JOINT CDA-NCID GUIDANCE

FOR CLINICAL MANAGEMENT OF MPOX FOR HEALTHCARE PROFESSIONALS

(Updated 30 October 2026)

CONTENT

1. DISEASE AND OUTBREAK CHARACTERISTICS 3
2. PATIENTS TO IDENTIFY FOR INVESTIGATIONS 6
3. SUSPECT CASE DEFINITION 7
4. CASE NOTIFICATION AND REFERRAL WORKFLOW 9
5. DIAGNOSTIC TESTING 10
6. CLINICAL MANAGEMENT OF CONFIRMED MPOX CASES 11
7. INFECTION PREVENTION & CONTROL 13
8. MANAGEMENT OF CONTACTS 18
9. PRE- AND POST-EXPOSURE PROPHYLAXIS FOR MPOX 19
10. MANAGEMENT OF DECEASED PERSONS WITH SUSPECTED/CONFIRMED MPOX INFECTION 21
11. USEFUL REFERENCES 23

LIST OF ANNEXES 24

ANNEX A: VISUAL EXAMPLES OF MPOX RASH AND DISTINGUISHING MPOX FROM CHICKENPOX 25

ANNEX B: MPOX THERAPEUTICS 29

ANNEX C: JYNNEOS MODIFIED VACCINE ANKARA BAVARIAN NORDIC (MVA-BN) - GUIDANCE FOR VACCINATION PROVIDERS 34

APPENDIX C1: JYNNEOS VACCINATION INFORMATION SHEET 45

APPENDIX C2: JYNNEOS VACCINATION CARD 48

ANNEX D: NCID DRUG INFORMATION LEAFLET FOR TECOVIRIMAT AND TRIFLURIDINE 1% EYE DROP 50

ANNEX E: NCID PATIENT INFORMATION LEAFLET FOR TECOVIRIMAT AND TRIFLURIDINE 1% EYE DROP 62

ANNEX F: PATIENT INFORMATION SHEET – PUBLIC HEALTH ADVICE FOR PATIENTS WITH MPOX 66

ACKNOWLEDGEMENT 68

1. DISEASE AND OUTBREAK CHARACTERISTICS

Mpox is a zoonotic disease caused by the monkeypox virus (MPXV), a member of the Orthopoxvirus genus in the Poxviridae family which also includes cowpox, horsepox, smallpox (variola), and vaccinia viruses. MPXV is endemic in parts of Central and West Africa, where two distinct clades of MPXV, clade I (formerly Congo Basin clade) and clade II (formerly West African Clade), circulate in different geographical regions.

1.1. GLOBAL SITUATION

The World Health Organization (WHO) declared the second Public Health Emergency of International Concern (PHEIC) declaration for mpox on 14 August 2024 due to an upsurge of mpox in the Democratic Republic of the Congo (DRC) and a growing number of countries in Africa.

As of 27 September 2026[1], human infections with four distinct MPXV clades (Ia, Ib, IIa, and IIb) have been reported in at least 37 countries across Central, East, and West Africa, with a total of 71,368 laboratory-confirmed mpox cases and 296 laboratory-confirmed deaths (Case Fatality Ratio, CFR: 0.4%) reported. The DRC accounted for the majority (55%) of laboratory confirmed mpox cases since the start of the outbreak in 2024, with Uganda reporting the second-highest number of cases.

As of 26 August 2026, at least 142 cases of MPXV clade I have been reported across at least 43 countries outside Africa. Most reported infections have been clade Ib, although clade Ia and recombinant clade Ib/IIb infections have also been detected. While initial cases reported outside Africa were predominantly travel-associated, transmission patterns have since evolved, with cases increasingly linked to travel outside Central and Eastern Africa and community transmission of clade Ib documented in several countries, including within sexual networks. Recent travel-associated clade I cases have been almost exclusively attributed to clade Ib and associated with relatively mild illness, with no deaths reported.

No cases of MPXV clade IIa have been reported outside Africa, while clade IIb, continues to circulate globally, driven primarily by sexual transmission in high-risk groups including men who have sex with men (MSM).

On 5 September 2025, the WHO ended the second PHEIC for mpox following a sustained decline in cases and deaths, improved understanding of transmission and severity risk factors, and increased response capacity in affected countries. Similarly, Africa CDC lifted mpox's Public Health Emergency of Continental Security (PHECS) status on 22 January 2026. As of 27 September 2026, clades Ia/IIa remain limited to endemic areas in Africa, with limited cases reported outside of Africa, including recombinant clade Ib/IIb mpox cases.

Since February 2026, WHO had shifted to a population-group-based risk assessment irrespective of clade, reflecting limited evidence of meaningful differences in transmission between clades. Updated epidemiological parameters also suggest that CFR differences between the main circulating clades have narrowed. According to WHO latest risk assessment of mpox on 24 August 2026, the global public health risk was moderate for individuals with multiple sexual partners and children in historically endemic areas, and **low** for all other individuals.

