

Mastery Series: Active VS. Passive Immunity; Vaccinations

1. What are the main two ways you can develop active immunity?
2. What are the main two ways that someone can receive passive immunity?
3. A person never knowingly gets sick from a bacteria (for example, *Streptococcus pyogenes*), but as an adult it is discovered that he/she is immune to it. How might this be possible?
4. For the 10 vaccines that I listed,
 - a. Name them, the disease, the type of vaccine, and what the person's antibodies will (hopefully) be made to recognize.

Mastery Series ANSWERS: Active VS. Passive Immunity; Vaccinations

1. What are the main two ways you can develop active immunity?

Get the disease; or receive a vaccination

2. What are the main two ways that someone can receive passive immunity?

Immunoglobulin shot; breastfeeding

3. A person never knowingly gets sick from a bacteria (for example, *Streptococcus pyogenes*), but as an adult it is discovered that he/she is immune to it. How might this be possible?

She was sick with the disease but never ill enough to be diagnosed; or she developed antibodies to the bacteria after numerous exposures (but not a confirmed illness)

4. DTaP: Diphtheria, tetanus and pertussis(whooping cough); It is considered an “inactivated bacterial” vaccination, and is under debate because it no longer contains “whole cell” pertussis like DTP did. There is debate and concern that DTaP doesn’t confer as robust immunity to pertussis as DTP did (although DTP had more side effects).

Antibodies to *Corynebacteria diphtheriae* toxin/*Clostridium tetani* toxin; and to the fimbriae of *Bordetella pertussis*, as well as its toxoid.

Hep B: Hepatitis B; inactivated virus; antibodies made to parts of the virus

Hib: *Hemophilus influenzae* bacteria; conjugate; antibodies made to components of the virus

HPV: Human papilloma virus; inactivated viral; antibodies made to parts of the virus

FluMist (LAIV): Influenza; attenuated (weakened—usually by growing it in a different animal so that it is not able to cause disease in most humans) live virus; antibodies to 3 different kinds of flu virus

Flu shot: influenza; inactivated virus; antibodies to 3 different kinds of flu virus

MMR: measles, mumps, rubella (all viral diseases); live attenuated viruses; antibodies to viral proteins

Rotavirus: rotavirus diarrheal disease; live attenuated; antibodies to viral proteins

Varicella: chickenpox; live attenuated; antibodies to viral proteins

Shingles: varicella vaccine—but up to 14X more concentrated; live attenuated; antibodies to viral proteins

Polio: poliovirus; inactivated viral; antibodies to viral proteins

Pneumococcal (PCV/PPV): *Streptococcus pneumoniae*; Pneumococcal conjugate (includes a carrier protein) or Pneumococcal polysaccharide; antibodies to parts of the cell wall