



https://youtu.be/LUFKfu8_ikk

Our Immune system and the workings explained.

Effectiveness of the COVID vaccines -a challenge to our immune system

Transcript:

“In early May, two people quarantined in adjacent hotel rooms in the Australian city of Adelaide opened their doors within seconds of each other to collect meals. Health authorities believe that could have been enough for the virus to spread from a man in one of the hotel rooms to a man in the other via airborne transmission-.

To combat such virulent contagious mutant variants, we need a strong immune system. Few weeks ago, the chief executive of Pfizer said anyone who receives its COVID-19 vaccine will probably need to have a third dose within 6-12 months after being fully immunised, and then likely one dose every year going forward.

We will need these because it is likely that, for many of us, immunity will begin to wane within that time frame. The vaccine will also need to be tweaked to cover new coronavirus variants as they emerge.

The advantage of mRNA vaccines like Pfizer’s is they are much easier to update than the “viral vector” vaccines like AstraZeneca’s. We should still use AstraZeneca now for over-50s, but our best long-term strategy is to use mRNA COVID-19 vaccines,

Long term immunity to coronaviruses does not last.

We know our immunity to different coronaviruses wanes over time.

Israel said, according to Reuter, it will begin offering a third dose of Pfizer vaccine to adults with weak immune systems but it was still weighing whether to make the booster available to the general public.

Our immune system is a complex network of cells and proteins that defends the body against infection. It protects the body from intruders, such as bacteria and viruses.

It has two parts-innate and adapted.

A important part played by the immune system is to keep a record of all microbes that have attacked and defeated previously, so it can recognize and destroy the microbes, including viruses quickly when it enters the body again.

Our immune system orchestra is composed of:

white blood cells- B cells-the leader of the orchestra, T cells, Plasma cells, , memory B cells derived from the activated B lymphocytes, T cells and, macrophages

Macrophages-these are specialized cells involved in the detection, phagocytosis and destruction of bacteria, viruses, and other harmful organisms.

They also present the foreign offenders like the viruses to the T cells and initiate inflammation by releasing molecules known as cytokines.

Others in the orchestra are- antibodies formed by plasma cells

lymphatic system

spleen

bone marrow

thymus.

White blood cells – the key players made from the stem cells in the bone marrow and in the lymphatic system. B cells from the bone marrow through the circulation enters the lymphoid organs and gets activated if they see any pathogens like the viruses and produce antibodies. These are the memory cells that form the part of the adaptive immune system.

B lymphocyte cells perform two important functions:

1. They differentiate into plasma cells and produce antibodies.
2. They can present antigen to helper T cells

Helper T cells with the appropriate receptor binds to the presented antigen, COVID virus in this situation.

Plasma cells release antibodies.

These antibodies are able to bind to the same antigens as the receptor on the B cell that was originally activated.

After you had the first jab from any type of Covid-vaccine-Pfizer, Moderna, AstraZeneca, among others, the body response in your immune starts cracking.

The B cells maturing in the bone marrow or in the lymph nodes gets stimulated by the Helper T cells to proliferate and differentiate into Plasma cells and memory cells.

The maturation of the B cells starts in the bone marrow and travel to the spleen for the final step of maturation into mature memory B cells.

Memory B cells can **survive for decades**, which gives them the capacity to respond to multiple exposures to the same antigen- the virus.

Vaccines against Coronavirus do not prevent or cure COVID , but still beneficial.

While a major achievement, none of the vaccine candidates in circulation can entirely prevent the virus from entering the body, nor stop its transmission. But according to a new computational analysis, outright prevention or cure may not be the be all and end all.

The research, led by Bruce Lee, Professor of Health Policy and Management at City University of New York, suggests that a vaccine or viral treatment that can shorten the infectious period of COVID-19 by just half a day for 25% of confirmed cases could avert up to 1.4 million infections and more than 99,000 hospitalisations.

According to Australia's COVID-19 Vaccine Roadmap released last week, priority population groups, including GPs, are set to receive the Pfizer/BioNTech candidate, which has an efficacy rate of 95%. The majority of the population, however, will receive the University of Oxford/AstraZeneca candidate, which, based on current data, has an efficacy rate of 70%.

The modelling would suggest a lower efficacy rate could still have significant benefits in curbing the pandemic. But it may take longer to achieve the end goal of elimination, according to Professor MacIntyre.

'It is important that people understand that vaccination is absolutely important but also that it's not a panacea.

WHO urges fully vaccinated people to continue to wear a mask?

Those recovered from COVID-19 had a robust antibody response after the first mRNA vaccine dose, but little immune benefit after the second dose, according to new research.

The findings suggest only a single vaccine dose may be needed to produce a sufficient antibody response.

Those who did not have COVID-19 did not have a full immune response until after receiving their second vaccine, reinforcing the importance of the two recommended doses.

University of Pennsylvania School of Medicine

Need for both 1st jab and booster jab.

When the immune system first encounters a vaccine, it activates white blood cell-plasma B cells which forms antibodies, that are short lived.

Unless you get the 2nd booster, B cells and memory B cells may decline.

Need for third dose of vaccine

Researchers say it is too early to know whether a 3rd booster may be required after 6-12 months.

As the Delta variant spreads rapidly throughout the world, the prospect of a third "booster" shot is gaining interest even in nations where a large proportion of people are vaccinated.

Hope this video talk was comprehensive and useful.

Have both jabs, stay safe, keep wearing the mask and the social distance until we meet again.

Bye for now.