

COVID-19 BOOSTER UPDATE

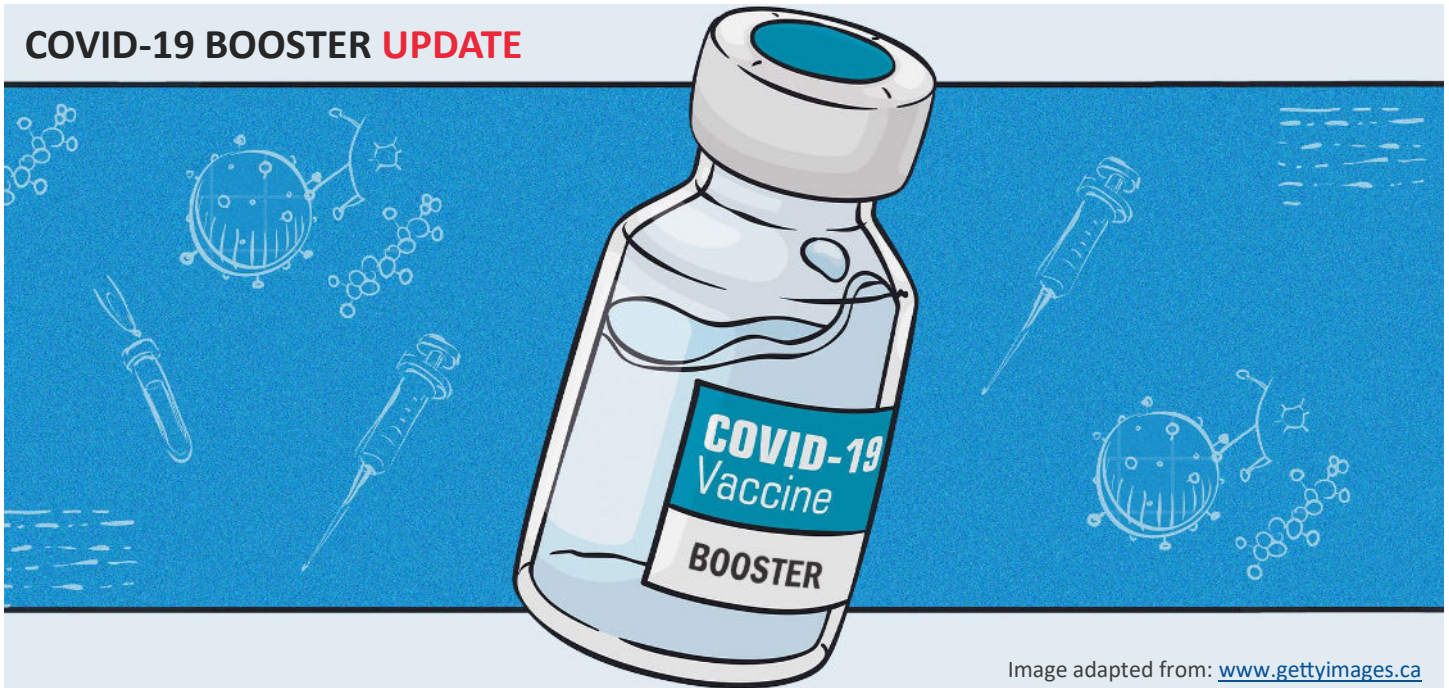


Image adapted from: www.gettyimages.ca

Earlier this month, the Ministry of Health updated its COVID-19 vaccine guidance with recommendation to consider *delaying* getting a COVID-19 booster dose until the fall of 2023. This is to maintain the recommended **6-month interval** from the last dose and maximize protection against COVID-19 outcomes when peak circulation is expected. Although seasonality of SARS-CoV-2 has not been established, other respiratory viruses such as influenza and respiratory syncytial virus (RSV) typically increase in the fall and winter months. No novel variants of concern (VOCs) have emerged since November 2021, with Omicron being the last one. However, mutations can occur as long as the virus circulates, and new variants can emerge.

