

Vaccines



Objectives:

- To define 'vaccine'.
- To explain how a vaccine works.
- To describe how a vaccine is developed.
- To discuss how vaccines can help you and your community.

Curriculum Links:

• **PSHE (from PSHE Association) - KS2: H10.** How medicines, when used responsibly, contribute to health; that some diseases can be prevented by vaccinations and immunisations; how allergies to vaccines can be managed

Key Vocabulary:

- Antibody
- Pathogen
- Immune system
- Vaccine
- disease

Resources:

- PowerPoint
- Battleship grids and microbe images
- Scissors
- Glue

FAQs:

Can everyone have a vaccine?

Most vaccines are suitable for everyone. Some vaccines may not be suitable for use with children or people who have a health condition or treatment that impairs the function of their immune system. If an individual is poorly or has a fever, then their vaccination may be postponed until they are better.

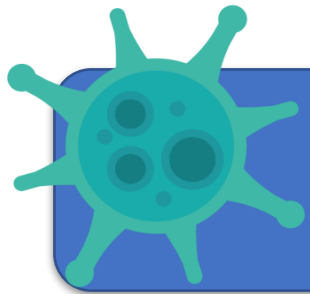
What is a booster vaccine and why do we need it?

For some vaccines a further round of exposure to the vaccine is required to increase (or 'boost') immunity against the disease. Immunity against some diseases can fade over time and it is important to keep up to date with booster vaccines to ensure as good protection as possible.

One example of routine childhood vaccinations is MMR vaccine. The first dose is given at the age of **12 months** and the second dose is given at around three years and four months, before starting school. Having both doses gives long lasting protection against measles, mumps and rubella.

How long does it take to develop a vaccine?

Normally it can take around 10 years or more for a vaccine to be developed. In the case of COVID-19 this has been much quicker as scientists from around the world had made major advances in vaccine development over recent years and shared information based on existing research into other Coronaviruses. Extra funding was also made available and vaccine manufacture began at the same time that the vaccine was being tested in people – called the 'trial phase'.



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FAQs (continued):

What is herd immunity?

Herd immunity is when a large number of people are immune from a disease so that it is less likely to spread far. You can build immunity by having a vaccine, or from catching the disease. The more people who are vaccinated, the less the disease can spread, which also keeps those who are unable to be vaccinated safe.

Introduction:

5 mins



Watch COVID-19 Warriors Video Introduction.

Use PowerPoint images to talk through main points in video and answer questions:

How does a vaccine work?

Why do we vaccinate? (herd immunity infographic)- link to how it benefits themselves/community

How is a vaccine developed?

Further information about how a vaccine is developed can be found attached to this plan, with an extra optional slide about what a vaccine is made from at the end of the PowerPoint.

Main Activity:

20 mins



Ask children to remember illnesses that we can be vaccinated against, and the benefits of preventing these illnesses.

Show pictures of microbes- COVID-19, flu, measles and whooping cough, and tell them that we will be using these diseases to play battleships.

Children should be given a grid and a set of microbes and be split into pairs. They need to hide their grid from each other and stick on the microbes wherever they wish.

They can begin a game of Battleships. After 5 minutes flash the VACCINATED slide onto the board and children to remove their barriers so they can see where the microbes are and finish the game really easily.

Emphasise how much easier it is for the immune system to fight a disease once it can recognise it.

Plenary:

5 mins

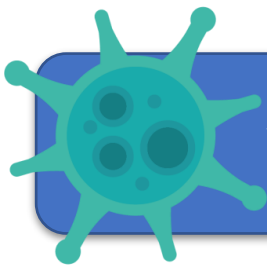


- Ask children to explain to their partner how a vaccine works.
- Ask children to talk about how being vaccinated can help individual children & their community.



Possible Extension Activities:

- Juno Island board game- a printable game showing the importance of vaccination. <https://www.immunology.org/sites/default/files/Juno%20island%20board%20game.pdf>
- Video with more detail about how vaccines work. [How do vaccines work? - YouTube](#)
- Herd Immunity Activity <https://www.sciencebuddies.org/stem-activities/model-herd-immunity>

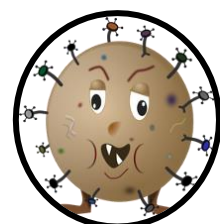
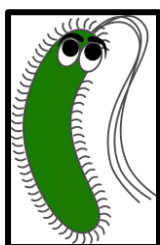


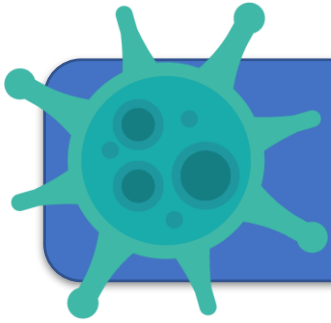
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This is your game card, cut and paste your germs onto the grid for your partner to find.

