



Importance of vaccines

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Introduction

Vaccines are regarded as one of the greatest advances in medical history. They are one of the most effective methods in preventing serious illness, disability, hospitalisation and death in people of all ages. For example:

- Authorised coronavirus disease (COVID-19) vaccines have been shown to be protective against severe disease, hospitalisation and death.
- According to the World Health Organization (WHO), immunisation currently prevents 2–3 million deaths every year from diseases like diphtheria, tetanus, pertussis, influenza and measles.
- The measles vaccine has prevented 25.5 million deaths since 2000.

Immunisation also reduces the cost of treatment and lost productivity from seasonal diseases such as influenza.

Vaccines for personal protection

Vaccines work by training the immune system to recognise and fight microorganisms such as viruses or bacteria before a person encounters the virus/bacterium. Vaccines mimic initial infection, and the immune system creates antibodies in response. Antibodies are proteins that help to fight the disease. When a vaccinated person is later exposed to the same microorganism, their immune system is able to recognise the microorganism and rapidly produces the antibodies required to destroy the microorganism.

Sometimes a vaccinated person can get the infection, but in this case, illness is usually milder than it would have been if they had not been vaccinated. For example, although the ability of COVID-19 vaccines to prevent infection decreases with time, vaccination still reduces the risk of hospitalisation and death in vaccinated people who become infected with COVID-19.

Some vaccines also protect against infection-related cancers caused by viruses, for example:

- Human papillomavirus (HPV) vaccines protect against infection with certain types of HPV, which are commonly associated with HPV-related cancers (i.e. precancerous conditions and cervical cancer).
- Hepatitis B vaccines protect against hepatitis B virus (HBV) infections and HBV-related liver cancers.

Fighting antimicrobial resistance

Vaccines are considered a key strategy in fighting antimicrobial resistance. Vaccines play a role in preventing vaccine-preventable infections that would otherwise be treated with antibiotics, i.e. vaccination reduces the need for antibiotics which, in turn, reduces the risk of antibiotic resistance.

Herd immunity

Besides providing personal protection, vaccination also prevents the spread of diseases and protects vulnerable people in the community. Entire communities can rapidly become infected if a disease is easily spread from one person to another.

The more people that are vaccinated in the community, the more difficult it becomes for the disease to spread in the community. This is referred to as herd immunity. However, to achieve herd immunity, enough people must be vaccinated. For example, measles is a highly contagious disease, and 95% vaccine coverage is needed to protect communities against measles outbreaks.

Herd immunity is especially important for vulnerable people who cannot receive certain vaccines; for example, infants, people receiving chemotherapy, people with impaired immune function, including those with human immunodeficiency virus (HIV) infection.

Preventing outbreaks and eradicating diseases

Not only do vaccines play an important role in the prevention and control of infectious disease outbreaks, but regular vaccination may also eventually result in the eradication of infectious diseases.

Smallpox was the first disease to be eradicated through intensive vaccination campaigns. The second human disease targeted for eradication through vaccination is polio.

Polio is a disease that once killed or paralysed thousands of children. Polio caused more than 350 000 cases of paralysis in 1988. Although there is no cure for polio, the disease can be prevented through vaccination. A global polio eradication initiative was launched in 1988, which included mass vaccination campaigns.

Tremendous progress has been made in polio eradication over the last decades. Polio vaccination has brought down polio cases by over 99% since 1988. In South Africa, the last case of wild poliovirus was in 1989.

Vaccine hesitancy

The incidence of measles has decreased significantly since the introduction of the measles vaccine. However, despite the availability of an effective and safe vaccine, several regions globally were hit with large measles outbreaks in 2018 due to low vaccine coverage.

Increasing levels of vaccine hesitancy have contributed to the resurgence of vaccine-preventable diseases, such as measles. Vaccine hesitancy is defined as the reluctance or refusal to vaccinate despite the availability of vaccines and has been identified by the WHO in 2019 as one of the ten threats to global health.

According to the WHO, measles elimination is greatly under threat, and several countries that had achieved, or were close to achieving elimination, have seen a resurgence of measles. Outbreaks of vaccine-preventable diseases primarily affect people who have not been vaccinated.

In a nutshell

- Immunisation is a fundamental component of primary health-care and has significantly reduced the number of deaths from infectious diseases.
- Vaccines play an important role in ensuring public health and are one of the main tools in controlling the COVID-19 pandemic.
- Immunisation results in fewer infections which, in turn, reduces the risk of transmitting diseases to close contacts and other people in the community.

- In some cases, protection following vaccination may be lifelong. In other cases, due to waning immunity, it may be necessary to give booster doses of the vaccine to maintain protection over time.
- Vaccine hesitancy threatens to reverse progress made in tackling vaccine preventable diseases.

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