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Vaccination and Immunization

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Vaccination and Immunization

Vaccination: A vaccine is administered through injection into a human. It stimulates immune system inorder to protect from infections that can cause illness, disability or death in future.

Vaccines are of four types

1. Live-attenuated vaccines.
2. Inactivated vaccines.
3. Subunit, recombinant, polysaccharide, and conjugate vaccines.
4. Toxoid vaccines.

Vaccination is the most effective method in preventing infectious diseases.

According to the Center for Disease and Prevention Control, CDC, not all that receive a vaccination will have immunity.

No vaccine is 100% effective. Childhood vaccines are effective for 85% to 95%. Every person immune system reacts differently. Few people do not develop immunity.

According to National Network of Immunization, vaccines have very high effectiveness rates; they are not completely effective in all individuals. For example, measles vaccine will protect 99 of 100 children from measles and polio vaccine will protect 99 of 100 children from polio. It means that when there is a disease outbreak, less number of people may prone to the disease. However, the fact remains that those who have not received the vaccine are more likely to catch the disease.

Globally, researchers are working 24*7 to find a vaccine against COVID-19.

Details of COVID vaccine which are under trials list are Inactivated vaccine (China), CoronaVac, Bacillus Calmette-Guerin (BCG) live-attenuated vaccine, AZD1222, mRNA-1273, Ad5-nCoV, Adjuvant recombinant vaccine candidate, BNT162, BBIBP-CorV (China), GX-19, Gam-COVID-Vac (Russia), Self-amplifying RNA vaccine (UK), LUNAR-COV19, ZyCoV-D, INO-4800, mRNA-based vaccine (Germany), SCB-2019, COVAX-19, NVX-CoV2373, Plant-based adjutant COVID-19 vaccine candidate, Molecular clamp vaccine, Covaxin (India), bacTRL-Spike, PittCoVacc, Measles vector vaccine, Ii-Key peptide COVID-19 vaccine, Recombinant vaccine, LineaDNA, Ad26.COV2-S, AdCOVID, T-COVIDTM, Protein subunit vaccine, Recombinant vesicular stomatitis virus (rVSV) vaccine, Adenovirus-based vaccine, AAVCOVID, Recombinant vaccine, HaloVax, mRNA-based vaccine, HDT-301 (USA), mRNA lipid nanoparticle (mRNA-LNP) vaccine, Adenovirus-based vaccine, gp96-based vaccine.

Immunisation: By which a person becomes protected against a disease through vaccination.

The important elements of immune system improved by immunization are T cells, B cells, and the antibodies B cells produce. Memory T cells and memory B cells are responsible for a response to other encounter with a foreign body.

Immunization is done through various techniques, most commonly used is vaccination. Immunizations are widely stated as less risky and an easy way to become immune to a particular disease. Some infections and diseases have almost completely been eradicated throughout the World through the immunisation.

Immunisation is a disease-specific. Immunisation is of two types' Active immunisation and Passive immunisation.

Active immunization is the immunity of body achieves when triggered to produce its own antibodies against the antigens of a disease. It stimulates long-term protection against a disease. Active immunity can occur after an infection (natural immunity). Vaccination is an active form of immunisation (artificial immunity). It is effective with a single dose. Examples of live, attenuated vaccines include measles, mumps, rubella, MMR, yellow fever, varicella, rotavirus, and influenza (LAIV).

Passive immunization provides short-term protection against a disease. It occurs when someone receives antibodies instead of making their own. Passive immunity is transmitted naturally from mother to child during birth and breastfeeding. It can also be achieved artificially through the injection of immune globulins. These are antibody-containing blood products. Passive immunization is normally administered through injection and it is used if there has been a recent outbreak of a particular disease or as an emergency treatment for toxicity, as in for tetanus. The antibodies can be produced in animals, called "serum therapy," although there is a high chance of anaphylactic shock because of immunity against animal serum itself. Thus, humanized antibodies produced in vitro by cell culture are used instead if available.

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