

GCSE (9–1)

Delivery Guide

TWENTY FIRST CENTURY SCIENCE BIOLOGY B

J257

For first teaching in 2016

Keeping Healthy

Version 1



GCSE (9–1) TWENTY FIRST CENTURY SCIENCE BIOLOGY B

Delivery guides are designed to represent a body of knowledge about teaching a particular topic and contain:

- Content: A clear outline of the content covered by the delivery guide;
- Thinking Conceptually: Expert guidance on the key concepts involved, common difficulties students may have, approaches to teaching that can help students understand these concepts and how this topic links conceptually to other areas of the subject;
- Thinking Contextually: A range of suggested teaching activities using a variety of themes so that different activities can be selected which best suit particular classes, learning styles or teaching approaches.

If you have any feedback on this Delivery Guide or suggestions for other resources you would like OCR to develop, please email resources.feedback@ocr.org.uk



'These draft qualifications have not yet been accredited by Ofqual. They are published (along with specimen assessment materials, summary brochures and sample resources) to enable teachers to have early sight of our proposed approach.'

Further changes may be required and no assurance can be given at this time that the proposed qualifications will be made available in their current form, or that they will be accredited in time for first teaching in 2016 and first award in 2018.

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B2.1.1	describe the relationship between health and disease
B2.1.2	describe the different types of diseases (including communicable and non-communicable diseases)
B2.1.3	explain how communicable diseases (caused by viruses, bacteria, protists and fungi) are spread in animals and plants
B2.1.4	describe common human infections including influenza (viral), Salmonella (bacterial), Athlete's foot (fungal) and malaria (protist) and sexually transmitted infections in humans including HIV/AIDS (viral)
B2.1.5	describe plant diseases including tobacco mosaic virus (viral), ash dieback (fungal) and crown gall disease (bacterial)



What you don't see when you shake hands

General approaches:

This chapter has many familiar concepts and as a result, learners can become complacent as they assume they already know it. However, there are many exciting opportunities to use news stories to generate interest and enthusiasm in the topic area of preventing the spread of disease and the methods of treating humans and plants.

The topic lends itself to a variety of delivery methods, including the use of video clips, role play and creative modelling.

Similar to most topics, there are a large range of key terms for the learners to learn. More significantly there are a large number of similar key terms which need to be thoroughly explained during teaching. A variety of short activities should be used to ensure learners not only learn the meaning of the terms, but also to prevent learners mixing up similar terms. Activities such as 'dominos', 'Pictionary' or 'Guess who', can be useful.

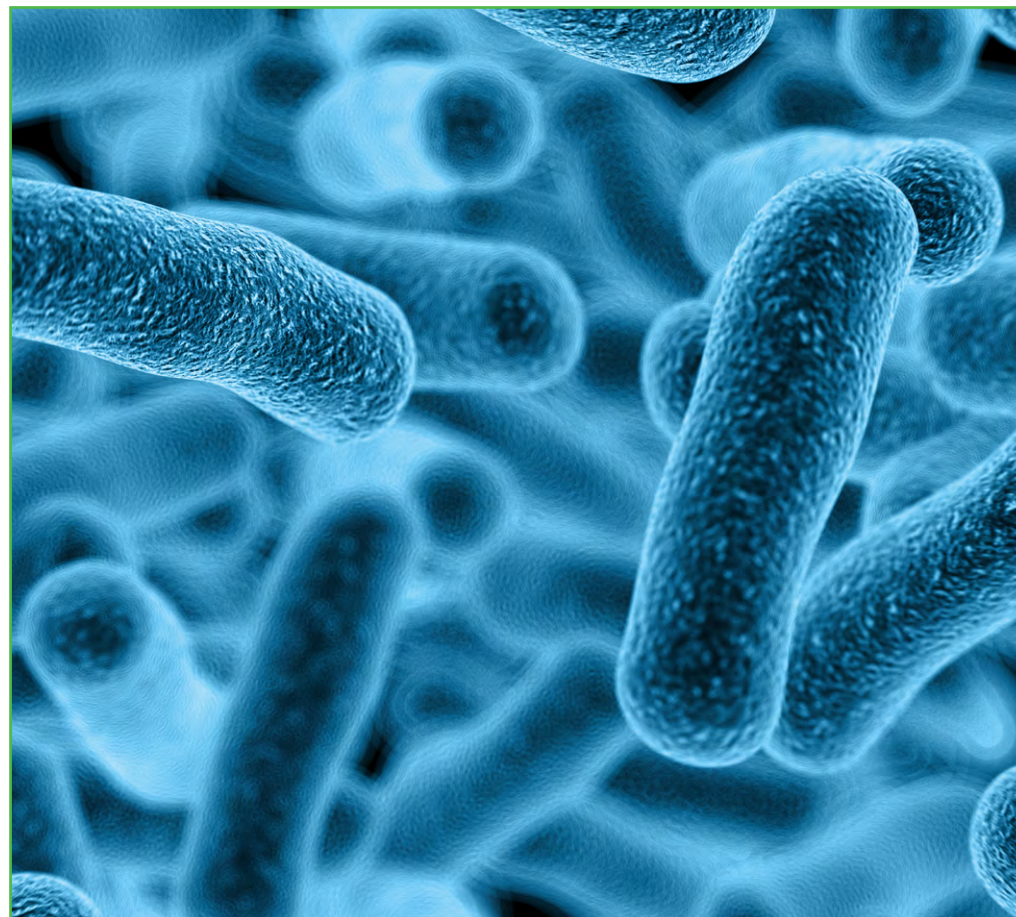
Common misconceptions or difficulties learners may have:

