UPDATED ATAGI CLINICAL GUIDANCE ON VACCINATION AGAINST MONKEYPOX

Version 2.0
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Summary

- This guidance is on the use of smallpox vaccines for protection against monkeypox virus infection. This advice will continue to be updated as new information emerges during the current multi-country monkeypox outbreak.
- Monkeypox is usually a self-limiting illness, and most people recover within a few weeks. However, severe illness can occur, particularly in immunocompromised people.
- Two vaccines are available in Australia for prevention of monkeypox: the 3rd generation JYNNEOS® (MVA-BN: modified vaccinia Ankara vaccine-Bavarian Nordic) and the 2nd generation ACAM2000™
- Limited supplies of the 3rd generation JYNNEOS® have been secured by the Commonwealth and some States and Territories.
- JYNNEOS®:
    - JYNNEOS® is a highly-attenuated vaccine that is replication-deficient.
    - JYNNEOS® is administered in a 2-dose schedule by subcutaneous injection with a minimum dose interval between doses of 28 days.
    - JYNNEOS® is associated with fewer potential adverse events and is safe to use in people with immunocompromise or atopic dermatitis. JYNNEOS® may also be used in children or during pregnancy, after risk-benefit assessment.
- ACAM2000™:
    - ACAM2000™ is a live-attenuated vaccine that is replication-competent.
    - Specialised training and methods are required to administer ACAM2000™ by percutaneous scarification using a bifurcated needle, as a single dose.
    - Post-vaccination wound care is required for ACAM2000™ to protect vulnerable contacts and prevent self-inoculation from the vaccination site.
    - ACAM2000™ cannot be used in severely immunocompromised people, people with active atopic dermatitis, in pregnancy or in infants under 12 months of age. It is associated with rare but serious adverse events.
- Overall, JYNNEOS® is the preferred vaccine for both pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP), due to its more favourable safety profile and comparative ease of administration. Supply considerations may affect availability of JYNNEOS®. For healthy non-pregnant adults, where JYNNEOS® is not suitable or not available, ACAM2000™ has an established profile and may be considered for PrEP or PEP.
- The key risk groups recommended by Australian Technical Advisory Group on Immunisation (ATAGI) to receive vaccination are:
    1. Anyone categorised by public health authorities as a high risk monkeypox contact in the past 14 days.
    2. Gay, bisexual and other men who have sex with men (GBMSM) who are at the highest risk of monkeypox infection due to having a high number of sexual contacts. Risk criteria for infection may include:
        - Those living with HIV.
        - A recent history of multiple sexual partners, participating in group sex, or attending sex on premises venues.

    - Other proxy markers, such as recent sexually transmitted infection or those being advised to take HIV PrEP due to number of sexual partners. Whilst many people prescribed HIV PrEP are monogamous with a HIV positive partner, this category can also capture those with multiple partners who are at high risk.
    - Recommendation from other service providers, such as sexual health clinics.
3. Sex workers, particularly those whose clients are in high-risk categories.
4. Anyone in the above risk categories who is planning travel to a country experiencing a significant outbreak, with vaccination recommended 4-6 weeks prior to departure.
5. Immunisation providers who are administering the ACAM2000™ smallpox vaccine.

- The risk-benefit assessment discussion for individual vaccination is complex and depends on emerging epidemiology, exposure risk, contraindications and precautions, and alternative options to vaccination. Clinical resources are available to support this decision-making process.
- Healthcare workers who will be administering ACAM2000™ can be offered either vaccine if they have not previously received a smallpox vaccine.
- In those individuals who have received a smallpox vaccine in the past, a booster dose is recommended if the previous dose of a smallpox vaccine was given more than ten years prior. JYNNEOS® and ACAM2000™ are both suitable vaccines for a booster; options may be discussed as part of an individual risk-benefit assessment.

