

What is Immune Imprinting?

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Why in news?

- Two papers, published in the New England Journal of Medicine (NEJM), pointed out those bivalent boosters — made to counter both the Omicron strains and the original Covid-19 strain — don't generate significantly greater antibody responses than an additional dose of the original mRNA vaccines.

What is immune imprinting?

- The phenomenon was first observed in 1947 when scientists noted that in flu patients and termed it an '**original antigenic sin**'
- Immune imprinting is a tendency of the body to **repeat its immune response** based on the first variant it encountered — through infection or vaccination — when it comes across a newer or slightly different variant of the same pathogen.
- Imprinting acts as a **database for the immune system**, helping it put up a better response to repeat infections.
- After the body is exposed to a virus for the first time, it produces **memory B cells** that circulate in the bloodstream and quickly produce antibodies whenever the same strain of the virus infects again.
- The problem occurs when a similar, not identical, variant of the virus is encountered by the body.

- In such cases, the immune system, rather than generating new B cells, activates memory B cells, which **produce cross-reactive antibodies** that bind to features found in both the old and new strains.
 - These cross-reactive antibodies offer some protection but are not as effective as the ones produced by B cells when the body first encountered the original virus.
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Q1) What are Lymphocytes?

Lymphocytes are a type of white blood cell. They help your body's immune system fight cancer and foreign viruses and bacteria. Your lymphocyte count can be taken during a normal blood test at your healthcare provider's office. Lymphocyte levels vary depending on your age, race, sex, altitude and lifestyle.

Source: [Studies find 'immune imprinting' might be making bivalent boosters less effective: What is it and how does it work?](#)

Source: <https://vajiramandravi.com/current-affairs/what-is-immune-imprinting/>

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