1. Disease is a topic often misunderstood as learners focus on the symptoms of the disease rather than the pathogen or the mode of transmission. They often refer to pathogens as 'germs' and have little understanding of the difference between bacteria and viruses. Spending time on the different types of pathogen will help aid the learners' understanding of the different types. Asking learners to draw annotated diagrams of the pathogens can help.
2. A common misconception is the mode of transmission of pathogens. Learners are often unaware how pathogens are spread and sometimes presume that all pathogens are spread in all bodily fluids. It should be emphasised that blood borne infections are not transmissible via saliva, tears or mucus unless they are contaminated with blood.

Conceptual links to other areas of the specification – useful ways to approach this topic to set learners up for topics later in the course:

Learners will be able to use prepared slides that covers B4.2.1 and PAG 1. An understanding of size and scale in B4.2.2 may be useful to show the difference in size of eukaryotic and prokaryotic cells.

An understanding of membrane permeability and the control of the movement of molecules in B5.1.2 may be important when discussing the mode of infection by a pathogen.



Bacteria under microscope

Approaches to teaching the content

This section lends itself well to guided learning. From directed research learners can discover about a variety of disease types and the modes of transmission.

Epidemiology is an area that can be used to enhance learners' confidence in presenting to a wider audience. Learners research information on types of disease and, using the websites highlighted in Activities 'Investigating disease' and 'Communicable and non-communicable diseases' go on to learn how to assimilate information, present it effectively and then deliver it to their class.

There are also opportunities to be creative in the way that learners get to grips with the course with producing models, fact files, wall displays and drawings being just a few. This can be a great way to motivate the variety of abilities and interests within the class.



A child undergoing one of many vaccinations

Activity 1**Disease transmission**

BBC

http://www.bbc.co.uk/schools/gcsebitesize/science/edexcel/problems_in_environment/infectiousdiseaserev2.shtml

To introduce the topic, learners can collaborate in small groups to begin to generate ideas using their Key Stage 3 knowledge on how diseases are transmitted; this can be done on mini white boards or A3 poster paper. They can then use the resource to begin to develop the idea of vertical and horizontal disease transmission.

An extension to the task could be to give a variety of common disease names and allow the learners to organise them as part of a card sort activity into vertical and horizontal transmission.

Activity 2**The spread of communicable disease**

US national library of medicine

http://apps.nlm.nih.gov/againsttheodds/pdfs/ss/lesson_plan_science_and_society.pdf

This activity is a fun and very visual way of showing how viruses spread. Learners move around the room and exchange their 'drink' with each other. At the end of the activity the spread of the virus is unveiled.

Activity 3**Modelling pathogens**

Abi schools

http://abpiscschools.org.uk/page/modules/infectiousdiseases_pathogens/index.cfm

Divide learners into 4 groups and give each group the pathogen - virus, bacteria, protoctist or fungi. Allow the groups to research their pathogen using the resource below. This could be as part of a homework task.

Provide learners with materials to build models of their pathogen.

Learners can use the model to teach the remainder of the class about their pathogen.

