ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

Let's talk about protection
Childhood Vaccination

Flipbook to support conversations with parents and caregivers

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The following material aims at supporting the conversations that healthcare workers involved in immunisation services have with parents, caregivers and patients. The material raises awareness on the importance of immunisation and addresses information needs on vaccination.

Each country can adapt the information provided here depending on national strategies and initiatives, country needs, cultural considerations and the characteristics (knowledge and needs) of the local population.

1. Why is childhood vaccination important?

2. How do vaccines work?

3. Vaccine safety

4. Information resources

- First, we'll look at **why we immunise** and the successes of vaccines in recent decades.
- Next, we'll discuss **how vaccines work in preventing diseases** such as measles, pertussis, and other examples.
- Next we'll focus on the approval process before introduction of new vaccines and evaluation of their **quality, safety and efficacy**.
- Finally, we'll **recommend some resources** for more information.

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Why is childhood vaccination important?

- Vaccination: One of the great public health achievements of the 20th century
  - **Smallpox:** eradicated worldwide since 1979
  - **Paralytic polio:** eliminated from most parts of the world
- Even though some vaccine-preventable diseases are not occurring around us thanks to good vaccination programmes, we are still at risk as long as the diseases exist somewhere in the world.

➔ **High vaccination rates = low disease rates**

Photo: ECDC/Tibor Bujdos

Why is childhood vaccination important?

- Vaccines are responsible for some of the greatest public health success stories of our time. All vaccine-preventable diseases have declined significantly in countries with successful immunisation programs.

- **Paralytic polio was eliminated from most of the world**. In 2015, only 2 countries (Afghanistan and Pakistan) remained polio-endemic, down from more than 125 in 1988.

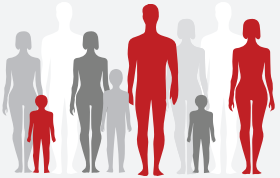
- Countries may add relevant data for their context (e.g. a graph of how cases of a vaccine preventable disease have been reduced following introduction of vaccination).

Vaccines save children's lives and reduce their suffering

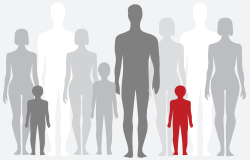
Vaccines **prevent childhood diseases** that can cause permanent disability or even death.

Diphtheria kills 1 in every 10 people who get it, even with treatment.

90 out of 100 babies born to mothers who had **rubella** shortly before getting pregnant or while pregnant will suffer from **congenital rubella syndrome.**



30 out of 100 persons affected by measles develop one or more complications.



Meningococcal disease kills 1 in 10 people, even with prompt diagnosis and treatment.

Vaccines are safe, while many of the diseases they prevent have no effective treatments.

and ...

Vaccines save children's lives and reduce their suffering.Vaccines prevent childhood diseases that can cause permanent disability or even death.

- **Diphtheria** kills 1 in every 10 people who get it, even with treatment
- 90 out of 100 babies born to mothers who had rubella shortly before getting pregnant or while pregnant will suffer from congenital rubella syndrome.
- **Meningococcal disease** kills 1 in 10 people, even with prompt diagnosis and treatment.
- **Measles** is highly contagious and 30 out of 100 persons affected develop one or more complications.
- **Vaccines are safe, while many of the diseases they prevent have no effective treatments.**

Vaccines protect everyone

Directly
the baby/child vaccinated

Indirectly
other babies, children and adults who are vulnerable to disease, e.g. the elderly, those with weak immune systems, those that due to medical reasons cannot be vaccinated.

Vaccines keep children and their communities healthier.

Highly contagious diseases

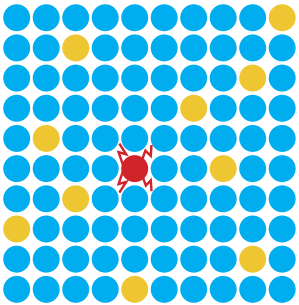
Vaccines protect against highly contagious diseases, for example measles

1 person
with measles can infect

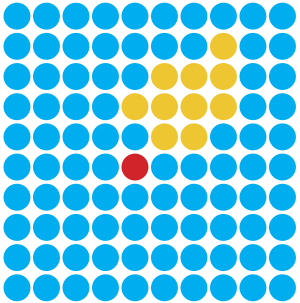
an average of
12 to 18
unprotected people

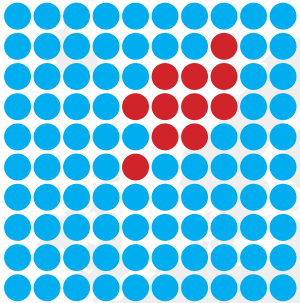
Vaccines keep children and their communities healthy (Community/herd immunity)

When enough people are protected (blue dots) in a community they can protect those who are not yet vaccinated (yellow dots) from those who are infectious (red dots).



