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300Level

Immunization is a vital public health intervention that prevents serious illness, disability, and death from numerous infectious diseases by training the immune system to recognize and fight specific pathogens. This prevention works both at an individual level and a community level through herd immunity, protecting vulnerable populations who cannot be vaccinated.

Below are details on several vaccine-preventable diseases and the specific ways they are prevented through immunization:

Vaccine-Preventable Diseases and Prevention Details

Disease Cause Symptoms & Complications Prevention through Immunization

Diphtheria Bacterium Infects the throat and tonsils, making breathing and swallowing difficult. Can cause heart, kidney, and/or nerve damage. Prevented by the DTaP or Tdap toxoid vaccine, often given in combination with tetanus and pertussis vaccines in a series of doses starting in infancy.

Hepatitis B Virus_A dangerous liver infection that can lead to chronic liver problems, cirrhosis, and liver cancer later in life, often without initial symptoms in infants. Prevented with a subunit vaccine. The first dose is typically given at birth, followed by a series of doses to ensure long-lasting protection.

Hib (Haemophilus influenzae type b) Bacterium- A leading cause of pneumonia, meningitis, septicaemia (blood poisoning), and other life-threatening infections, primarily in children under 5 years old. Prevented by a conjugate vaccine administered in multiple doses during infancy.

HPV (Human papillomavirus) Virus Usually has no symptoms, but some strains cause cervical cancer (nearly all cases of cervical cancer are linked to HPV), as well as other cancers and genital warts. Prevented by an HPV vaccine (made from virus-like particles), typically recommended for preteen boys and girls to prevent future cancers.

Influenza (Flu) VirusCauses fever, cough, sore throat, muscle aches, and fatigue; can lead to severe complications like pneumonia. Prevented by an annual seasonal vaccine (either inactivated, live attenuated nasal spray, or subunit) to protect against the most common circulating strains each year.

MeaslesVirus Highly contagious, with symptoms including fever, runny nose, white spots in the mouth, and a rash. Serious cases can cause blindness, brain swelling, and death. Prevented by the live-attenuated MMR (measles, mumps, and rubella) vaccine, given in two doses, usually starting between 12-15 months of age.

Polio (Poliomyelitis) Virus In most cases, it is asymptomatic, but it can invade the nervous

system, causing total paralysis in a small percentage of cases; 5-10% of those paralyzed die when their breathing muscles are affected. Prevented by the inactivated poliovirus vaccine (IPV), administered in a series of doses to create strong immunity. Oral polio vaccines (OPV) are live-attenuated and used in some regions.

Tetanus Bacterium Causes painful muscle contractions, particularly of the neck and jaw (lockjaw), making it difficult to eat and breathe. The bacteria is often found in soil and enters the body through cuts or wounds. Prevented by a toxoid vaccine (part of DTaP or Tdap), which trains the immune system to fight the harmful toxin produced by the bacteria.

Whooping Cough (Pertussis) Bacterium A highly contagious respiratory tract infection characterized by severe coughing fits, which can be life-threatening, especially in infants. Prevented by the inactivated pertussis vaccine, part of the combination DTaP vaccine series given during childhood, with boosters (Tdap) needed in adolescence and adulthood.

For specific guidance on the recommended immunization schedule for you and your family, consult your healthcare provider or national health authority, such as the CDC or WHO.

This is for informational purposes only. For medical advice or diagnosis, consult a professional. AI responses may include mistakes.