Activity 4**Investigating disease****Human Disease**

National geographic

<http://science.nationalgeographic.com/science/health-and-human-body/human-diseases/>

WHO

<http://www.who.int/mediacentre/factsheets/en/>

Plant Diseases

Ohioline

<http://ohioline.osu.edu/hyg-fact/3000/>

plantclinic

<http://plantclinic.cornell.edu/factsheets.html>

Learners can use the above resources to produce a presentation on a chosen disease that they can deliver to the class. Learners could also work individually to produce a fact file that could then be used as a wall display showing the variety of human and plant diseases.

Activity 5**Communicable and non-communicable diseases**

Peace corps

<http://www.peacecorps.gov/www/activities/preventing-communicable-and-noncommunicable-diseases/>

This resource is a step by step plan that allows the learner easy access to specific materials aimed at improving the knowledge of communicable and non-communicable diseases. The site contains resources that allows the learner to find out more about what communicable and non-communicable diseases are, how they effect the world and gives examples of each type of disease.

Activity 6**Pandemic****Crazy Monkey Games**

<http://pandemic3.info/>

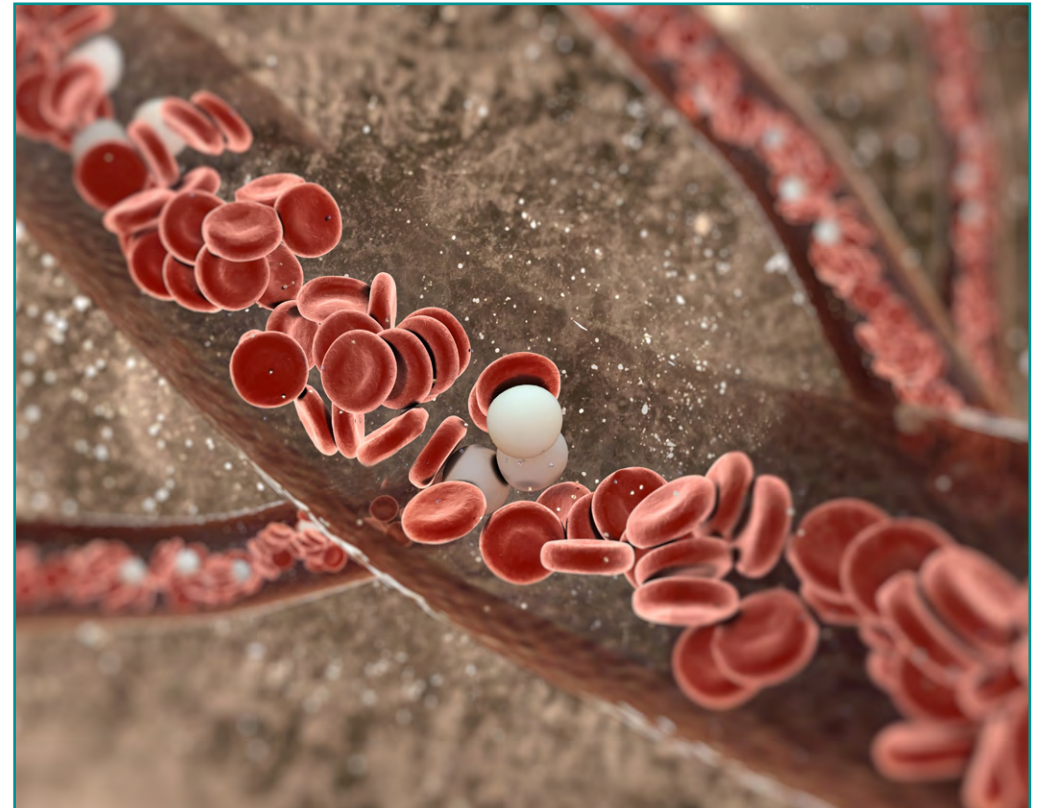
The resources allows learners to create pathogens and see how specific mutations affect the spread of the disease.

The game play can be set at two levels, Relaxed and Realistic would give the learners the choice of a range of pathogens with which they can try and cause a pandemic across the world in a short time frame. There is an instructional guide that allows the participation of learners with less experience in computer gaming to try and infect the world with their pathogen.

Protective medical gear reduces the risk of contamination



B2.2.1	describe non-specific defence systems of the human body against pathogens, including examples of physical, chemical and microbial defences
B2.2.2	explain how platelets are adapted to their function in the blood
B2.2.3	describe physical plant defences, including leaf cuticle and cell wall
B2.2.4	explain the role of the immune system in defence against disease
B2.2.5	explain how white blood cells are adapted to their functions in the blood, including what they do and how it helps protect against disease
B2.2.6	describe chemical plant defence responses, including antimicrobial substances



Red and white blood cells flowing in a capillary

General approaches:

Learning about how organisms protect themselves against communicable disease can be difficult as most of the key concepts are at a cellular or subcellular level.