When groups of unvaccinated people build up and are in close proximity, community immunity doesn't work and the disease spreads.





- **Community immunity** occurs when enough people in a population are immune to an infectious disease (through vaccination and/or prior illness). The disease is then unlikely to spread from person to person. This is also referred to as 'herd immunity'.

- **Even those who cannot be vaccinated** because they are too young, are allergic to vaccine components, or vaccination is contraindicated for them, **are offered some protection** by the vaccination of others, because the disease cannot easily spread in the community and infect them.

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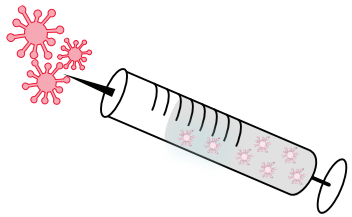
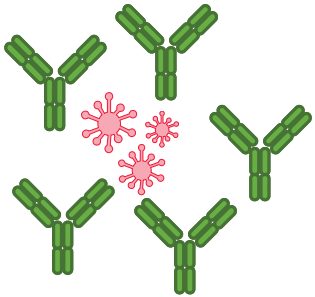
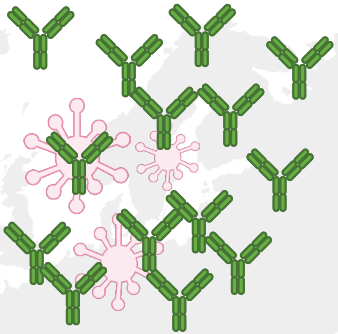
1 Vaccines contain either a greatly weakened form of the virus or bacterium that causes a disease, or a small part of it.



2 When the body detects the contents of the vaccine its immune system will make the antibodies required to fight off infection and eliminate the disease-causing virus/bacterium.



3 Later if a child comes into contact with the virus/bacterium, her/his immune system will recognise it and protect the child by producing the right antibodies.



- Each germ triggers a unique response in the immune system involving a specific set of T-cells, B-cells and memory cells.
- Immunity usually lasts for many years, often for a lifetime.
- The problem with natural infection – e.g. exposure to measles – is that the virus causes illness before an immune response has developed. In severe cases, infection can cause death or permanent disability before immunity can be established.
- A vaccine stimulates antibodies and lymphocytes, creating immune memory without causing disease.

Disease vs. side effects of vaccination (examples)

Disease	Effects of disease	Possible side effects of the vaccine
Diphtheria	Severe sore throat, marked weakness, **nerve damage**, heart failure. **Death** in 10 % of cases.	DTaP vaccine: 20 % of infants have local redness, pain; less than 5 % have fever; more redness and swelling with booster at 4 – 6 years of age.
Tetanus	Toxin affects nerve endings leading to **painful muscle spasms** and seizures.	See above as for DTaP. Local redness and pain common with adult booster.
Pertussis	Severe spasms of cough lasting 3 – 6 weeks, pneumonia, convulsions. **Brain damage** or death in 1 of every 400 infants	See above as for DTaP. The risk of brain damage after pertussis vaccine is too small, if any, to be measured.
Polio	Muscle paralysis in 1 out of 200 persons infected with polio. **Death** in severe cases	IPV: No risk of disease from vaccine.
Hib	**Meningitis kills** in 5 % of cases and leads to brain damage and deafness in 10 – 15 % of survivors	Given in combination with DTaP/IPV: see above for side effects.
Measles	Severe bronchitis, high fever, rash for 7 – 14 days; **death** in 1 per 1 000 cases; encephalitis in 1 per 1 000 cases	Given combined with mumps and rubella vaccines (MMR) 5 – 10 % have fever with or without rash 8 – 10 days after vaccine. No risk of disease from vaccine. Risk of encephalitis 1 case per 1 million doses.
Mumps	Fever, swollen salivary glands. No visible illness in more than 50 % of cases; encephalitis in 1 per 200 cases; **deafness** in 5 per 100 000 cases	See MMR above.

