ATAGI recommendations on use of the Pfizer bivalent (Original/Omicron BA.4/5) COVID-19 vaccine

Recommendations from the Australian Technical Advisory Group on Immunisation (ATAGI) on the use of the Pfizer bivalent (Original/Omicron BA.4/5) COVID-19 vaccine.

Date published:
8 February 2023

Type:
News

Audience:
General public

On 20 January 2023, the Therapeutic Goods Administration of Australia provisionally approved the Pfizer (Comirnaty) Bivalent Original/Omicron BA.4/5 vaccine (subsequently referred to as Pfizer bivalent BA.4/5) for use as a booster COVID-19 vaccine in people aged 12 years and older.

The Australian Technical Advisory Group on Immunisation (ATAGI) has evaluated the immunogenicity, efficacy, and safety data on this vaccine.

Recommendations

ATAGI advises that the Pfizer bivalent BA.4/5 vaccine can be used as a booster dose by adolescents and adults aged ≥12 years who are recommended to receive a COVID-19 booster according to the ATAGI 2023 booster advice.

The Pfizer bivalent BA.4/5 vaccine is not currently registered for use in children aged <12 years or as a primary series . An approved alternative COVID-19 vaccine, e.g. Pfizer Original COVID-19 vaccine, should be used in children aged 5-11 years who require a booster dose.

Vaccine presentation

The Pfizer bivalent vaccine is presented as a grey-capped multi-dose vial containing six 0.3mL doses of 30 mcg. The vaccine does not require dilution.

Each dose should be administered intramuscularly, preferably in the deltoid.

Rationale

Pfizer has updated its bivalent formulation of the COVID-19 vaccine to include 15mcg of mRNA encoding the BA.4/5 Omicron subvariant spike protein replacing the previous BA.1 Omicron subvariant in the Pfizer bivalent Original/Omicron BA.1 vaccine. 15mcg of the ancestral strain spike protein mRNA remains unchanged.

Two Pfizer immunogenicity studies in adolescents and adults aged ≥12 years who had received a primary series and first booster of Pfizer original vaccine provide a comparison between neutralising antibody levels after a second booster of 30 mcg of the Pfizer bivalent BA.4/5 vaccine and a second booster of the Pfizer original vaccine. Adults aged >55 years who received the Pfizer bivalent BA.4/5 vaccine developed higher neutralising antibody titres to the BA.4/5 Omicron subvariant (geometric mean ratio 2.91, 95%CI 2.45-3.44) than those who received the Pfizer original vaccine. Neutralisation of newer BQ.1.1 and XBB.1 subvariants was also higher than with the original vaccine. The bivalent vaccine had non-inferior and modestly higher titres for ancestral strain neutralisation (GMR 1.38, 95%CI 1.22-1.56).[1] Similar trends were seen in 12-17 year and 18-55 year age groups.

An additional four studies report higher neutralisation titres following a booster dose of Pfizer bivalent BA.4/5 vaccine for BA.4/5 and other sub-variants (e.g. BQ.1, XBB) compared to the Pfizer original vaccine.[2-5] Two studies have found the neutralisation response to be similar between bivalent BA.4/5 and original vaccines.[6,7] Early published and preprint data on whether these increases in neutralisation activity translate into measurable differences in clinical protection suggest a small advantage in vaccine effectiveness with bivalent vaccines over original vaccines in preventing hospitalisation and death.[8,9] A US study showed vaccine effectiveness (VE) against hospitalisation or death with a bivalent BA.4/5 booster (either Pfizer or Moderna) was 61.8% (95% CI 48.2 to 71.8%) compared with an original booster VE of 24.9% (95%CI 1.4 to 42.8%).[9] A nationwide cohort study conducted in Nordic countries during July to December 2022 found VE against hospitalisation for a second booster of bivalent BA.4/5 vaccine of 80.5% (95%CI 69.5% to 91.5%) and for an original vaccine second booster of 64.9% (95%CI 57.7% to 72.2%), both relative to not receiving a second booster.[8]

The short term safety of the Pfizer bivalent BA.4/5 vaccine was shown to be similar to the previous Pfizer bivalent BA.1 and original vaccines when used as a booster. Adverse reactions following Pfizer bivalent BA.4/5 as a second booster dose included pain at the injection site (68.5%), fatigue (56.4%), headache (41.4%), muscle pain (25.8%), chills (16.9%), joint pain (13.4%), fever (7.3%), injection site swelling (5.4%), injection site redness (4.8%), and lymphadenopathy (0.3%). No new adverse reactions were identified.[1,10] The suggestion of an increased risk of ischaemic stroke in adults aged 65 years or older following receipt of Pfizer bivalent BA.4/5 vaccine has emerged from a single US surveillance system. Currently, this is not considered to be a true safety signal.Additional US surveillance systems and those in other countries have not detected an association despite widespread use of the Pfizer bivalent BA.4/5 vaccine.[11]

ATAGI will continue to monitor the emerging evidence related to bivalent vaccines and the changing COVID-19 epidemiology.

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