption only (no further information). The six figures are Karl Landsteiner, Harvey Cushing, Christiaan Barnard, Henrietta Lacks, Rosalind Franklin, and one further figure of the teacher's choice (eg. Joseph Murray, Thomas Starzl).
- Students study the portraits with their captions and draw upon what they already know from their preparatory reading as well as conducting internet research. They then complete a short, written response on a structured worksheet with three prompts:
 1. **Rank:** Place the six figures in order of significance for the story of 20th-Century medicine, with 1 being the most significant. Write a single sentence beside each explaining your choice.
 2. **Assign a role:** Choose one of the following roles for each figure and explain it briefly in a sentence: ‘Pioneer’ (first to do something new); ‘Enabler’ (made it possible for others to succeed); ‘Witness to injustice’ (whose story reveals a cost of progress).
 3. **Challenge:** Which figure do you think is most underappreciated? Write two sentences explaining why their contribution deserves more recognition.
- A class discussion will develop rankings and roles. Note that the figures include both celebrated scientists and people whose contributions went unrecognised or whose exploitation made progress possible — connecting directly to the “but always at a price” dimension of the Enquiry question.

Activity 9: Organ transplants — the body's rejection problem and the solutions

- Students may be given a blank dated timeline and a number of significant transplant events to copy onto it. Students annotate the timeline with a colour code: green for a development that was primarily a surgical or technical advance; blue for a development that was primarily biological or pharmaceutical; red for a development that was primarily ethical or political.
- To help students compare and evaluate these features in the history of transplant surgery, consider posing the question, 'The real breakthrough in transplant surgery was not a new operation — it was a drug. Do you agree?' Students should aim to write one sentence of agreement and one of challenge before sharing.

Activity 10: Henrietta Lacks, the HeLa cell line, and the ethics of medical progress

- This activity begins with some careful reading and research rather than note-taking because the ethical dimensions require careful thought rather than recall. Whole-class discussion structured around three questions, 'What would not have been possible without HeLa cells?', 'What ethical principles were violated when Lacks's cells were taken?', 'Does the scientific benefit justify what happened? Why is this question difficult to answer?'
- Students write a short individual reflection (four to six sentences) in response to the prompt: 'What does the story of Henrietta Lacks tell us about whose contributions to medical progress get recognised — and whose do not?'

Activity 11: Rosalind Franklin, the DNA double helix, and genetic medicine

- Students read the textbook, and research on Rosalind Franklin. Students then answer structured questions individually, 'What was Franklin's specific technical contribution to understanding the structure of DNA?', 'Watson and Crick received the Nobel Prize in 1962. Franklin did not. Using evidence, explain why historians regard this as unjust.' and 'Franklin died in 1958. Nobel Prizes are not awarded posthumously. Does this fully explain why she was not recognised — or were there other factors?'
- It may be worth drawing attention to the fact that exclusion of women from scientific credit was systemic, not simply a case of unfortunate timing — connecting this to the broader theme of whose contributions get recognised. If colleagues in the Science department wish to contribute, then it would be interesting for students to see a reproduction of Photo 51.
- Ask students to produce no more than 300 words in response to the Enquiry question: 'By the end of the 20th-Century, medicine had transformed what could be done with the human body — but always at a price. How far do you agree?'
- Share with students the idea that a good response would do the following things: identify several distinct areas of transformation, use named individuals, events, and dates as evidence, address the "but always at a price" dimension, arrive at a clear conclusion that directly answers, 'how far'.

Global Public Health (1850-present)

Suggested timing

7-8 hours

Specification content

Global Public Health (1850-present): early cooperation; the rise of the World Health Organization; major disease campaigns (smallpox, polio, malaria, HIV/AIDS, Ebola); the growing threat of non-communicable diseases; the development of vaccines, pandemic spread and response (including COVID-19); the influence of political, cultural, and socioeconomic factors; issues of health equity, globalization, migration; the future, including climate change and evolving global policies.