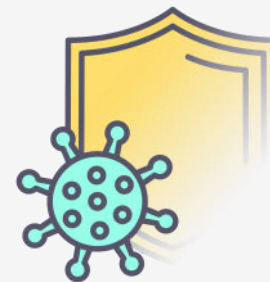
Omicron accounts for the majority of cases worldwide. Currently, Omicron's recombinant XBB sub-variants (including XBB.1.9, XBB.1.5 & XBB.1.16) are the source for 95% of COVID-19 activity in Canada. Updated monovalent boosters targeting XBB sub-variants are in development and may be offered in the fall. At present, based on the recommendations from National Advisory Committee on Immunization (NACI), the province is now using the bivalent COVID-19 mRNA vaccines for primary series initiation or completion, as well as for booster doses, for all individuals six months and older. If at least 6 months have passed since the last dose/infection, NACI strongly recommends to offer an additional booster dose to all high-risk groups, including residents of long-term care homes and other congregate settings.

Effectiveness of COVID-19 vaccines tends to be lowest against getting infected, higher against symptomatic disease, and highest against severe disease. Studies have shown that vaccine effectiveness **wanes** over time, particularly against infection/symptomatic disease, and to a lesser extent against severe disease. 'Hybrid' immunity offers greater protection than disease-induced immunity or vaccination alone against the Omicron variant, but current data shows that immunity starts to fade between 6-12 months, especially against reinfection. Booster doses are intended to counter the waning of immunity and provide a more robust and extended protection that may have decreased over time.

Sources: www.health.gov.on.ca | www.simcoemuskokahahealth.org | health-infobase.canada.ca | www.scienceupfirst.com | www.canada.ca

WHY DOES IMMUNITY AGAINST COVID-19 WANE OVER TIME?

COVID-19 mRNA vaccines have proven to be highly effective in preventing severe disease, hospitalization, and death, and also continue to provide some level of protection against symptomatic infection. Nonetheless, mounting evidence shows that the protection provided post-vaccination or post-infection wanes over time. Decline in protection occurs due to waning immunity, and the **evolution of new variants and sub-variants** of SARS-CoV-2 that can better evade the immune system.



To grossly simplify, there are three main soldiers/avengers in our adaptive immune army that work together to recognize and stop an infection: antibodies, B-cells, and T-cells. COVID-19 vaccine stimulates production of antibodies specific to the spike protein of SARS-CoV-2 in the blood via the B-cells. These antibodies 'neutralize' viral particles by sticking to them on the outside and blocking cell entry, preventing infection. But once viral particles get inside a host cell, antibodies cannot do much. Enter T-cells! Vaccines also stimulate production of T-cells that recognize and kill viral-infected host cells, and stop the virus from spreading to other cells. However, when these immune superheroes don't come in contact with the enemy for an extended period of time, production of virus-specific immune cells and antibodies/proteins could slow down, and gradually die off causing waning of immunity.

A small pool of humoral B-cells and cellular T-cells specific to SARS-CoV-2 however remain in the body as 'memory cells', and confer long-term immunity. If there is exposure to the virus or a booster dose, these memory cells are rapidly reactivated and provide strong protection against severe disease and death. Protection against severe outcomes is more durable and takes longer to wane, influenced by patient-specific variables such as age, comorbidities, effectiveness of vaccines and prior infection.

Immunity of people can wane at different rates and further research is required to understand the dynamics involved. Getting the recommended COVID-19 booster in the fall of 2023 could restore immunity and offer higher and longer-lasting protection against infection or reinfection. A booster is particularly important for high-risk groups, which include health care workers, and residents of long-term care homes and other congregate living settings.

Sources: jamanetwork.com | www.nature.com¹ | www.nature.com² | www.ncbi.nlm.nih.gov | www.smithsonianmag.com

MONTHLY COMMUNITY OF PRACTICE (CoP) MEETING



RVH IPAC Hub invites you to join our virtual CoP meeting via Microsoft Teams that is scheduled for **every third Thursday** of the month from 11:00-12:00 EST. The meeting is tailored for the IPAC leads of homes in the Simcoe-Muskoka region, where we get updates from Public Health Ontario (PHO), Simcoe Muskoka District Health Unit (SMDHU), and presentations from the hub's ICPs on IPAC topics that are pertinent to homes with congregate living. The tone of the meeting is designed to be casual and welcoming (sometimes even with mom/dad/bad jokes), with all attendees on mute and the video switched off, except for the active speaker. If you would like to attend, please contact our admin assistant, Tanya MacDonald at macdonaldta@rvh.on.ca to request an invite for the meeting. If you have already saved the invite and are a frequent attendee – a big thank you from the IPAC hub team!