[1] Latest updates on global mpox trends by WHO: https://worldhealthorg.shinyapps.io/mpx_global/

1.2. DISEASE TRANSMISSION

Mpox can spread through direct physical contact with skin lesions or body fluids from lesions of an infected person or recently contaminated materials (e.g., clothing or bedding used by an infected person). Mpox can also be spread through close, prolonged face-to-face interaction with someone who has mpox (such as talking or breathing close to one another, which can generate infectious respiratory particles). The virus can also spread from infected mother to baby during pregnancy or birth, or animals to humans (e.g., through a bite or scratch from an infected animal, bush meat preparation, or direct contact with the blood, body fluids, or skin or mucosal lesions of infected animals).

1.3. SYMPTOMS OF MPOX

The incubation period ranges from 3 to 21 days (usually 6 to 13 days). Symptoms may include skin rash often starting from the face before becoming generalised with involvement of palms and soles. However, atypical presentation in the global outbreak of clade II involves only a few or single localised lesions, especially in the genital and groin areas, which do not spread further. Other common symptoms identified include fever, headache, backache, muscle aches, swollen lymph nodes, general feeling of exhaustion, proctitis, urethritis, and oral or oropharyngeal manifestations including sore throat or dysphagia.

Most infections with MPXV were mild and self-limiting with symptoms lasting from 2 to 4 weeks. Serious complications or death may occur in vulnerable persons (e.g., pregnant women, young children, or immunocompromised individuals).

1.4. TREATMENT AND PREVENTION

Treatment is mainly supportive and symptomatic, including the use of antipyretics for fever, analgesics for pain relief, and measures to prevent complications. Mpox is typically a self-limiting illness, and most patients recover within two to four weeks, although serious illness and complications may occur, particularly in vulnerable persons (e.g., young children, pregnant women, and immunocompromised individuals). Specific antiviral treatment is generally not required for most cases. In severe cases, particularly among immunocompromised patients, the use of tecovirimat may be considered in consultation with an Infectious Diseases specialist.

Infection prevention and control measures for suspected and confirmed mpox cases, including patient placement and isolation, personal protective equipment, and environmental cleaning, are detailed in **Section 7**. Preventive measures and advice for patients recovering at home are provided in **Annex F.**

Travellers to mpox-affected countries should observe appropriate precautions and monitor symptoms for 21 days following potential exposure. Further information is available on the CDA Health Advice for Travellers webpage. Health advice for travellers | Communicable Diseases Agency

Historically, vaccination against smallpox has been shown to confer protection against mpox. The modified vaccinia Ankara-Bavarian Nordic (MVA-BN; Jynneos) vaccine, a third-generation vaccine indicated for the prevention of smallpox and mpox, has been approved in various jurisdictions for mpox prevention.

In Singapore, MVA-BN is used for targeted vaccination, including post-exposure prophylaxis (PEP) for identified close contacts of confirmed mpox cases and pre-exposure prophylaxis (PrEP) for selected individuals at higher risk of exposure, such as healthcare workers providing direct care to mpox patients, in accordance with prevailing national recommendations. See **Section 9** for further details.

2. PATIENTS TO IDENTIFY FOR INVESTIGATIONS

Initial symptoms of mpox include fever, headache, muscle ache, backache, lymphadenopathy, general feeling of exhaustion (asthenia), proctitis, urethritis, and oral or oropharyngeal manifestations including sore throat or dysphagia. Within 1 to 3 days after the onset of fever, infected persons will develop a maculopapular rash. In the **classic presentation**, this often starts from the face before becoming generalized (centrifugal distribution), including involvement of palms and soles in up to 75% of cases. The lesions progress uniformly to become vesicles (in contrast to a varicella or syphilis rash which appears in various stages of development) and then pustules, before crusting occurs in approximately 10 days, which then spontaneously scab and fall off.

See **Annex A** for visual examples of mpox rash and how to distinguish mpox from Chickenpox.

In the **global outbreak of clade IIb**, clinicians should note that presentation has often been more **atypical** and variable in terms of order of onset of fever versus rash and extent of dissemination of rash. About 72% of cases report prodromal systemic symptoms (e.g., fever, fatigue, and muscle aches). Anal and genital lesions are reported commonly, often painful, and lesions may initially appear quite non-specific.

Atypical features include:

a) Only a few or even just a single lesion, lesions which begin in the genital or perineal/perianal area and do not spread further.

b) Lesions appearing at different (asynchronous) stages of development.

c) Appearance of lesions before the onset of fever, malaise, and other constitutional symptoms.

d) Symptomatology may masquerade as other sexually transmitted infections (STIs), and mpox may occur concurrently with other STIs. Patients remain infectious from the onset of fever until the vesicles/lesions have scabbed over and have separated, with normal skin underneath (re-epithelialisation).

