Q&A for Monkeypox

Interim Vaccine Guidance for Post-Exposure Prophylaxis (PEP) and How to Access Tecovirimat

Version 1.0 – May 28, 2022

Monkeypox

Monkeypox is a rare disease that is caused by infection with the monkeypox virus. The monkeypox virus belongs to the *Orthopoxvirus* genus which also includes the variola virus (which causes smallpox) and the vaccinia virus (used in smallpox vaccine). Monkeypox is usually a mild and self-limiting disease, and most people recover within 2 to 4 weeks. However, severe illness can occur in some people.

Ontario continues to monitor for cases of monkeypox and is working collaboratively with health care providers, Public Health Ontario (PHO) and the Public Health Agency of Canada (PHAC) to address health risk(s).

Given that the situation is rapidly evolving, the following are **interim recommendations** on the use of vaccination for post-exposure prophylaxis of select contacts, and information on how to access Tecovirimat (TPoxx®) for the treatment of severe monkeypox infection.

Q1. What is the vaccine available for Monkeypox post-exposure prophylaxis?

A1. Imvamune® is a live attenuated 3rd generation replication deficient smallpox vaccine. It is produced from the Modified Vaccinia Ankara-Bavarian Nordic (MVA-BN) strain of orthopoxvirus, and was developed to provide an alternative for the vaccination of immunocompromised individuals and those with atopic dermatitis, who could not safely receive earlier generation (replicating) smallpox vaccines. It was authorized by Health Canada in 2020 under the provision of the Extraordinary Use New Drug regulations for active immunization against smallpox, monkeypox, and related orthopoxviral infections in adults 18 years of age and older at high risk of exposure. Considerations regarding the use of Imvamune® in special populations, including children under 18 years, are outlined under Q4.

Imvamune® is not indicated for the treatment of monkeypox infection.

Q2. What are the interim recommendations for the use of Imvamune® as post-exposure prophylaxis in Ontario?

A2. Based on extrapolation from animal studies and historical experience with smallpox vaccine in humans, vaccination after an exposure to monkeypox infection may prevent infection or may lessen disease severity in those who still go on to develop infection after receiving vaccine as post-exposure prophylaxis (PEP).

The provision of Imvamune® vaccine for PEP requires an assessment of the risk of exposure by the public health unit. Adults 18 years of age and over, who meet the definition of a high risk contact of a confirmed or probable case of monkeypox, as per the local public health unit's assessment are recommended to be offered PEP. Intermediate risk contacts may also be offered PEP, following the public health unit's assessment of individual risks and benefits (i.e., to balance the risks from exposure, protection from vaccination and potential side effects from the vaccine). Individuals who have been in the same premises (i.e., bar or nightclub) as a confirmed/probable case but with **no known** high or intermediate risk exposure are not recommended to receive PEP. Low risk contacts are also not recommended for PEP.

Table 1. Recommendations for Post-exposure Prophylaxis (PEP) according to risk of infection

Risk of exposure[1]	**PEP**
High	Recommended
Intermediate	May be recommended based on the public health unit's assessment of risks and benefits
Low	Not recommended
No/very low	Not recommended

[1] Monkeypox Virus: Interim Case and Contact Management Guidance for Local Public Health Units

The use of Imvamune® has not been studied in individuals less than 18 years of age or in those who are pregnant or breastfeeding. Further details on the considerations for these contacts are outlined under Q3 on Special Populations.

For the use of Imvamune® vaccine as PEP, a single 0.5 mL dose of Imvamune® should be administered within 4 days of exposure, up to a maximum of 14 days after exposure. The vaccine is administered subcutaneously.

Q3. What is known about the use of Imvamune® vaccine in special populations (immunocompromised, pregnant, and breastfeeding individuals, and children?

A3. Immunocompromised populations: Clinical trials of Imvamune® have included people living with human immunodeficiency virus (HIV) with a CD4 count of greater than 100. There is less experience in individuals with severe immunosuppression. Additional risk/benefit discussion is indicated for those with severe immunosuppression prior to receiving vaccine as PEP.

Pregnancy and breastfeeding: There are very limited data on the use of Imvamune® in pregnancy. No clinical trials have been conducted in pregnant individuals, although approximately 300 pregnancies have been reported to the manufacturer with no safety issues identified. There is no data on whether the vaccine is excreted in breastmilk, although this is unlikely as the vaccine is non-replicating. Additional risk/benefit discussion is indicated for those who are pregnant or breastfeeding prior to receiving vaccine as PEP.

Children and youth: Imvamune® vaccine is not authorized for use in persons under 18 years of age, and has not been studied in this age group, although it has been offered to children as PEP in previous United Kingdom monkeypox incidents as cited in UK PEP guidance. Clinical trials have studied other vaccines (TB and malaria) using Modified Vaccinia Ankara (MVA) as a vector in children with a reassuring safety profile. Additional risk/benefit discussion is indicated for persons under 18 years of age prior to receiving vaccine as PEP.

Q4. Who should not receive Imvamune®?

A4. Individuals who are hypersensitive to this vaccine or to any ingredient in the formulation or component of the container should not receive the vaccine. A list of ingredients can be found in the product monograph.