	A	B	C	D	E	F	G	H	I
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									





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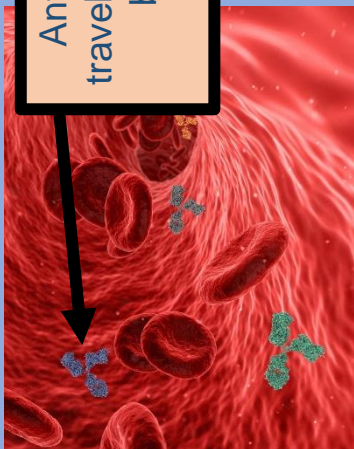
Vaccines Extra Information



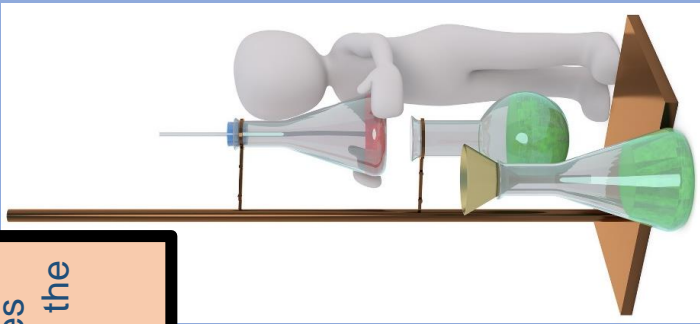
How is a vaccine developed?

The most important ingredient in most vaccines is the antigen- a tiny part of a germ, which can be used to help your body build the right antibodies to fight the disease. This builds your immune system and means that if the germ tries to infect you again your body will recognise it and fight back without you getting ill.

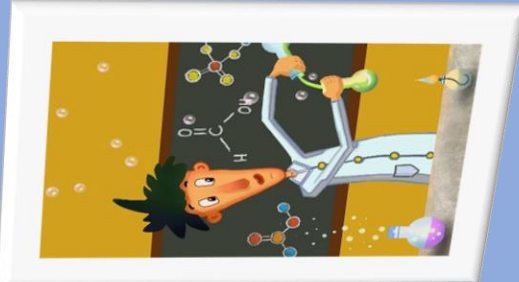
Scientists start by doing tests on the disease germ to find the antigen that will produce a good immune response.



Antibodies travelling in the blood



The antigen is mixed with other ingredients to make a vaccine.
(please look at the Extra Information slide at the end of the ppt if you would like more details)

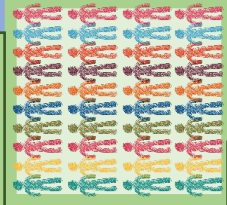


How is a vaccine developed?

The vaccine is tested using cells, then tested on human volunteers in 3 Phases.

Phase 1

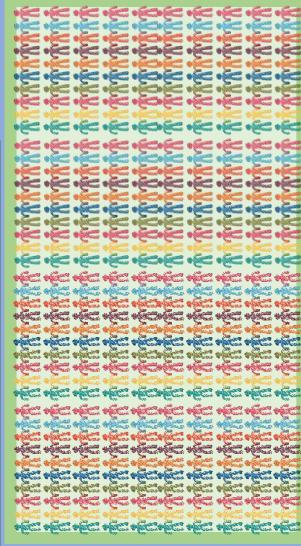
Small groups of 20-50 people are given the vaccine and scientists do safety checks. They record any side effects, look at the size of the dose, check the recipe and decide how the vaccine will be given - as an injection, a tablet or nasal spray.



Changes are made as needed after each phase of testing to make the vaccine safer.

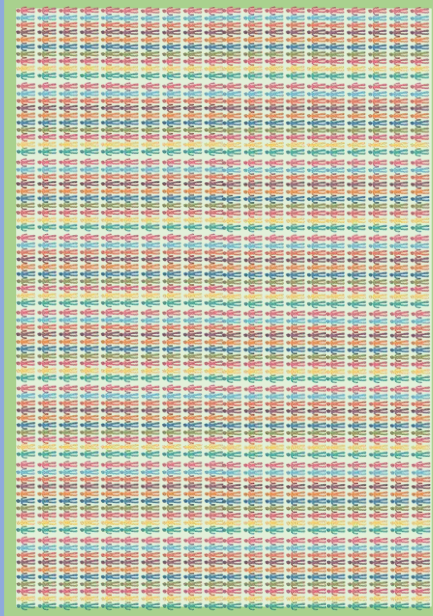
Phase 2

Larger groups of several hundred people are given the vaccine, focusing on volunteers who are the same age and sex as those expected to need the vaccine.



Phase 3

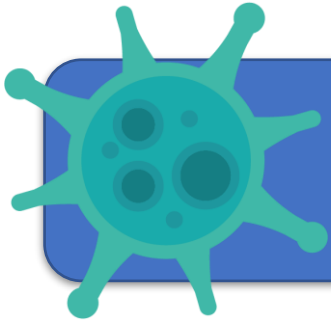
Even larger groups of people thousands are given the vaccine, including people from a bigger variety of population groups.



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Vaccines Extra Information





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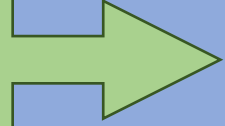
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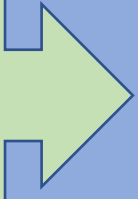
How is a vaccine developed?



The vaccine is checked by experts in each country who decide whether it is safe to use. In the UK it is the Medicines and Healthcare Products Regulatory Agency (MHRA) who are in charge of making sure that medicines and medical devices are safe.



The Joint Committee on Vaccination and Immunisation (JCVI) is an independent expert advisory committee that advises United Kingdom health departments on immunisation, making recommendations about vaccination schedules and vaccine safety.



The safety of the vaccine is continually measured. If anyone has any side effects following the vaccine, they are encouraged to report them using the 'yellow card' system. This lets the MHRA know of any problems so that they can change the recipe or the way the vaccine is used as necessary.