Clinical presentations of both mpox clades are indistinguishable.

3. SUSPECT CASE DEFINITION

Please refer to the latest CDA Circulars on mpox for the prevailing case definition.

3.1. SUSPECT CASE DEFINITION

Medical practitioners should suspect and report:

a) Persons who present with unexplained acute rash (Box 1) **WITH OR WITHOUT** the accompanying symptoms (Box 2); **AND**

b) Epidemiological risk factors within the last 21 days from onset of illness (Box 3):

Box 1

Unexplained rash: skin or mucosal abnormalities which are morphologically consistent with mpox lesions (fluid-filled vesicles or ulcers, typically on genital, or anal area or hands, but can also be anywhere on face, body, or limbs).

Differential diagnoses for rash to be ruled out either clinically or by laboratory confirmation: Varicella zoster, herpes zoster, hand, foot and mouth disease, measles, herpes simplex, bacterial skin infections, disseminated gonococcus infection, primary or secondary syphilis, chancroid, lymphogranuloma venereum, granuloma inguinale, molluscum contagiosum, dengue, eczema and allergic reaction, and any other locally relevant common causes of papular or vesicular rash.

Box 2: Accompanying Symptoms

- Fever (>38.5°C)
- Headache
- Backache
- Lymphadenopathy
- Myalgia
- Asthenia (profound weakness)
- Proctitis (e.g. anorectal pain, rectal bleeding or discharge);
- Urethritis (e.g. dysuria or urethral discharge); or
- Oral or oropharyngeal manifestations including sore throat/dysphagia.

Box 3: Epidemiologic Risk Factors

Epidemiological risk factors within 21 days before illness onset include:

- **Close contact**[2] with a person with confirmed or suspected mpox; **OR**

[2] Close contact is defined as (i) having physical contact with an infected person; or (ii) having physical contact with contaminated surfaces or materials, such as clothes or bedding contaminated with bodily fluids and scabs.

- **Sexual or intimate in-person contact** with persons in a social or sexual network with mpox transmission (including men-who-have-sex-with-men and commercial sex workers); **OR**

- **Travel history** to countries where mpox is endemic or countries with confirmed case(s) of mpox;[3] **OR**

- **Contact with animals**, their body fluids, waste, or products from countries where mpox is endemic**.**

Clinical discretion: Medical practitioners should exercise clinical judgement to report and refer individuals with a high index of suspicion for mpox based on their clinical presentation, even where the epidemiological criteria are not fulfilled.

[3] Clade Ia mpox remains endemic in Central and West Africa. These transmissions are primarily zoonotic with limited human-to-human transmission via all forms of close physical contact. Clade IIa mpox have been mainly observed in animals, with limited infections in human populations. Since 2024, Côte d'Ivoire, Ghana, Guinea, and Liberia have reported human mpox due to MPXV clade IIa. Clade Ib/IIb has been circulating globally at low levels. More information on the global situation of Mpox is available at: https://worldhealthorg.shinyapps.io/mpx_global/

4. CASE NOTIFICATION AND REFERRAL WORKFLOW

All suspect or confirmed cases of MPXV infections should be notified to CDA via the Communicable Diseases Live & Enhanced Surveillance (CDLENS) system at https://de-rom.moh.gov.sg/cdlens **within 24 hours**.

4.1. SUSPECT CASES SEEN AT PRIMARY CARE SETTING

Suspect cases seen at General Practitioner clinics or polyclinics are to be referred to either NCID Clinic J OR Department of STI Control (DSC) clinic but not both, for further review. While pending evaluation from NCID Clinic J or DSC clinic, medical practitioners **should send the patient home with public health advice** (see **Annex F**) **and issue medical certificate for 5 days.** Individuals presenting with severe disease or those who are at risk of severe mpox or complications should be referred to the Emergency Department (ED) for further assessment.

4.2. SUSPECT CASES SEEN AT EMERGENCY DEPARTMENTS AND INPATIENT SETTINGS

Suspect cases seen at Specialist Outpatient Clinics, ED, and inpatient settings **do not need admission unless clinically indicated. For example, those at risk of severe mpox or complications may be considered for admission** (see **section 6.4**). Patients who are admitted may be managed by the primary physician in consultation with the hospital's infectious diseases (ID) specialist(s). There is no need to refer such inpatients to NCID unless further assistance or advice is required. Swab samples taken from inpatients are to be submitted to the National Public Health Laboratory (NPHL) for mpox testing through the respective hospital laboratory.

