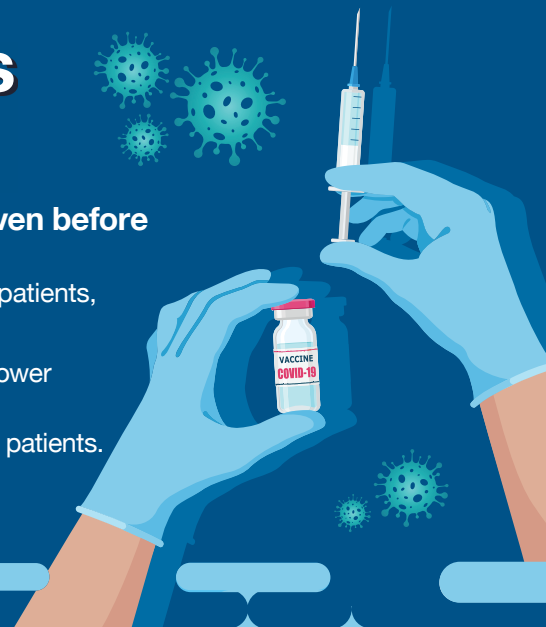


Vaccination reduces risks of long-COVID and death

COVID-19 vaccination can reduce the risk of long COVID if given before SARS-CoV-2 infection.

A systematic review and meta-analysis of 12 observational studies in 629,093 patients, with or without vaccination before SARS-CoV-2 infection, found that:¹

- Two-dose vaccination before SARS-CoV-2 infection was associated with a lower incidence of long COVID compared with no vaccination.
- Risks of persistent fatigue and pulmonary disorders were lower in vaccinated patients.
- However, vaccination did not help to improve symptoms in most patients with prior SARS-CoV-2 infection and ongoing long COVID.



“Vaccination should be recommended before SARS-CoV-2 infection to reduce the risk of long COVID”

Despite the protective effect of vaccination, the risk of long COVID still persists with breakthrough infections (BTI)

Using the US Department of Veterans Affairs national healthcare databases, researchers compared the risk of death and post-acute sequelae in vaccinated patients with BTI (n=33,940) vs various control groups of people without SARS-CoV-2 infection. These included contemporary (n=4,983,491), historical (n=5,785,273), and vaccinated controls (n=2,566,369).²













Risk and 6-month excess burden of post-acute sequelae in vaccinated patients with BTI vs those without current SARS-CoV-2 infection

| | Hazard Ratio | Excess burden per 1,000 persons at 6 months |
|--|--------------|---|
| Death | 1.75 | 13.36 |
| At least one post-acute sequela | 1.50 | 122.22 |
| Cardiovascular | 1.74 | 43.94 |
| Coagulation and haematologic | 2.43 | 13.66 |
| Fatigue | 2.00 | 15.47 |
| Gastrointestinal | 1.63 | 37.68 |
| Kidney | 1.62 | 16.12 |
| Mental health | 1.46 | 45.85 |
| Metabolic | 1.46 | 30.70 |
| Musculoskeletal | 1.53 | 19.81 |
| Neurologic | 1.69 | 11.60 |
| Pulmonary | 2.48 | 39.82 |



“At 6 months after infection, people with BTI exhibited a higher risk of death and incident post-acute sequelae compared to those without current infection”

Risk and 6-month excess burden of post-acute sequelae in vaccinated patients with BTI compared with those with SARS-CoV-2 infection but without prior vaccination

| | | Hazard Ratio | Excess burden per 1,000 persons at 6 months |
|---|---------------------------------|--------------|---|
|  | Death | 0.66 | -10.99 |
|  | At least one post-acute sequela | 0.85 | -43.38 |
|  | Cardiovascular | 0.87 | -13.12 |
|  | Coagulation and haematologic | 0.44 | -20.54 |
|  | Fatigue | 0.72 | -9.36 |
|  | Gastrointestinal | 0.80 | -18.43 |
|  | Kidney | 0.68 | -12.96 |
|  | Mental health | 0.85 | -18.52 |
|  | Metabolic | 0.77 | -18.72 |
|  | Musculoskeletal | 0.88 | -6.48 |
|  | Neurologic | 0.79 | -5.67 |
|  | Pulmonary | 0.51 | -46.19 |

“Vaccinated patients with BTI had lower risks of death and incident post-acute sequelae compared with patients with SARS-CoV-2 infection without prior vaccination (n = 113,474)”



Note: Negative values denote reduced burden of BTI vs SARS-CoV-2 infection.

- These findings suggest that vaccination before infection confers only partial protection in the post-acute phase of the disease. Hence, reliance on vaccination as a sole mitigation strategy may not optimally reduce long-term health consequences of SARS-CoV-2 infection.
- The risk of post-acute sequelae was higher in people with BTI than in people with seasonal influenza, which again emphasizes the importance of prevention of both SARS-CoV-2 infection and BTI.

Expert Insights



Photo courtesy of National Centre for Infectious Diseases (NCID)

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How to manage long COVID

Long COVID is a highly heterogenous syndrome that varies widely in symptoms, severity, and impact on daily life. Individualised, empathetic care is necessary. Diagnosis relies on history, examination, pattern of symptoms, and time course. Blood tests, chest X-ray, and ECG can exclude other potential causes. Most patients can be reassured of symptom improvement and having them resolved over time. Treatment at NCID’s long COVID clinic focuses on symptom relief and improving functional status. Options include referrals to rehabilitation, physiotherapy, beta-blockers for tachycardia, and a short course of inhaled steroids for wheezing. COVID-19 vaccination is recommended if the patient is not up to date.

Strategies to prevent breakthrough infection

Long COVID is less common after vaccination or reinfection, with reduced risk with the Omicron variant. To reduce the risk of breakthrough infections, keep up to date with vaccinations, wear mask in crowded areas, and practise hand hygiene. If sick, stay home to prevent community spread.

References:

1. Watanabe A, et al. Protective effect of COVID-19 vaccination against long COVID syndrome: A systematic review and meta-analysis. *Vaccine* 2023;41:1783-1790.
2. Al-Aly, Z, et al. Long COVID after breakthrough SARS-CoV-2 infection. *Nat Med* 2022;28:1461-1467.

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