



## Immunity Against Covid-19

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### Why in News

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As per a recent study, published in the **journal Science**, based on analyses of **blood samples** from 188 patients, **Covid-19** survivors have **protective immunity** from the coronavirus for months, perhaps years, **after infection**.

### Key Points

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- **Background:**
  - The duration of immunity to Covid-19 has been a **subject of research** throughout the **pandemic**, and studies so far have provided various results.
  - Previously in July 2020, a study suggested that **immunity might be lost in months** making it susceptible to **re-infections**.
- **Findings of the New Study:**
  - It suggests that the **body's immune response** to the novel coronavirus **can last for at least eight months** after the onset of symptoms from the initial infection.
  - It suggests that **nearly all Covid-19 survivors** have the immune cells necessary to fight re-infection.
    - It measured **antibodies, memory B cells, helper T cells and killer T cells** all at the same time.
  - It addresses concerns arising out of Covid-19 data from **other labs**, which showed a **dramatic drop-off of Covid-specific antibodies over time**.

### Immunity

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- **Meaning:**
  - Immunity is the **ability of the body to defend itself against disease-causing organisms**.
  - Immunity is of **two types**: Innate immunity and Acquired immunity.
- **Innate Immunity:**
  - It is a **non-specific type of defense** that is **present at the time of birth**.

- **Acquired Immunity:**
  - It is **pathogen specific**. It is **characterized by memory**. This means that the body when it encounters a pathogen for the first time produces a response called primary response which is of low intensity.
  - Subsequent encounters with the same pathogen elicits a **highly intensified secondary or anamnestic response**. This is ascribed to the fact that the body appears to have memory of the first encounter.
- **Antibody:**

An antibody, also known as an immunoglobulin, is a large, **Y-shaped protein** used by the immune system to identify and **neutralize foreign objects** such as pathogenic bacteria and viruses.
- **T cells** (thymus cells) and **B cells** (bone marrow- or bursa-derived cells) are the major **cellular components of the adaptive immune response**. T cells are involved in **cell-mediated immunity**, whereas B cells are primarily responsible for **humoral immunity** (relating to antibodies).
- **Memory B cells (MBCs):**

These are a B cell **subtype formed within germinal centers** following **primary infection**. MBCs can survive for decades and repeatedly generate an accelerated and robust antibody-mediated immune response in the case of re-infection (also known as a secondary immune response).
- **Helper T cells:**

These are arguably the most **important cells in adaptive immunity**, as they are required for almost all adaptive immune responses. They not only help **activate B cells** to secrete **antibodies and macrophages** to destroy ingested microbes, but they also help activate **killer T cells** to kill infected target cells.
- **Killer T cells:**

It is a T lymphocyte (a type of white blood cell) that kills **cancer cells**, cells that are infected (particularly with viruses), or cells that are damaged in other ways.

**Source:IE**