For persons not requiring admission but have been reviewed and assessed by an ID specialist (preferred) or an ED specialist to require swabs, medical practitioners **should send the patient home with public health advice** (see **Annex F**) **and issue medical certificate or hospitalisation leave for the duration as required.** Swab samples taken are to be sent to NPHL for mpox testing through the respective hospital laboratory.

5. DIAGNOSTIC TESTING

Mpox should be confirmed by laboratory testing. The recommended specimen type is skin or mucosal lesion material, including swabs of lesion surfaces or exudate (e.g., vesicles or ulcers, including oral lesions), lesion roofs, or crusts. Lesions should be swabbed vigorously to ensure adequate collection of viral DNA. Where possible, more than one lesion of the same type or from the same body site should be sampled, with swabs placed in a single dry sterile tube without transport medium.

Oropharyngeal swabs may also be considered for patients with relevant symptoms (e.g., pharyngitis), particularly in the absence of skin or mucosal lesions. However, a negative PCR result from an oropharyngeal swab does not exclude mpox infection. Molecular testing at NPHL can detect MPXV and differentiate between clades.

Specimens for mpox testing should be submitted to NPHL through the respective hospital diagnostic laboratory in accordance with established packaging and transport procedures. Diagnostic laboratories may contact NPHL for clarification on specimen collection and submission requirements.

Where clinically indicated, clinicians should also consider testing for other infections with similar clinical presentations, such as varicella-zoster virus (VZV) and herpes simplex virus (HSV). Screening for other sexually transmitted infections (STIs), including syphilis, gonorrhoea, chlamydia, hepatitis B, hepatitis C and HIV, may also be considered based on the patient's risk factors.

Other clinically indicated laboratory investigations, including routine haematology, biochemistry and testing for co-infections, may be performed on specimens from suspected or confirmed mpox patients, subject to appropriate biosafety measures. Laboratories should conduct local, activity-specific risk assessments, taking into account specimen types, testing procedures, potential exposure risks, and waste management requirements, and implement the necessary control measures in accordance with institutional protocols and applicable national biosafety legislation and regulations.

6. CLINICAL MANAGEMENT OF CONFIRMED MPOX CASES

6.1. GENERAL

Clinical management of mpox is mainly supportive care. Most cases are mild and recover without specific antiviral treatment. In randomised controlled clinical trials covering both clade I and clade II mpox, tecovirimat monotherapy has failed to demonstrate clinical benefit over placebo in terms of lesion resolution, pain, or viral clearance. However, important evidence gaps remain in the management of highest-risk groups; people with advanced HIV, children, pregnant women, and those with severe or disseminated disease.

For severe cases and patients at risk of severe mpox or complications, treatment with tecovirimat, cidofovir, or vaccinia immunoglobulin may be considered, in consultation with infectious disease experts. Ocular trifluridine may be considered for mpox eye disease. Brincidofovir, if available, may also be considered (see **Annex B**).

6.2. PREGNANCY AND MPOX

Mpox infection during pregnancy may result in pregnancy complications, stillbirth, or congenital mpox infection. Consultation with obstetrics and infectious disease specialists is recommended.

6.3. PAEDIATRIC CASES OF MPOX

Children may be at higher risk for severe disease and death if infected with mpox. Children under 16 years of age should be admitted to KKH or NUH. Consultation with paediatric infectious disease specialists is recommended.

6.4. SEVERE CASES OF MPOX

Those at risk of severe mpox or complications may be considered for admission.

Persons at high risk of severe mpox include:

a) Persons with immunocompromised conditions (e.g., HIV with CD4 < 200 cells/mm^3, leukaemia or lymphoma, generalized malignancy, stem cell or solid organ transplantation, chemotherapy, radiation or other biologic (e.g., anti-TNF inhibitor) therapy within 180 days of mpox illness onset, high-dose corticosteroids (equivalent of 20 mg or greater of prednisone for at least 14 days) within 90 days prior to mpox illness onset, autoimmunity with immunodeficiency, other immunocompromising conditions).
b) Persons with active skin conditions placing the person at higher risk for disseminated infection defined as: atopic dermatitis, active exfoliative skin condition(s) such as eczema, burns, impetigo, active varicella zoster virus infection, psoriasis, or Darier disease (keratosis follicularis).
c) Pregnant or lactating individuals, regardless of illness severity or underlying comorbidities at presentation.
d) Children (< 16 years), regardless of illness severity or underlying comorbidities at presentation.

Persons with severe mpox include those with protracted or life-threatening manifestations of mpox at presentation as defined by one of the following:

a) Lesions affecting ≥ 25% of body surface that may be confluent, necrotic, and/or haemorrhagic in appearance or cause sepsis.
b) Disease resulting in airway compromise or affecting the nervous system.
c) Cardiac (e.g., myocarditis) and/or neurologic disease (e.g., encephalitis) which might occur in a small number of patients with mpox.
d) Ocular or periorbital infection, regardless of the time since infection onset.

