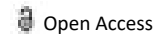




COMMENTARY



Note on Vaccine-Preventable Diseases

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Introduction

A vaccine-preventable disease is one for which a reliable preventive vaccination is available. A vaccine-preventable death occurs when a person contracts a vaccine-preventable disease and dies from it. The infiltration of disease-causing pathogens into an organism's body tissues, their proliferation, and the host tissues' reaction to the infectious agents and the toxins they produce are all considered infections. A transmissible or communicable disease is a disorder caused by an infection. The bacteria and viruses are the most common pathogens that cause infections. Using their immune systems, hosts can combat pathogens. Mammalian hosts have an inherent reaction to infections, which commonly includes inflammation, followed by an adaptive response.

About the Study

Vaccines are biological chemicals that provide active acquired immunity to a specific infectious disease. The adaptive immune system, also known as the acquired immune system, is a subsystem of the immune system made up of specialised, systemic cells and mechanisms that kill or prevent infections from multiplying. The acquired immune system is one of the two main immunity systems found in vertebrates. An infection is the entry of disease-causing microorganisms into an organism's bodily tissues, their multiplication, and the host tissues' reaction to the infectious agents and the toxins they produce.

A vaccine usually contains a disease-causing agent made from weakened or destroyed microorganisms, their toxins, or one of their surface proteins. Antigen (Ag) is a molecule or molecular structure, as well as any foreign particulate matter or pollen grain that can attach to a specific antibody or T-cell receptor in immunology. Antigens present in the body can cause an immunological response. Originally, the term antigen referred to a material that produces antibodies. Proteins, peptides (amino acid chains), polysaccharides (chains of monosaccharides/simple sugars), lipids,

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and nucleic acids are all examples of antigens.

The agent stimulates the immune system, causing it to recognise and destroy the agent as a threat, as well as any related bacteria it may encounter in the future. The immune system of an organism is a web of biological processes that protects it from disease. It can recognise and respond to a variety of pathogens, including viruses, parasitic worms, cancer cells, and foreign objects such as wood splinters, while keeping them separate from the organism's own healthy tissue. In many species, the immune system is organised into two primary subsystems. The innate immune system has a pre-programmed response to a wide range of events and stimuli. The adaptive immune system can respond to each stimulus in a unique way by learning to recognise substances it has seen before. Both rely on molecules and cells to get the task accomplished.

Vaccines can be either preventative or therapeutic. Prophylaxis, or preventive healthcare, refers to steps taken to keep people from getting sick. Disease and disability are dynamic processes that begin before individuals realise, they are affected, and are influenced by environmental variables, genetic predisposition, disease agents, and lifestyle choices.

Conclusion

Some vaccinations give complete sterilising immunity, ensuring that infection is completely averted. A neutralising antibody protects a cell against a disease or infectious particle by neutralising whatever biological effects it may have. The particle is no longer infectious or harmful after neutralisation. Antibodies that neutralise viruses, intracellular bacteria, and microbial toxins are part of the adaptive immune system's humoral response. Neutralizing antibodies bind to certain surface features (antigen) on infectious particles, preventing them from interacting with the cells they may infect and destroy. Immunity resulting from neutralising antibodies is often referred to as sterilising immunity, because the immune system destroys the infectious particle before infection occurs.