

# WJEC England Biology GCSE

## 3.3 - Treating, curing and preventing disease

### Flashcards

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# How do vaccines work?



# How do vaccines work?

- Dead or inactive pathogens are injected into the body
- The body produces antibodies against the pathogen
- Memory cells are also created to provide long term immunity



Give 2 types of pathogen that vaccines  
can protect against



Give 2 types of pathogen that vaccines can protect against

- Bacteria
- Viruses



# Why might parents choose to have their child vaccinated?



# Why might parents choose to have their child vaccinated?

- Vaccines save lives and will prevent their child from getting certain diseases
- Parents in countries without free healthcare may not be able to afford treatment if their child falls ill from a disease



Why might parents choose **not** to have their child vaccinated?





# Why might parents choose **not** to have their child vaccinated?

- They may be concerned about the potential side effects of vaccination
- They may be unaware of the contents of the vaccine
- They may have religious or cultural objections to it
- They may believe that vaccines are linked to certain other diseases like autism, asthma and multiple sclerosis



What negative impacts could arise from the decision to not vaccinate children?



What negative impacts could arise from the decision to not vaccinate children?

Not vaccinating children can lead to breakouts of diseases which may cause epidemics or pandemics and put a strain on the healthcare system



Why can't science tell people whether or not they **should** get their child vaccinated?



Why can't science tell people whether or not they **should** get their child vaccinated?

Vaccinating a child is a personal choice and ultimately the decision of the parents. Science can only give them a 'balance of probability'.



# What type of pathogen do antibiotics kill?



What type of pathogen do antibiotics kill?

Antibiotics kill bacteria



# What was the first ever antibiotic discovered?





What was the first ever antibiotic discovered?

Penicillin was discovered by Alexander Fleming in 1928



# Outline how antibiotics work



## Outline how antibiotics work

Antibiotics stop bacteria from growing or kill them completely without damaging the host cells which can cure bacterial diseases



# Why can't antibiotics kill viruses?



## Why can't antibiotics kill viruses?

Antibiotics are specific to bacteria and the way that bacteria grow and replicate. Viruses grow and replicate in different ways and so require different treatment



Give one example of an antibiotic resistant bacterium



Give one example of an antibiotic resistant bacterium

MRSA (Methicillin-resistant  
Staphylococcus aureus)



State 3 ways of controlling the spread of  
MRSA





## State 3 ways of controlling the spread of MRSA

- Cover wounds with sterile dressings
- Wash your hands, surfaces and equipment often and thoroughly
- Treatment and screening programmes

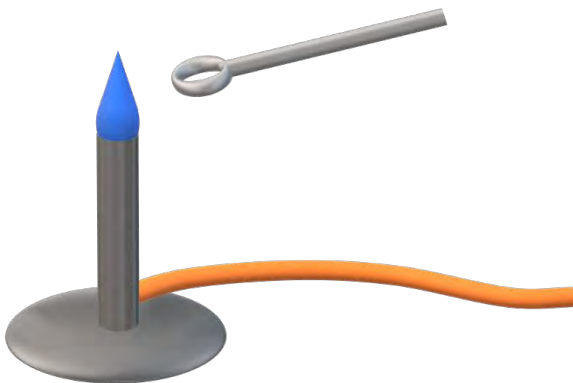


# How should you sterilise an inoculating loop?



# How should you sterilise an inoculating loop?

## Pass it through a blue bunsen burner flame



# What are inoculating loops used for?



What are inoculating loops used for?

Inoculating loops are used to transfer microorganisms



Describe precautions that should be taken to avoid contaminating samples of microorganisms



Describe precautions that should be taken to avoid contaminating samples of microorganisms

- Sterilise equipment and surfaces
- Keep the lid of the agar dish closed as much as possible
- Pass the inoculating loop through a flame



# What is an autoclave?





# What is an autoclave?

A machine that uses hot steam to sterilise equipment



Why are microorganisms not cultured at temperatures above 25 degrees in schools?



Why are microorganisms not cultured at temperatures above 25 degrees in schools?

To prevent pathogens that are harmful to humans from growing



Give 4 safety precautions to take when culturing microorganisms



## Give 4 safety precautions to take when culturing microorganisms

- Wear protective equipment (safety glasses, lab coat, etc.)
- Wash hands before and after the practical
- Clean all work surfaces
- Keep eyes and face away from culture medium



# What are the stages in the development of new medicines?



# What are the stages in the development of new medicines?

- Research the drug and test it on lab grown cells
- Test on animals
- Test on healthy volunteers
- Test on people who have the disease



# What are preclinical trials?





# What are preclinical trials?

Testing the drug on lab grown cells and tissues and using computer modelling to understand the effects of the drug



# What is a placebo?



# What is a placebo?

A substance which looks the same and is ideally indistinguishable from the actual drug but has no effect when taken



# What are placebos used for?



## What are placebos used for?

Placebos are used to test the effectiveness of a new drug by providing a comparison point



# What is a blind trial?



# What is a blind trial?

Where the patients do not know which drug is the placebo and which is the actual drug



# What is a double blind trial?





## What is a double blind trial?

Where both the patients and the researchers do not know which drug is the placebo and which is the actual drug to avoid any bias in the results