Teaching guidance

- This unit examines the transformation of global public health from the mid-19th-Century to the present day. It traces the emergence of international cooperation, the founding and work of the World Health Organization, the campaigns that eradicated and contained major infectious diseases, and the growing challenge of non-communicable diseases and health inequity in the modern era. COVID-19, climate change, and antimicrobial resistance bring the story to the present.
- It is important that students discriminate immediate effects. For example, was a disease controlled or eliminated? Was the response accepted or controversial? – eg. the WHO eradication declaration of 1980 was a genuine triumph, whereas the HIV/AIDS response in the 1980s was delayed by stigma and political discomfort. Many of the developments can be traced forwards, so students should recognise that: smallpox eradication demonstrated what was possible and shaped subsequent WHO campaigns; the ARV therapy developed for HIV shaped later approaches to viral disease; COVID-19 vaccine development will influence future pandemic preparedness.
- Teachers will have stressed the role of different factors in the study of the development of penicillin. There are many opportunities to apply the same analysis to change in relation to a study of Global Public Health. It is important to encourage students to evaluate the relative importance of different factors, eg. the role of the individual, institutional coordination, technology, political will, economic resources, and different cases.
- It is important that students begin to appreciate why the benefits of medical knowledge and public health tools are not distributed equally. They should be able to use some specific evidence, eg. malaria deaths concentrated in sub-Saharan Africa, ARV access disparities, COVID-19 vaccine equity failure or the NCD burden in low-income countries. From this, students may recognise that the history of global public health includes structural injustice, not only scientific achievement.
- The unit is structured around two Enquiry questions. The first focuses on the period of institution-building and scientific advance, roughly 1850 to 1980, asking students to weigh collective action against individual discovery as the primary engine of progress. This is based on the Enquiry question 'The greatest advances in global public health

before 1980 were made not by individual scientists, but by international cooperation. How far does the evidence support this view?

- The second turns to the period since 1980, where the world has possessed unprecedented knowledge and capacity yet has repeatedly struggled to convert these into equitable, effective responses to both infectious and non-communicable disease. This second question challenges the assumption that progress in global health is simply a matter of scientific capacity: 'Since 1980, the world has had the knowledge and the tools to control infectious disease — but has repeatedly failed to use them effectively. How far do you agree?'

Possible teaching and learning activities

- Before the first lesson, ask students to prepare by reading the section of the textbook on the International Sanitary Conferences (1851 onwards); the founding of the WHO (1948); and the smallpox eradication campaign. Make brief notes under three columns: What changed? How did it come about? What difference did it make? Ask students to remind themselves about the work of Edward Jenner from their studies of '19th-Century medical advances.' Read about Jonas Salk and Albert Sabin (polio). They should be ready to explain what each man discovered and what made their contribution possible. Furthermore, write one sentence in response to the following: 'Could smallpox have been eradicated without the WHO?'

Activity 1: International cooperation before the WHO — mapping the foundations

- Provide each student with a blank world map. Students should annotate it during and after discussion, marking key locations, institutions, and dates as they emerge. The completed map then serves as a visual reference for the whole enquiry. After a brief whole class discussion about the students' preparatory sentences about WHO and Smallpox, students should annotate the map with significant dates related to international public health conferences and events, eg. 1851, 1902, 1923, 1948.
- Ask students to consider, in a pair, why it took nearly a century from the first International Sanitary Conference to a genuinely global health organisation? Students should think about sovereignty, colonial politics, and competing national interests. Students then annotate the map with a brief summary answer to: 'What did each organisation contribute that the one before it could not?'

Activity 2: The science behind the vaccines — Jenner, Salk, and Sabin

- Students use their preparatory notes and the textbook to complete a structured comparison table for three vaccine developments: Jenner and smallpox vaccination (1796), Salk's inactivated polio vaccine (1955), and Sabin's oral polio vaccine (1961). For each vaccine development, consider the following: How the vaccine worked; What problem it solved, Who or what made it possible; How it was distributed or adopted globally and its limitations or controversies. After completing the table, students write two sentences: one identifying what all three vaccine breakthroughs had in common, and one identifying the most significant difference between them. The comparison

should help students see that scientific discovery and global deployment are distinct challenges. Class discussion: 'Is a vaccine a scientific achievement or an organisational one?' Students should draw on both columns of their comparison.

Activity 3: Facing modern epidemics- Smallpox, Polio, HIV/AIDS, Malaria, Ebola.

