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MPOX VACCINE EFFICACY OVER TIME

13 February 2026

Overview

The JYNNEOS® vaccine has been widely deployed in Australia and internationally to prevent mpox. A two-dose schedule provides substantial protection and reduces disease severity, but data on the long-term durability of immunity remain limited. Ongoing research is assessing whether booster doses or next-generation vaccines may provide improved efficacy and broader protection.

Context

In Australia, mpox outbreaks between 2022 and 2024 were predominantly caused by clade IIb, with transmission concentrated within gay, bisexual and other men who have sex with men communities (GBMSM). Clade I mpox, historically endemic in parts of Central Africa, has also been detected internationally, with four travel-associated cases of clade Ib mpox reported in Australia as of November 2025 (1).

Vaccination has been a core component of Australia's response to mpox. The primary vaccine used in Australia to protect against mpox is JYNNEOS® (MVA-BN), which is typically administered as a two-dose schedule, 28 days apart. The vaccine is provided free through state and territory health departments and is widely available through services such as sexual health clinics, general practices and community-based clinics. During outbreaks, vaccination has also been delivered through peer outreach and pop-up clinics at community venues.

Effectiveness

JYNNEOS® is used as pre-exposure prophylaxis, particularly among populations at higher risk of mpox exposure such as GBMSM, sex workers and people at high risk of exposure.

Observational studies indicate substantial protection against mpox infection. Effectiveness estimates vary by study design, population, and setting. However overall, real-world estimates demonstrate higher effectiveness for two doses (~72–92%) compared with one dose (~64–88%) (2). Vaccination is also associated with reduced disease severity among breakthrough cases.

JYNNEOS® has also been used as post-exposure prophylaxis however emerging evidence suggests that the effectiveness of post-exposure vaccination with JYNNEOS® may be limited, particularly when vaccination occurs later in the incubation period (3).

Longevity of immunity

Despite increased reporting of breakthrough mpox infections in 2024, the overall rate of reported breakthrough disease over a two-year period has remained low. A recent United States analysis estimated breakthrough infection in less than 1% of fully vaccinated individuals, although continued monitoring is required to assess longer-term trends (4).

Modelling studies combining immunogenicity and vaccine effectiveness data suggest that protection following two doses may persist for approximately 10 years (5). Modelling in England similarly indicates that observed case numbers in 2023 were most consistent with an assumed duration of protection of around a decade (6).

While informative, these modelling estimates rely on assumptions and should be interpreted cautiously until supported by longer-term real-world effectiveness data.

Boosters

There is currently insufficient evidence to support routine boosters in immunocompetent individuals (3).

The Australian Technical Advisory Group on Immunisation (ATAGI) does not currently recommend booster doses of mpox vaccine for people who have completed a two-dose primary course or who have previously been infected with mpox, including those who are severely immunocompromised.

This position is broadly consistent with international guidance:

- *United States:* The CDC does not recommend a booster except for those individuals at ongoing occupational risk (7).
- *United Kingdom:* The UK Government does not recommend booster shots except in very limited specific circumstances (3).
- *Europe:* Routine boosters are not recommended. The *Mpox Booster Trial*, led by the Public Health Agency of Sweden in collaboration with several European countries is currently investigating the safety and immunogenicity of booster doses following primary vaccination (8).

France is one of the few jurisdictions to recommend an mpox booster, advising additional vaccination for individuals in priority populations who completed a two-dose primary course more than two years earlier (9).

People with immunosuppression

JYNNEOS® is considered to be well-tolerated in people with HIV. However, clinicians should remain attentive to emerging guidance and consider individual patient risk factors when planning vaccination with JYNNEOS® for people with HIV and immunosuppression more broadly (10).

Future work needed

Current evidence on mpox vaccine effectiveness is derived almost exclusively from observational studies and largely reflects clade II outbreaks. There is a clear need for prospective and longer-term studies to better define the durability of protection, evaluate vaccine effectiveness against clade I, and clarify the potential role of booster doses (Orkin et al., 2025). Evidence gaps are particularly pronounced for immunosuppressed populations, including people living with HIV. Although existing vaccination data among people with HIV are encouraging, further evaluation in larger cohorts, including individuals with advanced or uncontrolled HIV, is essential to strengthen understanding (10).

While JYNNEOS® has contributed substantially to mpox control, there is scope for the development of next-generation mpox vaccines with improved efficacy and durability. The World Health Organization is monitoring several candidate vaccines through its Mpox Vaccine Tracker, including repurposed smallpox vaccines and mpox-specific mRNA platforms currently in clinical trials.

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