This section also has a large number of key terms that learners find difficult to remember and often mix up. The use of visual aids, interactive resources and practical activities can support learners in their understanding of the concepts involved.

Common misconceptions or difficulties learners may have:

1. Understanding that organisms have a variety of different defence mechanisms, not just those at a cellular level, can be difficult for learners to grasp. When learners are aware that the skin is the major defence against pathogens, a simple question can be posed such as 'where does the human body have extra defences'? Learners could be asked to label them on a human torso diagram. From this, the cellular level can be introduced but it is important to introduce the names of the different immune cells early on as this will reduce the chance of learners using 'white blood cell' to describe every immune cell.
2. Learners sometimes presume that plants have an immune system similar to animals. A greater emphasis should be placed on the physical defence systems in plants along with the antimicrobial chemical defence system.

Conceptual links to other areas of the specification – useful ways to approach this topic to set learners up for topics later in the course:

This sub-section builds on the learning in B2.1 'What are the causes of disease?'

Learners will be able to produce blood smear slides showing the presence of leucocytes that covers PAG 1 and the electron-microscopy in B4.2.1. An understanding of size and scale in B4.2.2 may be useful to show the difference in size of eukaryotic and prokaryotic cells.

An understanding of membrane permeability and the control of the movement of molecules in B5.1.2 may be important when discussing endocytosis by phagocytes.



Obtaining a blood sample on a glass slide

Activities

Starting the topic by looking at the specialist physical defence systems that the human body has can allow learners to begin to develop an understanding of how the body can not only protect itself, but also the mode of transmission of pathogens. This understanding can then be applied to plants and their defence systems although learners will require some specific details like those in the activity 'Plant defence mechanisms'.



Pathogenic bacteria growing on a petri dish

Activity 1

Skin as a first defence

BBC

<http://www.bbc.co.uk/education/clips/z2mcd2p>

As an introduction to skin as the physical barrier, this resource is a short 3 minute video clip that highlights the importance of skin as the first line of defence against pathogens.

Activity 2

The role of white blood cells

BBC

<http://www.bbc.co.uk/education/clips/z77b9j6>

A brief 1 minute clip introducing the role of white blood cells.

BBC

http://www.bbc.co.uk/schools/gcsebitesize/science/21c/keeping_healthy/disease_resistanceact.shtml

Learners can then have a go at the fun learning activity and quiz that covers bacteria and viruses, white blood cells, vaccinations and antibiotics which will give them a good grounding from where their understanding can develop.

Activity 3

Constituents of blood

Asian Pacific network

<http://www.apan.net/meetings/busan03/materials/ws/education/demo-los/blood-rlo/whatisblood.swf>

The above revision resource by APAN gives learners an overview of the constituents of blood with clear notes and animation clips to support their learning.

BBC Bitesize

<http://www.bbc.co.uk/education/guides/ztp9q6f/revision/1>

A more detailed explanation is available here from the BBC allowing learners to investigate the key constituents of blood before testing themselves on their learning.

Activity 4

Plant defence mechanisms

Youtube

<https://www.youtube.com/watch?v=6KAsWPN-H2U>

The video tutorial highlights some of the defence mechanisms in South African plant species. This could be a good starting point to allow students to use this knowledge and apply it to British plant species.

- | | |
|--------|---|
| B2.3.1 | explain how the spread of communicable diseases may be reduced or prevented in animals and plants, to include a minimum of one common human infection, one plant disease and sexually transmitted infections in humans including HIV / AIDS |
| B2.3.2 | explain the use of vaccines in the prevention of disease, including the safe form of pathogen and the need to vaccinate a large proportion of the population |



Due to various health concerns there are now numerous controls in place regarding the raising of livestock

General approaches:

Reducing the spread of communicable diseases is of global importance due to its impact on food supplies, biodiversity and, most importantly, its impact on health. Much of the learning involved in reducing the spread of disease revolves around an understanding of the control strategies both in terms of animal pathogens and plant pathogens.

This involves learners linking key ideas from B2.3 on microbial growth and applying it on a global scale, appreciating the likely effects and associated cost of not reducing them. Later learners can move on allowing an opportunity to debate the moral and ethical issues that are inherent in this subtopic.