6.5. RECOVERY CRITERIA AND DISCHARGE

Clinical criteria for recovery include:

a) No new lesions have developed for at least 48 hours.

b) All lesions have crusted over, all scabs have dropped off, with fresh intact skin underneath. This typically can take 3-4 weeks.

There is no requirement for laboratory testing such as blood, urine, or throat PCR testing in order to discharge the patient, as positive PCR tests may not represent viable, infectious virus, and may remain positive for many weeks. If patients are clinically stable but not completely recovered yet, they may be discharged to continue recovery at home.

7. INFECTION PREVENTION & CONTROL

The infectious period for mpox is from illness onset all lesions have healed, scabs have fallen off, and a fresh layer of intact skin has formed.

While viral DNA has been detected in seminal fluid of mpox-infected individuals, it is still not clear what role sexual body fluids (e.g., semen and vaginal fluids) play in mpox transmission. WHO recommends that all patients be advised to abstain from sex and close physical contact until all skin lesions from mpox have crusted, the scabs have fallen off, and a fresh layer of skin has formed underneath.

As a precaution after recovery from mpox, the WHO recommends the use of condoms consistently during sexual activity (receptive or insertive oral/anal/vaginal) for at least 12 weeks to reduce the potential for transmission of mpox. Clinicians should advise their patients accordingly. This advice will be updated as new evidence emerges.

The following infection prevention and control (IPC) measures apply to suspected or confirmed mpox cases, regardless of mpox clade.

7.1. INFECTION PREVENTION AND CONTROL MEASURES IN HOSPITALS

a) Patient Placement and Isolation

Suspected or confirmed mpox cases should be promptly identified, provided with a surgical mask at the earliest opportunity, and segregated from other patients in healthcare facilities.

Recovery at home is the default for suspected or confirmed cases who are clinically stable and do not require hospitalisation. Hospital admission should be based on clinical indications, including disease severity, risk of complications, and need for inpatient care.

Patients requiring hospital admission should be placed in an Airborne Infection Isolation Room (AIIR) and managed under Airborne and Contact Precautions, regardless of mpox clade, in accordance with existing institutional protocols and prevailing National IPC Guidelines[4].

Isolation precautions should be maintained until the patient is assessed to be no longer infectious.

b) Personal Protective Equipment (PPE) Posture

Healthcare workers and other personnel whose duties may involve direct contact with suspected or confirmed mpox cases, their body fluids, clinical specimens, or potentially contaminated materials should wear appropriate PPE, as specified in Table 7.1. This includes healthcare workers providing direct patient care, staff transporting patients, laboratory personnel handling clinical specimens, and housekeeping staff handling infectious waste or cleaning patient rooms.

The recommended PPE requirements apply regardless of mpox clade. Healthcare workers providing direct patient care should adhere to Airborne and Contact Precautions and wear an N95 respirator, fluid-impermeable gown, gloves, and eye protection.

[4] The National IPC Guidelines for Acute Care, Community Hospitals, Primary Care and Long Term Care Facilities are accessible via https://www.cda.gov.sg/professionals/ipc-guidelines-and-standards/

Table 7.1. Recommended PPE Use based on Types of Exposure

Staff and tasks	Mask	Gowns[#]	Gloves	Eye protection[^]	Boots/ Shoes cover
Healthcare workers with direct patient contact or entering patient room	N95 respirator	√	√	√	-
Staff transporting patient, including ambulance staff	N95 respirator	√	√	√	-
Housekeeping staff handling infected waste or cleaning room	N95 respirator	√	√	√	√*
Porter transporting clinical samples in containers	Surgical mask	-	-	-	-

*Boots/shoes cover may be considered for housekeeping staff in consultation with the IPC team.
[#]Gowns should be fluid-impermeable gowns or AAMI level 4 equivalent.
[^]Eye protection refers to either goggles or disposable face shields.

c) Cleaning and Disinfection

i. Environmental cleaning: Rooms occupied by suspected or confirmed mpox cases should undergo terminal cleaning and disinfection upon patient discharge, using a bleach-based disinfectant containing 5,000 ppm available chlorine. This can be prepared by diluting one part household bleach (5% sodium hypochlorite) with nine parts water. Adjunctive disinfection using ultraviolet-C (UV-C) systems or hydrogen peroxide vapour (HPV) may be considered, where available and appropriate.

ii. Cleaning methods: Wet cleaning methods, such as wiping and mopping with appropriate disinfectants, should be used. Dry dusting and sweeping should be avoided as these activities may disperse infectious particles. Vacuuming should only be performed using equipment fitted with a high-efficiency particulate air (HEPA) filter.

