Chapter

Vaccine Types

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Abstract

There are several different types of vaccines. Each type is designed to teach your immune system how to fight off certain kinds of germs and the serious diseases they cause. There are four main types of vaccines: live attenuated vaccines; inactivated vaccines; subunit, recombinant, polysaccharide, and conjugate vaccines; and toxoid vaccines.

Keywords: vaccine, type, attenuated, inactivated, recombinant

1. Introduction

Vaccines are biologics that provide active adaptive immunity against specific diseases. Vaccines usually contain drugs that resemble the microorganisms responsible for the disease and are often made from one of the killed or attenuated microorganisms, their toxins, or their surface proteins, introduced by mouth, by injection, or by nasal spray to stimulate the immune system in us and recognize the foreign agents and destroy them.

There are many success stories in vaccine. The first vaccine, against smallpox, a disease that had killed millions of people over the centuries by British physician Edward Jenner in 1796 [1], was derived from the benign cowpox virus, which provided immunity to small pox. In 1980, following an historic global campaign of surveillance and vaccination, the World Health Assembly declared smallpox eradicated. In the nineteenth and twentieth centuries, scientists following Jenner's model developed new vaccines to fight numerous deadly diseases, including polio, whooping cough, measles, tetanus, yellow fever, typhus, rubella mumps, varicella, and hepatitis B and many others [2]. Rabies was the first virus attenuated in a lab to create a vaccine for humans.

The vaccine exposes humans to very small and safe amounts of attenuated or killed viruses and bacteria. When you are exposed to it in later life, the immune system will learn to recognize and attack infections. So you will not get sick, or you may be infected lightly. During the process of immunity development, the body produces antibodies against specific microorganisms and creates defense. The next time the person encounters that microorganism, the antibody prevents him from causing disease or alleviates the severity of the disease, regardless of the way that a vaccine is made.

Vaccines are the most cost-effective healthcare interventions known to prevent death and disease. A dollar spent on a childhood vaccination not only helps save a life but greatly reduces spending on future healthcare. According to a new study from the University of North Carolina at Chapel Hill, vaccination efforts made in the world's poorest countries since 2001 will have prevented 20 million deaths and