Common misconceptions or difficulties learners may have:

1. Learners are largely unaware that many of the attempts to control the spread of disease in humans such as vaccination and sanitation also apply to domestic livestock. Asking learners to name methods used in humans and then making the link to pets and finally livestock may be of benefit.
2. A common misconception is that some learners believe that the administration of a vaccine can cause the disease it is used to treat.
3. Learners may have come across the use of pesticides, herbicides and fungicides but are less likely to understand the ideas of crop rotation as a means of crop improvement and disease prevention.



A dairy cow undergoing regular tests

Approaches to teaching the content

Beginning the topic by discussing communicable diseases and how they are passed between individuals can allow learners to develop an understanding of how the transmission of pathogens can be prevented. This understanding can then be applied to vaccinations for which the use of the 'Are Vaccines worth the risk?' activity may be useful.



Consider the kiss

Activity 1

Vaccination in action

NHS

<http://www.nhs.uk/Conditions/vaccinations/Pages/How-vaccines-work.aspx>

BBC

http://www.bbc.co.uk/schools/gcsebitesize/science/21c/keeping_healthy/antibiotics_drug_testingrev1.shtml

The NHS publish a timeline of when childhood vaccinations should be administered. If utilised online, learners can use hyperlinks to gain more information on the vaccine. This could be used with the BBC bitesize site that explains the different types of vaccine.

Learners could pick a particular vaccine to produce an information leaflet explaining what affect the disease can have and how the vaccine serves to protect against it.

Activity 2

Are Vaccines worth the risk?

BBC

http://www.bbc.co.uk/schools/gcsebitesize/science/21c/keeping_healthy/antibiotics_drug_testingrev2.shtml

The risk of potential side effects from vaccination divides opinion as to whether they should be administered as widely as they are.

Learners can use the resource from BBC bitesize to produce an NHS style information poster promoting the use of a particular vaccine.

Activity 3

HIV Transmission

<http://www.nhs.uk/Conditions/HIV/Pages/Causes.aspx>

Learners can use the resource by the NHS to produce a 'facts about HIV' information booklet. This can also provide a useful opportunity to dismiss many of the myths about HIV and AIDS.

A child receives a vaccination against polio



B2.4.1a	describe the ways in which diseases, including plant diseases, can be detected and identified, in the lab and in the field
B2.4.1b	describe how to use a light microscope to observe microorganisms PAG1
B2.4.2	describe and explain the aseptic techniques used in culturing organisms PAG7
B2.4.3	calculate cross-sectional areas of bacterial cultures and of clear zones around antibiotic discs on agar plates using πr^2 PAG7
B2.4.4	describe how monoclonal antibodies are produced including the following steps: • antigen injected into an animal • antibody-producing cells taken from animal • cells producing the correct antibody selected then cultured
B2.4.5	describe some of the ways in which monoclonal antibodies can be used in diagnostic tests

Antibodies attaching to an infecting bacterium



General approaches:

Learning about how diseases can be detected and the techniques involved can generate enthusiasm amongst the learners but it is important to emphasise the finer detail of the techniques. The enthusiasm for the practical activities needs to be carried over into the mathematical tasks by integrating the practical activities with the mathematical element.

This section also has a large number of new key terms and practical techniques that learners can find difficult to remember and often mix up. The use of visual aids, interactive resources and practical activities can support learners in their understanding of the concepts involved.

A variety of practical tasks are available to support the delivery of the chapter including the culturing of micro-organisms and investigation of anti-microbial compounds. This can be investigated further by comparing the growth of cultures on different surfaces and the use of microscopy.

Common misconceptions or difficulties learners may have:

1. The procedure of culturing bacteria using aseptic technique is not one that learners will have any experience of. Health and safety and best lab practice must be adhered to. Computer simulations are available so that learners can practice these techniques prior to the lab based practical.
2. Calculating the cross sectional area of bacteria cultures and clear zones around the antibiotic discs is going to be a challenging task for some learners so provide clear guidance to the learners on accurate measuring and clear explanation of the use of πr^2 .
3. Learners are likely to have little understanding of the use for monoclonal antibodies in diagnostic tests. Clear instruction on the role of antibodies is recommended prior to teaching this learning outcome.

Conceptual links to other areas of the specification – useful ways to approach this topic to set learners up for topics later in the course:

Learners will be able to use prepared slides that covers B4.2.1 and PAG 1. An understanding of size and scale in B4.2.2 may be useful to show the difference in size of eukaryotic and prokaryotic cells.

