

# **Adaptive( Acquired) Immunity**

## Naturally acquired immunity

- **Naturally acquired immunity** is the immunity acquired upon exposure to a specific pathogen particularly in the course of an infection/disease.
- Additionally, naturally acquired immunity occurs when an infant obtains colostrum from mother. The infant is thus naturally immune against many or all of the disease against which the mother is immune.

## **Artificially acquired immunity**

- **Basically it constitutes the various means by which the specific immunity of individuals is enhanced.**
- **It specifically refers to vaccination( Active immunity), and transfer of antibodies via antiserum etc (Passive immunity).**

## Active immunity

- **Active immunity occurs when an individual's own immune system is induced to produce a specific immune response against an antigen /pathogen.**
- **Active immunity can last as long as the immune system cells, that mediate this immunity, survive within an individual.**

## **Active immunity**

- **Active immunity can occur:**
- **After infection or disease( naturally acquired active immunity).**
- **Artificially upon vaccination ( artificially acquired active immunity).**

## **Passive immunity**

- **It results when antibodies are produced by one individual and then acquired by another.**
- **The acquisition of the antibodies in colostrum by an infant is an example of naturally acquired passive immunity; the crossing of the placenta by maternal antibodies is another example.**
- **Passive immunity may also be artificially acquired particularly when antiserum or antibodies produced by one individual are transfused into a second individual.**

## **Passive immunity**

- **In all cases, passive immunity represents the passive acquisition of an immune response that was actively acquired by another individual.**
- **However, because passive immunity involves the transfusion of molecules rather than the transfusion of immune system cells, it can last for at most months since antibodies have a finite life span within the body.**
- **on the other hand, passive immunity is functional immediately upon reception, whereas active immunity requires time (days, weeks) before a functional immune response develops.**

## Important definitions

- **Antigen:** Anything that can be bound by an antibody.
- **Antibody:** Immunoglobulins (Ig) produced in response to antigens.
- **B cells:** Lymphocytes responsible for antibody production (humoral response).
- **T cells:** Lymphocytes responsible for cell mediated immunity.