

**- Vaccination / Virus****'Nasal vaccines could limit future variant threats'**

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NEW DELHI: Nasal vaccines could be the breakthrough the world needs for lasting protection against Covid-19, potentially limiting the risk from new variants of Sars-cov-2 because of the way they act, one of the world's top immunologists said during the Hindustan Times Leadership Summit on Tuesday.

Dr Akiko Iwasaki, professor of immunobiology at Yale University, was speaking during the session on Covid-19 on the first day of the summit, and offered several insights on where the focus needs to be to contain the key threats from Covid-19.

"How do we ever stop having to vaccinate every so often? That is a question that my lab and others in the field have been tackling. One of the ways is through mucosal vaccines," she said, in a conversation with health communications specialist Sanchita Sharma.

"Mucosal vaccines provide local protection, which is much more resilient against different mutations that occur within the virus. This is because mucosal immunity produces antibodies known as IGA, which coats the mucous lining," she said, before explaining it with an analogy: "It is like having guards outside your home, versus guards placed inside the door."

At present, all approved vaccines are developed intramuscularly, which Iwasaki said prompts systemic immunity.

Iwasaki outlined three important steps that should be taken to head off the threat from future variants:

First, there needs to be better genomic surveillance. "Global genome surveillance effort is important because we don't know where the new variants will come from," she said.

Second, the focus must turn to regions with low vaccination coverage. "And as the world becomes more and more vaccinated, new variants are likely to emerge from regions that are under-vaccinated, because we still need transmission of the virus to develop mutants," she added.

Third, people with compromised immunity need therapies.

"The other kind of things we need to worry about is to protect the immunocompromised. They often have long-term infections, which can aid in the accumulation of these mutations. We need to implement monoclonal antibodies and antivirals to protect these individuals," she said.

Iwasaki said her team at Yale and others in the scientific community are trying to uncover further clues about how the virus works, which could in turn be used for future therapies.

Among these is the discovery of an RNA molecule that Iwasaki's team reported in early November.

The molecule, known as SLR14, jumpstarts the immune system and is simple to manufacture. It works by triggering the production of interferons, a group of proteins key to the body's initial response to infection. How the immune system reacts has been a particular area of study for the Iwasaki lab, which answers why some people have severe disease while others could have no or just mild symptoms, as well as the wide variety of long Covid symptoms that have been seen.

Iwasaki said long Covid is a serious issue, affecting close to 10-30% of the people infected. "There is still not a universal definition. It is possible even for asymptomatic infection to lead to long Covid symptoms."

The immunologist explained there are "two paths to get to long Covid-19": One is in the case of people who develop severe symptoms and require hospitalisation. "These are mostly male and older patient. Around 50-70% of this population, which has severe disease and hospitalisation, may have long Covid," she said.

The second way these develop is in a group of patients that is predominantly women of middle age.

"There are over 200 symptoms of long Covid – brain fog, shortness of breath, neuro symptoms, hair loss, skin rash. We are currently trying to understand the sex differences in long Covid and underlying mechanisms," she said.