iii. Personal belongings: Upon discharge, patients' personal belongings should be appropriately cleaned and disinfected, where feasible, using suitable disinfectants and methods compatible with the materials. Items that cannot be adequately cleaned or disinfected should be assessed for alternative management or disposal, in consultation with the institutional IPC team.

iv. Personal clothing and washable items: Items that can be laundered, such as personal clothing, may be securely bagged and returned to patients for laundering at home. The exterior of the bag should be wiped with an appropriate disinfectant before being placed in a separate bag for transport. Patients should be advised to:

   a. Wear gloves when handling potentially contaminated laundry;

   b. Transfer clothing directly into the washing machine without shaking it;

   c. Wash using detergent and the highest temperature permitted by the fabric care instructions;

d. Dispose of the used bag and gloves appropriately; and

e. Perform hand hygiene thoroughly with soap and water after handling the laundry.

d) Waste and Linen Management

Waste, linen, and laundry generated during the care of suspected or confirmed mpox cases should be handled and managed as infectious waste and linen, in accordance with existing institutional protocols and prevailing National IPC Guidelines[5]. Personnel handling these materials should wear appropriate PPE as specified in Table 7.1.

7.2. INFECTION PREVENTION AND CONTROL MEASURES IN PRIMARY CARE SETTINGS

a) Facility requirement

i. All occupied spaces should have adequate and functioning ventilation systems. Where feasible, outdoor air intake and supply should be optimised, particularly in areas used for the assessment of suspected mpox cases, without compromising the safety of those in other occupied areas.

ii. Where feasible, clinics should designate separate "Clean" and "Dirty" zones to minimise the risk of transmission:

a. "Clean" zones include registration areas, common waiting areas, toilet facilities, and consultation rooms for non-suspect patients where Standard Precautions apply.

b. "Dirty" zones refer to designated areas where suspected or confirmed mpox cases wait and/or undergo clinical assessment. Access to these areas should be restricted to the relevant patients and authorised personnel. Staff entering these areas should wear the appropriate PPE, as specified in Section 7.2(c).

iii. Where possible, dedicated toilet facilities should be provided for suspected or confirmed mpox cases. If this is not possible, toilets used by these cases should not be used by others until they have been thoroughly cleaned and disinfected, including sanitary fixtures and frequently touched surfaces, using appropriate disinfectants as specified in Section 7.2(d).

b) Flow of Suspected Mpox Cases

i. Patients should be screened for mpox at the point of registration, preferably through contactless registration where feasible. Where face-to-face interaction is necessary, staff should wear appropriate PPE as specified in Section 7.2(c).

ii. Patients who are identified as potential suspected cases, either at registration or during consultation, should be provided with a surgical mask and promptly segregated from other patients in a designated area, where feasible, while awaiting clinical assessment. Patients should also be advised to keep any exposed lesions covered.

[5] The National IPC Guidelines for Acute Care, Community Hospitals, Primary Care and Long Term Care Facilities are accessible via https://www.cda.gov.sg/professionals/ipc-guidelines-and-standards/

c) PPE Posture

i. Healthcare workers and other personnel whose duties may involve direct contact with suspected or confirmed mpox cases, their body fluids, or potentially contaminated materials should adhere to Airborne and Contact Precautions, regardless of mpox clade.

ii. The recommended PPE comprises:

a. N95 respirator;

b. Single-use fluid-impermeable gown;

c. Single-use gloves; and

d. Eye protection (i.e., goggles or face shield).

iii. Staff should be appropriately trained in the correct donning, use, and doffing of PPE, and should perform hand hygiene before donning and after removal of PPE.

d) Cleaning and Disinfection

i. Areas exposed to suspected or confirmed mpox cases should undergo terminal cleaning using a bleach-based disinfectant containing 5,000 ppm available chlorine. This can be prepared by diluting one part common household bleach (5% sodium hypochlorite) with nine parts water. Medical equipment should be cleaned and disinfected using appropriate disinfectants, in accordance with the equipment manufacturer's instructions.

ii. Personnel performing cleaning and disinfection of designated areas used by suspected or confirmed mpox cases, including toilets, should wear the following PPE:

a. N95 respirator;

b. Single-use fluid-impermeable gown;

c. Single-use gloves; and

d. Eye protection (i.e., goggles or face shield).

iii. Wet cleaning methods should be used. Dry dusting, sweeping, and vacuuming should be avoided unless a vacuum cleaner fitted with a HEPA filter is used, as these activities may disperse infectious particles.

iv. Reusable cleaning equipment, including cloths and mops, should be appropriately cleaned and disinfected after each use and allowed to air-dry.

e) Waste Management

i. Waste generated from areas used by suspected or confirmed mpox cases should be appropriately segregated and disposed of as follows:

a. General waste (e.g., packaging and administrative waste that is not contaminated) should be disposed of in general waste bags;

b. Infectious waste (e.g., wound dressings, PPE, and other materials contaminated with potentially infectious blood, body fluids or mpox lesion material) should be disposed of in biohazard waste bags; and

c. Used sharps should be disposed of in designated puncture-resistant sharps containers.

ii. Personnel handling potentially contaminated infectious waste should wear the appropriate PPE as specified in Section 7.2(c). Infectious waste should be handled and disposed of in accordance with prevailing institutional infectious waste management procedures or the National IPC Guidelines[6].