Disease vs. side effects of vaccination

Some opponents of immunisation claim that vaccines carry unnecessary risk.

The table on the page compares the specific effects of each disease with the side effects of each vaccine. What you can see even at a glance is that the benefits of vaccines far outweigh the risks of potential side effects from the vaccine.

Presenters can highlight a few examples from the table, such as:

- Pertussis is a very serious disease, especially in infants. It can cause coughing spells for 3 to 6 weeks, pneumonia and convulsions. Canadian data shows that 1of every 400 infants with pertussis will suffer brain damage or die.
- With the vaccine, on the other hand, about 20 % of infants will have redness and pain at the injection site. Less than 5 % will have fever. The risk of brain damage after pertussis vaccine, if any, is too small to be measured.

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- Rigorous procedures have to be followed before a new vaccine is approved and marketed in EU Member States
- Marketing authorisation only after evaluation during product development and clinical trials
  - Quality
  - Safety
  - Efficacy
- Vaccines are monitored after release for adverse events
  - Adverse events: Health effects occurring after immunisation that may or may not be related to the vaccine
  - Mild adverse events, such as fever and swelling at the injection site, are common. More serious reactions are rare.

Photo: Source: National Eye Institute, www.flickr.com/photos/nationaleyeinstitute/9955311796

Vaccines have to obtain a marketing authorisation before being sold. This is only granted after an evaluation of the data collected during product development and clinical trials taking into account quality, safety and efficacy. Compliance with good practices in the areas of manufacturing and clinical or laboratory testing is also verified by regulatory agencies prior to approval of a marketing authorisation.

Registration or licensing of pharmaceutical products in Europe can be done by different procedures:

- Centralised: By European Medicines Agency (EMA)
- Mutual recognition procedure: Collection of national marketing authorisations
- National procedures: For products licensed in one single country

Once a marketing authorisation is obtained, each batch of vaccines must still be assessed for quality before release for use. This is done by both the manufacturer and an official European control laboratory

In addition, after release onto the market, all vaccines are monitored for adverse events following immunisation. Suspected adverse events are reported by vaccinators or the general public to the National Regulatory Agencies in all countries and in some countries simultaneously to the national public health institutes.

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Vaccine information on the Internet

When looking for vaccine information on the Internet, check that the website:

- Informs about ownership, purpose, authors, and organisations that support it.
- Is transparent about the sources of funding and informs about data protection.
- Provides information based on scientific research and mention sources of information (including references and links).
- Directs you to additional information sources and refers to well-recognised public health organisations and professional bodies.
- Credible websites usually present both the benefits and risks of vaccination.

- When looking at health-related information on the internet, it can be difficult to judge the quality and accuracy of information found.
- Websites offering credible information are transparent with the way they work. They usually have a section where they inform visitors if they are commercial or non-profit, independent or affiliated. A website should clearly state who is responsible for its content. It should also identify the organisation(s) behind it (e.g. ‘about us’) and provide contact information.
- HON is a Swiss not-for-profit organization that helps users find reliable online medical information. It has a set of guidelines and a code of conduct for sites that meet HON criteria.

Web resources for more information

- See the vaccination schedule in your country
  http://vaccine-schedule.ecdc.europa.eu/Pages/Scheduler.aspx
- European Centre for Disease Prevention and Control (ECDC) webpage with information on immunisation
  http://ecdc.europa.eu/en/healthtopics/immunisation/pages/index.aspx
- World Health Organization (WHO)
  http://www.who.int/topics/immunization/en
- WHO – Lists of reviewed vaccination websites that meet good information practices criteria
  http://www.who.int/vaccine_safety/initiative/communication/network/approved_vaccine_safety_website/en

- The WHO Global Advisory Committee on Vaccine Safety (GACVS) developed four categories of criteria for good information practices – credibility, content, accessibility and design – to which websites providing information on vaccine safety should adhere.
  See: 'Good information practices for vaccine safety websites', at www.who.int/vaccine_safety/good_vs_sites/en.

- Countries can add other relevant links on this page.

Thank you!

European Centre for
Disease Prevention
and Control (ECDC)

For more information:
www.ecdc.europa.eu

Photo: ECDC/Darja Stundlova

inform protect IMMUNISE