Vaccination = Artificial but ACTIVE immunity. Goal = provide adequate "Herd" Immunity.
An "Ideal Vaccine" has certain characteristics (hypothetical):
  1. Easy administration
  2. Long term protection
  3. No side effects
  4. No reversion (return to virulence due to back mutation)

Types of Vaccines: (all contain needed antigens to stimulate an immune response or ACTIVE immunity)

A. Attenuated (modified live organism) — viable but weakened organism that is unable to cause disease.
   Advantage: can reproduce in host and therefore provides strong and long term immunity.
   Disadvantage: has possibility to revert and cause disease. Should only use in healthy individuals
B. Killed - organism is killed and unable to metabolize or reproduce.
   Advantage: cannot revert nor cause disease. Use in compromised host
   Disadvantage: immune response is usually weaker and shorter in duration; repeated inoculations
C. Subunit (acellular) — contains only the strongest and most protective antigens from the pathogen.
   Advantage: Stronger response that killed vaccines and no possibility of reversion
   Disadvantage: Usually not as strong as attenuated vaccine
D. Conjugated — Attaches a typically weak but important antigen to a protein to enhance the strength of the immune response.
   Advantage/Disadvantage: Similar to subunit
E. Toxoids - Not directed at pathogen but a substance released by the pathogen. Typically a protein toxin.
   Advantage: Usually strong and lasting immune response, unable to cause disease

Antitoxins, Antisera, Immunoglobulins, Gammaglobulins — Antibodies (NOT antigens) that are manufactured or made by another organism. These provide PASSIVE immunity.
   Advantage: Immediate protection
   Disadvantage: Short term protection; no cellular immunity, may blunt active immunity of host