Individuals with signs or symptoms of monkeypox infection should not receive the vaccine as the vaccine is not indicated in the treatment of monkeypox infection.

Q5. Can Imvamune® be given at the same time as other vaccines?

A5. Data on co-administration of Imvamune® and other vaccines are not available. Therefore, it is recommended to not co-administer Imvamune® with other vaccines, and to reschedule any other vaccines until at least 14 days after administration of Imvamune®.

The administration of Imvamune® as post-exposure prophylaxis **should not be delayed** in an individual who has recently received another vaccine.

Q6. How do I access Imvamune®?

A6. The Federal government has procured doses of Imvamune® that have been made available to provinces and territories. Imvamune® will be made available to Public Health Units for the provision of PEP under the criteria outlined above (Q2).

To order the vaccine, the local public health unit must email the Ministry of Health Emergency Operations Centre at EOCoperations.MOH@ontario.ca or call the Healthcare Provider Hotline at 1-866-212-2272.

Clinicians who think they have a patient (i.e., a contact of a case) who might be recommended to receive PEP using the criteria above should contact their local public health unit.

Q7. What information should be provided to individuals to obtain informed consent?

A7. A discussion of the risks of disease and the risks and benefits of vaccination with Imvamune® should be conducted to support informed consent to vaccination. Additional counselling is recommended for people who are pregnant, people who are immunocompromised, and children and youth (see Q3).

Q8. Are there any side effects to Imvamune®?

A8. The most common side effects include reactions at the injection site like pain, erythema, induration and swelling. The most common systemic reactions observed after vaccination are fatigue, headache, myalgia, and nausea. Most of the reported

adverse drug reactions observed in clinical trials were of mild to moderate intensity and resolved within the first seven days following vaccination.

Older generation (i.e., replicating) smallpox vaccines have been associated with myocarditis. No case of myocarditis or pericarditis was identified in clinical trials of Imvamune®, however monitoring of vaccine recipients identified cardiac adverse events of special interest (AESIs) including asymptomatic troponin elevation, abnormal ECG findings, tachycardia, and palpitations. Cardiac AESIs were reported to occur in 1.4% (91/6,640) of Imvamune® recipients and 0.2% (3/1,206) of placebo recipients who were smallpox vaccine-naïve. Individuals should be counselled to seek medical attention if cardiac symptoms (i.e., chest pain, shortness of breath, palpitations) develop following vaccination with Imvamune®.

Q9. How do I report an Adverse Event Following Immunization (AEFI) following Imvamune® vaccine in Ontario?

A9. Reports of any Adverse Event Following Immunization (AEFI) following Imvamune® vaccine should be made using the Ontario AEFI form and sent to the local public health unit. Please see Public Health Ontario's vaccine safety webpage and Fact Sheet –Adverse Event Following Immunization Reporting for Health Care Providers in Ontario for additional guidance.

Q10. How should Imvamune® be stored?

A10. Imvamune® should be stored frozen at -20˚C ± 5˚C or -50˚C ± 10˚C or -80˚C ± 10˚C and stored in the original package in order to protect from light.

The product should be thawed at room temperature. To ensure homogeneity upon thawing, the vial should be swirled gently (not shaken) for at least 30 seconds. After thawing, the drug should appear a pale milky coloured homogeneous suspension.

Once thawed, the vaccine should be used immediately, or it can be stored between +2˚C – +8˚C for up to 2 weeks prior to use. Do not refreeze a vial once it has been thawed.

Expiry date depends on the storage temperature. If stored frozen, the expiry date is the date listed on the product label.

Q11. How can I access Tecovirimat (TPoxx®) treatment?

A11. In Canada, Tecovirimat (TPoxx®) is authorized by Health Canada under an extraordinary use indication for the treatment of human smallpox disease in adults and pediatric patients weighing at least 13 kg. The European Medicine Agency (EMA) has authorized it for the treatment of smallpox, monkeypox, and cowpox. While the drug does not have an approved indication for the treatment of monkeypox in Canada, a licensed healthcare professional may use their clinical judgment to prescribe TPoxx® off-label for the treatment for severe monkeypox infections. The treatment course is three capsules (three 200 mg capsules) taken twice daily for 14 days.

A limited supply is available in Ontario for hospitalized severely ill patients. Hospital clinicians can request product by contacting the Ministry of Health Emergency Operations Centre at EOCoperations.MOH@ontario.ca or by calling the Healthcare Provider Hotline at 1-866-212-2272.

Q12. Where can I get more information?

A12. Imvamune Product Monograph

Ontario Ministry of Health

Public Health Ontario

Public Health Agency of Canada

Additional Resources

Ontario - Monkeypox Virus (gov.on.ca)

World Health Organization – Monkeypox information

World Health Organization - Monkeypox Q&A (who.int)

European Centre for Disease Prevention and Control - Factsheet for health professionals on monkeypox (europa.eu)

United States Centres for Disease Control - Monkeypox | Poxvirus | CDC

Public Health Ontario - Monkeypox Case and Contact Management