[6] The National IPC Guidelines for Primary Care are accessible via https://www.cda.gov.sg/professionals/ipc-guidelines-and-standards/

8. MANAGEMENT OF CONTACTS

a) Persons with unprotected exposure to mpox cases or infected materials are at risk of acquiring infection, within an incubation period of 21 days from date of last exposure.

b) Healthcare workers with **protected** exposure to a confirmed case or their body fluids should self-monitor their health closely for 21 days from the last known contact with the patient or infected materials, and report any illness (e.g., fever, rash, etc.) to their supervisor immediately.

c) Healthcare workers with **unprotected** exposure (either before appropriate precautions were taken, or because of inadvertent breach of PPE) should immediately shower and change clothes. They should then report the exposure per their institution's infection control protocols.

d) **Symptomatic contacts** who develop symptoms during their monitoring period should seek medical attention. Such cases may be referred to NCID for assessment, if required.

e) **Asymptomatic contacts** do not require testing.

f) Close contacts with unprotected exposure may be referred by CDA to NCID for risk assessment and consideration of **post-exposure prophylaxis** (PEP) for which decisions should be individualised based on risk-benefits, and contraindications and precautions to PEP be carefully evaluated for.

9. PRE- AND POST-EXPOSURE PROPHYLAXIS FOR MPOX

The JYNNEOS vaccine is a live but non-replicating viral vaccine, based on the Modified Vaccine Ankara Bavarian Nordic (MVA-BN) strain. This is considered a third-generation smallpox vaccine, which has efficacy in preventing smallpox, mpox, vaccinia and other orthopoxvirus infections. It cannot cause smallpox, mpox, or any other disease.

While JYNNEOS is approved for use in individuals 18 years of age and older, the Expert Committee for Immunisation has recommended that children aged 6 months and older can also be given the vaccine. In children, JYNNEOS would be used for post-exposure prophylaxis (PEP) of close contacts. The child's parents or legal guardians should be counselled about the risks and benefits of JYNNEOS vaccination, so that they can make an informed decision on whether to proceed with vaccination. Close contacts aged below 6 months may be considered for vaccinia intravenous immunoglobulin for PEP.

Mass population-wide vaccination is currently not recommended. JYNNEOS vaccination is used for the indications below:

9.1. POST-EXPOSURE PROPHYLAXIS

For persons who have already had unprotected close contact with a confirmed mpox case.

The vaccine should be given within 4 days of exposure for optimal effectiveness in preventing disease, similar to ACAM2000. If given at 4-14 days after exposure, vaccination may be less effective in preventing disease but may still reduce disease symptoms or severity.

9.2. PRE-EXPOSURE PROPHYLAXIS FOR OCCUPATIONAL EXPOSURE

Pre-exposure prophylaxis (PrEP) with JYNNEOS vaccination can be offered to healthcare workers directly caring for mpox patients following risk-based assessment, and is recommended to laboratory personnel involved in the isolation, culture, and/or manipulation of mpox viruses in BSL3 laboratories registered with MOH. It is not recommended for general healthcare personnel who perform standard clinical assessments or routine diagnostic testing.

9.3. PRE-EXPOSURE PROPHYLAXIS FOR NON-OCCUPATIONAL EXPOSURE

For persons at high-risk of potential exposure to mpox.

9.4. DOSAGE AND ADMINISTRATION

The JYNNEOS vaccine dose is 0.5 mL in a single-dose vial, to be administered subcutaneously. This applies to all individuals above 6 months. The number of doses to be administered is described in Table 9.1.

Table 9.1. Recommended Doses

Indication	**Doses** (0.5mL / dose)
Post Exposure Prophylaxis in Close Contacts	
Immunocompetent (≥6 months old)	Single dose @ day 0
Immunocompromised (≥6 months old)	Dose 1 @ day 0 Dose 2 @ day 28
Pre-Exposure Prophylaxis	
Immunocompetent with childhood smallpox vaccination*	Single dose @ day 0
Immunocompetent, vaccine-naïve	Dose 1 @ day 0 Dose 2 @ day 28
Immunocompromised	Dose 1 @ day 0 Dose 2 @ day 28

*These individuals are generally aged 45 years and above (as of 2024), as smallpox vaccination was no longer mandatory from March 1981 in Singapore.