An understanding of variation and evolution in B5.1.2 may be important when discussing development if an antibiotic resistant strain of bacteria.



Remember to follow established safety procedures

Approaches to teaching the content

The topic lends itself to a wide range of practical activities both laboratory based and virtual. Learners should have the opportunity to gain lab based skills both in microscopy and microbiology but can sample the techniques virtually as part of an in class activity or homework.

As practical skills are an important aspect of this section and must be carried out safely, teachers and learners should be made aware of the Cleapss learner safety sheet 1 (<http://www.cleapss.org.uk/secondary/secondary-science/secondary-science-student-safety-sheets>).

Interactive online software (such as the activity 'Culturing bacterial colonies simulator') can provide an opportunity to reinforce key techniques prior to commencing the lab based work. This can only serve to increase their confidence and understanding of the mechanisms involved.

The 'Monoclonal antibodies production' Activity undoubtedly enhances the understanding of microbiology and in particular diagnostic tests but the extent to which it is ethical could be used as a good plenary to a lesson.



Gaining skills in microscopy

Activity 1

Bacteria, bacteria everywhere

BBC

<http://www.bbc.co.uk/education/clips/z2pwmp3>

This short video clip will be a great introduction to the topic as it shows the growth of bacteria collected from a variety of everyday objects.

Activity 2

Sickly trees

SAPS

<http://www.saps.org.uk/secondary/teaching-resources/1273-csi-trees-investigating-plant-pathogens>

SAPS have produced a fun and interesting way of learning about plant disease. They provide all the worksheets and teacher notes to provide a 'CSI' style lesson looking at tree disease.

APS

<http://www.apsnet.org/edcenter/intropp/topics/Pages/OverviewOfPlantDiseases.aspx>

For the most able APS provide further information on plant pathogens and defences.

Activity 3

Culturing bacterial colonies simulator

MCGRAW HILL

http://www.glencoe.com/sites/common_assets/science/virtual_labs/LS08/LS08.swf

The above resource can be used to inform learners on the basics of bacterial culturing.

Nuffield Foundation

<http://www.nuffieldfoundation.org/practical-biology/aseptic-techniques>

The correct aseptic technique is explained in detail by the Nuffield Foundation.

Activity 4

Monoclonal antibody production

BBC

http://www.bbc.co.uk/schools/gcsebitesize/science/triple_edexcel/control_systems/microorganisms_immunity/revision/6/

The above resource can be used to produce a flow chart highlighting the sequence of events required to produce monoclonal antibodies.

SUMANAS

<http://www.sumanasinc.com/webcontent/animations/content/monoclonalantibodies.html>

For the more able learners a video clip and a simulation are available that describe the process in more detail.

B2.5.1a	describe how the interaction of genetic and lifestyle factors can increase or decrease the risk of developing non-communicable human diseases, including cardiovascular diseases, many forms of cancer, some lung and liver diseases and diseases influenced by nutrition, including type 2 diabetes
B2.5.1b	describe how to use a light microscope to observe microorganisms PAG1
B2.5.2	use given data to explain the incidence of non-communicable diseases at local, national and global levels with reference to lifestyle factors, including exercise, diet, alcohol and smoking
B2.5.3	in the context of data related to the causes, spread, effects and treatment of disease: translate information between graphical and numerical forms M4a construct and interpret frequency tables and diagrams, bar charts and histograms M4a, M4c understand the principles of sampling as applied to scientific data M2d use a scatter diagram to identify a correlation between two variables M2g
B2.5.4	describe interactions between different types of disease

