

## **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 diphtheria* toxin/*Clostridium tetani* toxin; and to the fimbriae of *Bordatella pertussis*, as well as its toxoid.

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

**Hib:** *Hemophilus influenza* 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