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Does timely vaccination help prevent post-viral conditions?

Incidence of post-covid-19 condition is substantially reduced among vaccinated adults

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Vaccines substantially mitigated the impacts of the covid-19 pandemic worldwide, saving millions of lives. The pandemic has, however, left a substantial global prevalence of a post-viral syndrome, called post-covid-19 condition or long covid. Post-covid-19 condition is defined as persistent symptoms at three months from the onset of covid-19, with symptoms that have lasted for at least two months.[1] At least 200 million individuals are affected,[2] and the protective value of covid-19 vaccines remains uncertain, with reported estimates ranging from a 13% to a 52% reduction in risk.[3 4] Most of these studies relied on self-reported symptoms of post-covid-19 condition rather than a clinical diagnosis using ICD-10 (international classification of diseases, 10th revision) coding.

In a linked paper, Lundberg-Morris and colleagues (doi:10.1136/bmj-2023-076990) add to this evidence, a large population based longitudinal study of all adults from the two largest regions of Sweden with a first covid-19 infection registered between 27 December 2020 and 9 February 2022 (n=589 722).[5] Those who received one or more covid-19 vaccines before acute infection were 58% less likely to develop post-covid-19 condition than unvaccinated individuals (0.4% *v* 1.4%; adjusted hazard ratio 0.42, 95% confidence interval 0.38 to 0.46). Further analysis showed a dose-response relation: the first dose reduced the risk of post-covid-19 condition by 21% (adjusted hazard ratio 0.79, 0.68 to 0.91), two doses by 59% (0.41, 0.37 to 0.45), and three or more doses by 73% (0.27, 0.23 to 0.32). These are impressive findings, and they are similar to the cumulative protective effect of vaccines against outcomes of acute infection, such as severity of illness and death.

The incidence rates of post-covid-19 condition in this study[5] (0.4% in the vaccinated group and 1.4% in the unvaccinated group) were considerably lower than incidences reported by previous studies (9-81%, and a pooled global estimate of 43%[2]). Methodological differences likely contributed to the discrepancy: Previous studies relied on self-reported symptoms, whereas Lundberg-Morris and colleagues used clinician coding to ascertain cases of post-covid-19 condition. As the vaccinated and unvaccinated groups both would be affected equally by possible under ascertainment, the Swedish study's conclusions remain reassuring that covid-19 vaccines have a clear and clinically important protective effect against post-covid-19 condition.

These findings, combined with evidence from other studies, highlight the association between the immune system and the development of post-viral conditions.[4 5] Vaccines activate the immune system's antibody and T cell responses, enabling the neutralisation or destruction of SARS-CoV-2, reducing the severity of infection and risk of hospital admission and death.[6] These mechanisms could also explain the protective effect of vaccines against post-covid-19 condition. The evidence supporting such protection helps validate the existence of post-covid-19 condition at a time when considerable disbelief and stigma remains due to the lack of confirmatory biomarkers.[7] Studies also suggest that once post-covid-19 condition is established, vaccines do not have a substantial treatment effect in alleviating symptoms.[8]

The evidence so far, including from Lundberg-Morris and colleagues' study, underlines the importance of timely vaccination during pandemics. Future pandemic preparedness plans should continue to prioritise prompt manufacture, evaluation, and distribution of vaccines, and mass vaccination to reduce a pandemic's impact on health. Although vaccines have adverse effects, including some that are rare but can lead to considerable disability,[1] the benefits of vaccination for both individuals and populations far outweigh the risks. In future viral pandemics, a cautious vaccination programme that avoids use in individuals with known reactions to previous vaccines, can help minimise these complications. Given a plausible link between viral illnesses and long term syndromes such as chronic fatigue syndrome/myalgic encephalitis[9] and fibromyalgia,[10] it would be prudent to advocate timely vaccination to reduce the healthcare burden and adverse impact on the economy.

The scale of the covid-19 pandemic showed the importance of post-viral conditions, an area of medicine that had been relatively neglected. Post-viral conditions can be disabling, fluctuant, and sometimes chronic. We need to better consolidate our understanding by continuing to investigate the evolution of long term residual symptoms of covid-19[11] and other viral illnesses. Steps should also be taken to improve the accuracy of recording both recovery and continued illness after infection, and in quantifying key family, social, financial, and economic outcomes. Such estimates are fundamental to unlocking the funding required for future research and increased investment in specialist clinical services offering treatment and rehabilitation to support patients with post-viral conditions.

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