

IPCRG practice driven answers on COVID-19 and respiratory questions



What is known about immunity beyond 6 months following a fourth COVID-19 vaccination (2 initial doses plus first and second booster doses), and does the evidence suggest healthcare professionals would benefit from an additional booster dose?

What the research says

Booster vaccination programmes at or around 6 months after completing an initial course (2 doses) have been widely adopted. However, waning of effectiveness against symptomatic illness has been observed following booster vaccination (Fabiani et al 2022; PHE 2022). On this basis, several countries have now approved a second booster dose, initially for older people, those who are immunocompromised and those with certain comorbidities.

The emergence of the Omicron variant has prompted consideration of the longer term protection against severe COVID-19 disease (PHE 2022). Two initial doses plus a first booster dose of current vaccines demonstrates somewhat reduced effectiveness against hospitalization and death against the Omicron variant compared with

that conferred against earlier variants:

- ~80% effective against hospitalisation among those aged 18–64 years and ~90% among those aged >64 years) waning to almost ~50% and ~75%, respectively, from around 4 months post-first booster vaccination
- ~93% effective against mortality declining only slightly to ~87% at 10 weeks post-first booster vaccination

Data from Israel suggests that, in the face of the Omicron variant, a second booster dose restores protection against severe COVID-19 illness in people aged ≥ 60 years and at-risk populations, with waning of effectiveness in the following 4–6 months (Bar-On et al 2022; Magen et al 2022). Data from the US have also demonstrated additional protection in people aged ≥ 50 following a second booster dose in the context of Omicron predominance (Link-Gelles et al 2022). Studies specifically among healthcare workers suggest that a second booster vaccination can reduce the breakthrough infection rate even when the Omicron variant is the predominant circulating variant (Cohen et al 2022).

In terms of the quality of the immune response conferred following booster vaccinations, emerging data suggests that, while still eliciting an antibody response (Munro et al 2022), the resultant antibodies are less effective against the Omicron variant in terms of preventing illness, but still effective at preventing hospitalization and death (Hein et al 2022). These data emphasise the need for ongoing variant-adapted vaccine development.

Vaccines with specificity against both the original strains and the OMICRON variant are under regulatory review and have been approved in a number of countries including Canada (Government of Canada 2022), the UK (MHRA 2022) and the US (Pfizer 2022).

What this means for your clinical practice

- Continue to encourage patients at increased risk for more severe illness from SARS-CoV-2 infection to consider additional COVID-19 booster vaccinations according to National Guidelines.
- Healthcare workers should continue to consider COVID-19 booster vaccinations with current vaccines as they become eligible.
- Individuals at high risk for severe illness or death from COVID-19 should get their fourth dose of vaccine now if it has been more than 6 months since their last dose. Booster vaccination should not be delayed if an Omicron-directed vaccine is not yet available.

See also our responses to the questions:

- [What is known about immunity beyond 6 months following COVID-19 vaccination \(2 doses\) and first booster dose, and does the evidence suggest that any specific groups would benefit from an additional booster dose?](#)

Useful links and supporting references

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