The prevalence of fast food creates a number of factors regarding health



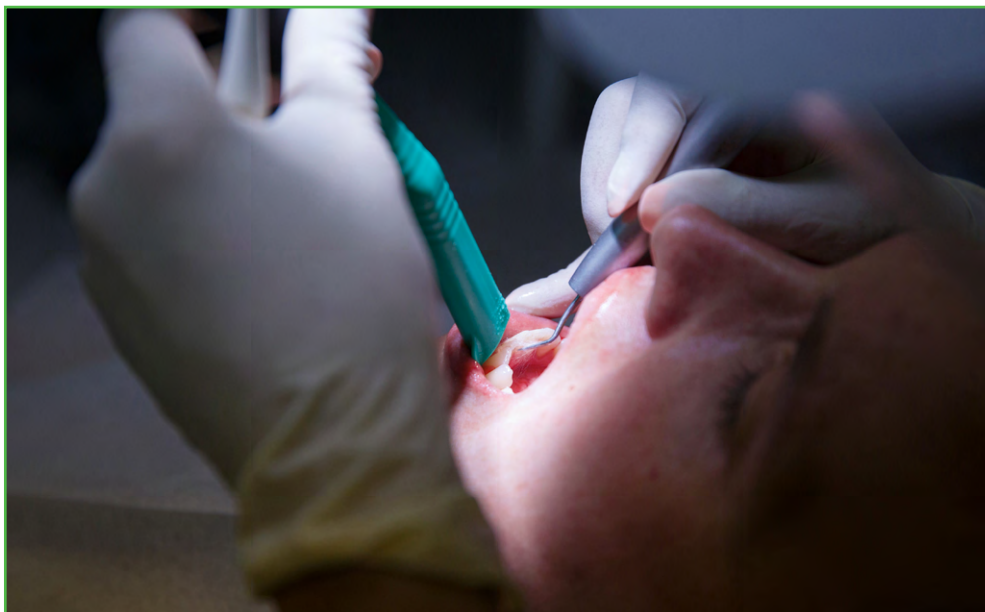
General approaches:

This topic has a number of examples that will be familiar to the learners and can be used to build enthusiasm for the content e.g. lung, liver and cardiovascular diseases.

There is a large portion of mathematical content to this section that the learners can find off putting. The use of examples for the mathematical element as the starting point may be advantageous before asking the learners to build on it e.g. providing graphical data on conditions.

Common misconceptions or difficulties learners may have:

1. The major difficulty learners will face is the interpretation of data from graphical and numerical sources. Starting with simple skills such as describing the general trend before moving on to more detailed interpretation stating cause and effects will help to build learners' confidence.
2. Learners often don't appreciate that the presence of one condition can be as a result of having another condition e.g. blindness can be as a result of high blood pressure, which can be as a result of diabetes. Providing learners with symptoms of one disease and asking them to suggest what else could have caused it can reinforce understanding.



Inadequate dental care can lead to bacteria in the gums creating a range of problems

Approaches to teaching the content

The topic can be introduced by discussing the factors affecting our lifestyle and some of the diseases that can be as a result of those lifestyle choices. The learners can practically investigate the effects of exercise on recovery rates and a comparison could be made between individuals in the class. A useful comparison can be made between an endurance athlete like a long distance runner or cyclist and an explosive event athlete like a sprinter or field athlete. This understanding can then be applied to national data such as that available in the activity 'Analysing disease in your local area'.



Lifestyle choices can greatly impact how your body wards off disease

Activity 1

Investigating the effects of exercise on the body

Nuffield foundation

<http://www.nuffieldfoundation.org/practical-biology/observing-effects-exercise-human-body>

Learners can investigate the effects of exercise on the body using the schedule from the Nuffield Foundation.

The activity will provide data for analysis that can be used to address some of the maths assessment objectives.

Activity 2

Analysing disease in your local area

Public Health observatories

http://www.apho.org.uk/addons/_49906/atlas.html

This first resource focuses specifically on the incidence of cancer in males throughout the UK. This can be used to compare different regions and generate ideas on the potential causes of the condition.

Local Health England

http://www.localhealth.org.uk/#v=map4;sid=838;l=en;z=338873,421707,101092,78791;sly=ward_2013_DR

The second resource is suited to a more able class. It allows learners to compare different region and investigate a wide variety of indicators comparing the more affluent local areas to the more deprived regions.



There are many lifestyle choices, each choice has implications for better or worse

- | | |
|--------|---|
| B2.6.1 | explain the use of medicines, including antibiotics, in the treatment of disease |
| B2.6.2 | calculate cross-sectional areas of bacterial cultures and of clear zones around antibiotic discs on agar jelly using πr^2 M5c |
| B2.6.3 | evaluate some different treatments for cardiovascular disease, including lifestyle changes, medicines and surgery |
| B2.6.4 | describe the process of discovery and development of potential new medicines including preclinical and clinical testing |
| B2.6.5 | describe how monoclonal antibodies can be used to treat cancer including: <ul style="list-style-type: none">• produce monoclonal antibodies specific to a cancer cell antigen• inject the antibodies into the blood• the antibodies bind to the cancer cells, tagging them for attack by white blood cells• the antibodies can also be attached to a radioactive or toxic substances to deliver to cancer cells |



Repeated and improper use of antibiotics has led to antibiotic resistant strains of bacteria

General approaches:

This chapter has many familiar concepts which can be used to guide learners into some of the more complex areas of this subsection. There are many exciting opportunities to use news stories to generate interest and enthusiasm in the topic areas of antibiotic resistance and epidemiological evidence.