Background

The virus and transmission

Monkeypox virus is a DNA virus in the Orthopoxvirus genus, which also includes the variola virus (which causes smallpox) and vaccinia virus (which is used in smallpox vaccines). Monkeypox was first discovered in 1958 and since then multiple outbreaks have been reported, mostly in western and central African nations including the Democratic Republic of the Congo and Nigeria. In 2003, there was an outbreak in the United States of America (USA) caused by imported rodents from Africa, in which cases were reported in both humans and pet prairie dogs[1]. There are two genomic clades: the West African clade which is usually less severe, and the Congo Basin (Central African) clade. Monkeypox causes less severe disease than smallpox.

Monkeypox virus can be transmitted from infected animals to people, or from person to person. The natural animal reservoir for monkeypox virus remains unknown. Monkeypox does not spread easily between people. Transmission between people occurs via:

- Close contact with lesions, body fluids,
- Respiratory droplets in prolonged face-to-face contact or
- Fomites (such as contaminated clothing or linen).

Transmission can be prevented using infection control measures.

Increasing numbers of cases of human monkeypox have been reported sporadically in non-enzootic countries over the last 2 years. On 11 May 2022, the World Health Organization alerted member states to a multi-country outbreak of monkeypox, originating from the West African clade of virus[2]. From the beginning of May to 4 July 2022, 6027 laboratory-confirmed cases have been reported in 59 countries, including Australia, across Europe, North America and South America[3].

Although anyone can contract monkeypox, global data in 2022 to date show higher levels of transmission within – but not exclusive to – the sexual networks of gay, bisexual and other men who have sex with men (GBMSM).

Clinical features

The incubation period is between 5–21 days[4]. Monkeypox illness may begin with a prodrome of swollen lymph nodes, fever, headache, muscle aches, joint pain and back pain, followed by a rash within 1–3 days after fever onset. The rash tends be more concentrated on face and extremities rather than the trunk and may occur in the genital, perianal and rectal areas. Proctitis, which may be painful, may occur[5]. The illness may also present without prodromal symptoms, with the rash being the first sign of infection[6]. The evolution of skin lesions progress through four stages: macular, papular, vesicular, and pustular, before scabbing over. A person with monkeypox may be infectious from the onset of any symptoms until all scabs have fallen off, leaving intact skin underneath. Resolution of skin lesions may take up to four weeks from prodrome onset.

Monkeypox is usually self-limiting and most people recover within a few weeks[4]. The risk of severe disease and complications such as secondary infection, sepsis, pneumonia and encephalitis is likely be increased in people with immunocompromise, young children and pregnant women. Symptoms such as severe oropharyngeal or anorectal pain may also lead to hospitalisation[7]. Treatment with antiviral medication and vaccinia immunoglobulin (VIG) is available for people at risk of severe disease; refer to the National Treatment Guidelines.

Vaccine information

Smallpox vaccines contain the vaccinia virus, a poxvirus related to both smallpox and monkeypox. Previous guidance in Australia and other countries on the use of smallpox vaccine has focused on protection against smallpox infection. Vaccines using the vaccinia virus for the prevention of smallpox are likely to be effective against monkeypox (refer to Vaccine effectiveness below).

There are two types of smallpox vaccine available in Australia for use against monkeypox:

- The third-generation vaccine: the replication-deficient modified vaccinia Ankara (MVA-BN) vaccine. The MVA-BN vaccine, known variously as JYNNEOS/Imvamune/Imvanex (Bavarian Nordic), is registered for use in USA, United Kingdom, Canada and other countries for prevention of smallpox and monkeypox. Limited supplies of JYNNEOS® have been secured by the Commonwealth and some States and Territories.
- The second-generation vaccine containing replication-competent live attenuated vaccinia virus: ACAM2000™ (Emergent BioSolutions) is available from the National Medical Stockpile on a request basis for State and Territory governments.

Table 1: Summary of vaccine characteristics

Category	ACAM2000™	JYNNEOS®
Manufacturer	Emergent BioSolutions	Bavarian Nordic
Approved age for use*	≥18 years	≥18 years*