- Students use the textbook and information from teacher prepared posters about each disease placed around the classroom to circulate and acquire answers under a series of broad headings (eg. symptoms, treatments developed, evidence of success or evidence of failure). An alternative to posters would be dedicated folders created by teachers about the diseases, which contain images, text, and sources that the students can access over a network. The aim should be to be able to compare the handling of each disease. In groups of four, students should evaluate how each of the epidemics were dealt with and produce a reasoned rank order. The conclusions should be discussed as a class. Use this opportunity to discuss the second Enquiry question, which challenges the assumption that progress in global health is simply a matter of scientific capacity, 'Since 1980, the world has had the knowledge and the tools to control infectious disease — but has repeatedly failed to use them effectively. How far do you agree?'
- Note, for example, that DDT was highly effective against malaria mosquitoes when first used in the 1940s–50s. Why did its widespread use ultimately fail to eradicate malaria, and why was it phased out? Insecticide-treated bed nets are cheap, effective, and widely distributed. Why have they not solved the malaria problem? Malaria kills an estimated 600,000 people per year, the large majority of them children in sub-Saharan Africa. What does this distribution tell us about global health equity?
- When developing this understanding, the teacher may wish to draw out, (for the purposes of addressing the overall Enquiry question), that malaria is a disease for which cheap and effective tools exist and yet it persists. This is a strong case for the enquiry statement's claim about failure.

Activity 4: COVID-19 — from outbreak response to pandemic

- Students should be encouraged to treat COVID-19 as case study. It will also be an opportunity to revise the students work on the Black Death. Using the textbook and the internet, firstly, students should research COVID-19 individually, then, in pairs, review their notes about the Black Death and complete a comparative table, which examines the origins, beliefs at the time, transmission, treatments, government action, effectiveness and impact. It is worth noting that COVID-19 simultaneously demonstrates human ingenuity (the vaccines) and human failure (their distribution). This makes it a more difficult piece of evidence to use and evaluate in relation to the Enquiry question.

Activity 5: Non-communicable diseases and health equity — the changing burden of disease

- Students should prepare for this lesson by reading the textbook explanation of non-communicable diseases (NCDs). Present students with a statistical information graphic

that shows global deaths by cause, 1990 versus 2019. This will illustrate the difference between infectious versus noncommunicable diseases, as well as NCD mortality rates by income group (high, middle, and low-income countries). It should also be possible to show the percentage of NCD deaths that are 'premature' (before age 70), by region. Ask students to annotate the infographic with notes about patterns in the data, evidence of NCDs as 'lifestyle diseases,' and ideas about what would need to change at local, national, and international level, to reduce the burden of NCDs in low-income countries?

- As a class, consider whether or not the NCD burden strengthens or weakens the Enquiry questions claim. Note the tools to prevent NCD's exist – but structural inequalities obstruct their use. This is a different kind of failure from Ebola or COVID-19, and students should recognise the distinction.

Activity 6: The future — climate change, migration, and antimicrobial resistance

- The class may consider three emerging challenges to global public health:
 1. **Climate change:** rising temperatures expanding the geographical range of malaria and dengue mosquitoes; increased frequency of extreme weather events and their health consequences; food insecurity.
 2. **Migration and global mobility:** faster spread of infectious disease along migration and travel routes; the particular vulnerability of displaced populations; the tension between border control and public health cooperation.
 3. **Antimicrobial resistance (AMR):** the growing ineffectiveness of antibiotics due to overuse in human medicine and agriculture; the possibility of returning to a world where bacterial infections are untreatable; the role of global pharmaceutical and regulatory systems in the crisis.
- Students should be asked to rank the three challenges in order of seriousness for global public health over the next fifty years, writing one sentence of justification for their top choice. In class discussion, identify the 'tools' or at least the knowledge of what is needed that are available, and the limiting factors.
- Allow students to write a two or three paragraph response (no more than 300 words). addressing the Enquiry question: 'Since 1980, the world has had the knowledge and the tools to control infectious disease — but has repeatedly failed to use them effectively. How far do you agree?' An important point is for the students answer to consider whether the statement applies equally to non-communicable diseases, or only to infectious disease.

Review (3)

Suggested timing

1 hour

Specification content

Review and assessment of the A modern medical revolution (c1880-present) and Global Public Health.

Assessment guidance

- This is an opportunity to review and assess Parts one, two and three and to develop your students' exam techniques.
- Give your students a Section A question from one of the specimen papers.

Resources

Test exercises, Specimen papers, sample responses.