The topic lends itself to a variety of delivery methods including the use of video clips, debates and group work.

There are a large range of key terms for the learners to learn but more significantly there are a number of concepts that will be alien to the learners which need to be thoroughly explained during teaching. A variety of short activities should be used to build momentum into a topic that for some will be challenging.

Common misconceptions or difficulties learners may have:

1. Learners often do not realise that antibiotics only work on bacterial infections and not viruses. However they are effective against a disease where a bacterial infection is an opportunistic disease.
2. Calculating the cross sectional area of bacteria cultures and clear zones around the antibiotic discs is going to be a challenging task for some learners so provide clear guidance to the learners on accurate measuring and clear explanation of the use of πr^2 .
3. Learners may not appreciate the level of testing that needs to be carried out for a drug to be approved for use or the criteria that must be followed in such trials so the activity on 'Is animal testing essential?' could be useful.

Conceptual links to other areas of the specification – useful ways to approach this topic to set learners up for topics later in the course:

Learners will be able to have a debate on the ethics of pre-clinical trials. An understanding of the potential benefits, risks and ethical issues associated with the use of stem cells in medicine in B4.5.2 may be useful.



The subject of animal testing can be very emotive

Approaches to teaching the content

This section lends itself well to debating the issues involved. From directed research learners can discover about key areas in this sub-section and discuss them amongst their peers.

Treating disease is an area that can be used to enhance learners' confidence in presenting to a wider audience. Learners' research information on the prescribing of antibiotics, evaluate the treatments of CHD or the process of clinical trials highlighted in the activities 'Role of antibiotics' and 'Is animal testing essential?' to learn how to assimilate information, present it effectively and then deliver it to their class. This can be a great way to motivate the variety of abilities and interests within the class.



Testing a specimen in a lab, note the safe use of gloves, goggles, lab coat and a mask

Activity 1

Role of antibiotics

Medical news today

<http://www.medicalnewstoday.com/articles/10278.php>

<http://www.nhs.uk/conditions/Antibiotics-penicillins/Pages/Introduction.aspx>

Learners could be divided into groups and each given a question to answer to the rest of the class on antibiotics.

Questions could include:

What are antibiotics?

How do antibiotics work?

What are antibiotics used for?

What are the side-effects of antibiotics?

How do antibiotics causes allergic reactions?

How to do you use antibiotics?

Activity 2

Preventing CHD

BBC

<http://www.bbc.co.uk/education/clips/zqsg6sg>

Bupa

<http://www.bupa.co.uk/health-information/directory/c/coronary-heart-disease>

NHS

<http://www.nhs.uk/Conditions/Coronary-heart-disease/Pages/Treatment.aspx>

Learners can watch the short video clip by the BBC prior to using the resources from Bupa and the NHS to produce a public awareness leaflet that highlights the danger of CHD and the steps that can be taken to reduce the incidence of the disease.

Activity 3

Is animal testing essential

Youtube

<https://m.youtube.com/watch?v=RzO2pYsH2AU>

NHS

<http://www.nhs.uk/Conditions/clinical-trials/Pages/ethicscommittees.aspx>

Testing treatments

http://www.testingtreatments.org/ecran-video-introduction-to-clinical-trials/?nabe=5208195799711744:1&utm_referrer=https%3A%2F%2Fwww.google.co.uk%2F#jump

Learners can watch the short video clip before researching clinical trials from the NHS and testing treatments.

This can then be used to debate and justify the use of animal testing as a critical stage in the clinical trials process.

Activity 4

Treating cancer with Monoclonal antibodies

NHS

<http://www.cancerresearchuk.org/about-cancer/cancers-in-general/treatment/biological/types/about-mono-clonal-antibodies>

Mayo clinic

<http://www.mayoclinic.org/diseases-conditions/cancer/in-depth/monoclonal-antibody/art-20047808>

The excellent resource from the NHS provides 3 short video clips and a range of information on the use of monoclonal antibodies and their use in treating cancer. This can then be used in conjunction with the resource from the Mayo Clinic to help support the learning of the topic.



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