Please refer to the latest version of the MOH document, “JYNNEOS Modified Vaccine Ankara Bavarian Nordic (MVA-BN) - Guidance for Vaccination Providers” in **Annex C**, including information on JYNNEOS vaccine, screening of vaccinee prior to vaccination, storage and handling, dosage and administration, post-vaccination care, management of inadvertent vaccine errors and reporting of serious adverse events, and Vaccination Information Sheet.

10. MANAGEMENT OF DECEASED PERSONS WITH SUSPECTED/CONFIRMED MPOX INFECTION

There is a possibility of transmission when persons handling the body of a deceased person with mpox come into contact with infectious lesions, body fluids, or contaminated materials. Handling of the body should therefore be minimised, and appropriate infection prevention and control precautions should be observed.

10.1. PERSONAL PROTECTIVE EQUIPMENT

Personnel directly involved in handling the body should don appropriate PPE, which comprises:

- Single-use gloves;
- Single-use fluid impermeable gowns;
- Surgical masks (or N95 respirator, if aerosol-generating or high-risk procedures are anticipated); and
- Eye protection, such as disposable face shields or goggles.

Personnel should perform hand hygiene after handling the body and after removal of PPE. The number of persons involved in handling the body should be minimised. Used PPE and other potentially contaminated articles should be disposed of in appropriately labelled biohazard waste bags.

10.2. PREPARATION AND HANDLING OF THE BODY

As a guiding principle, handling and manipulation of the body should be minimised. All persons handling, transporting, and receiving the body should be informed of the biosafety status of the body.

Personnel preparing the body should ensure that the following measures are observed:

- All body orifices should be plugged with 10,000ppm sodium hypochlorite. For Coroner's cases, dry cotton balls (without disinfectant) should be used, as pathologists may need to obtain samples from these sites during post-mortem examination.
- Medical devices, including venulas, tubes, catheters and pacemakers, should not be removed from the body.
- The body should not be sprayed, washed, or embalmed.
- The body should be double-bagged in sealed, leak-proof heavy-duty cadaveric body bags. The exterior surface of each body bag should be wiped down with a suitable disinfectant (e.g., sodium hypochlorite), sealed, and affixed with a biohazard label. A body tag containing the deceased's particulars should be attached to the outer surface of the second body bag.
- Where a post-mortem examination is required, the Health Sciences Authority (HSA) Forensic Medicine Division (FMD) should be notified prior to the transfer of the body.

- Notifications should be submitted via the HSA FMD e-notification form at https://go.gov.sg/infectious-notify-fmd before transferring the body.

- Only staff of funeral services providers (FSPs) who have undergone the Basic Infection Control Course (BICC) conducted by the National Centre for Infectious Diseases (NCID) should handle the body. The list of BICC-Qualified FSPs can be found at the NHG website.

11. USEFUL REFERENCES

a) Communicable Diseases Agency (CDA), 30 Oct 2026
CDA Circular CDA-GEC-0025-2026: Update on Mpox Situation and Revision to Case Reporting and Management of Mpox and Charging Policy for Mpox Cases

b) Communicable Diseases Agency (CDA), 30 Oct 2026
CDA Circular CDA-GEC-0026-2026: Update on Mpox Situation and Revision to Case Reporting and Management of Mpox

c) Communicable Diseases Agency (CDA), 30 Oct 2026
CDA Weekly Infectious Disease Bulletin 2026
Accessed at: https://www.cda.gov.sg/resources/weekly-infectious-diseases-bulletin-2026/

d) World Health Organization (WHO), 5 Oct 2026
Global Mpox Trends.
Accessed at: https://worldhealthorg.shinyapps.io/mpx_global/#23_Maps

e) United Kingdom Health Security Agency, 27 Oct 2025
Information and advice for healthcare professionals and the general public.
Accessed at: https://www.gov.uk/government/collections/monkeypox-guidance

f) United States Centers for Disease Control (US CDC), 17 Oct 2026
Nationally Notifiable Infectious Disease and Conditions, Weekly Tables - Monkeypox.
Accessed at:
https://stacks.cdc.gov/gsearch?ref=docDetails&related_series=National+Notifiable+Diseases%3A+Infectious+Weekly+Tables

g) DailyMed. TPOXX (tecovirimat monohydrate) injection, solution, concentrate; capsule.
Accessed at: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=fce826ab-4d6a-4139-a2ee-a304a913a253

h) DailyMed. VISTIDE (cidofovir) injection.
Accessed at: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=90639fc6-0295-4115-98f0-054b783850ce

i) DailyMed. CNJ-016 (vaccinia immune globulin intravenous, human) injection.
Accessed at: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a4f9f620-e6e4-4a03-a9a7-79007c8c2cfe

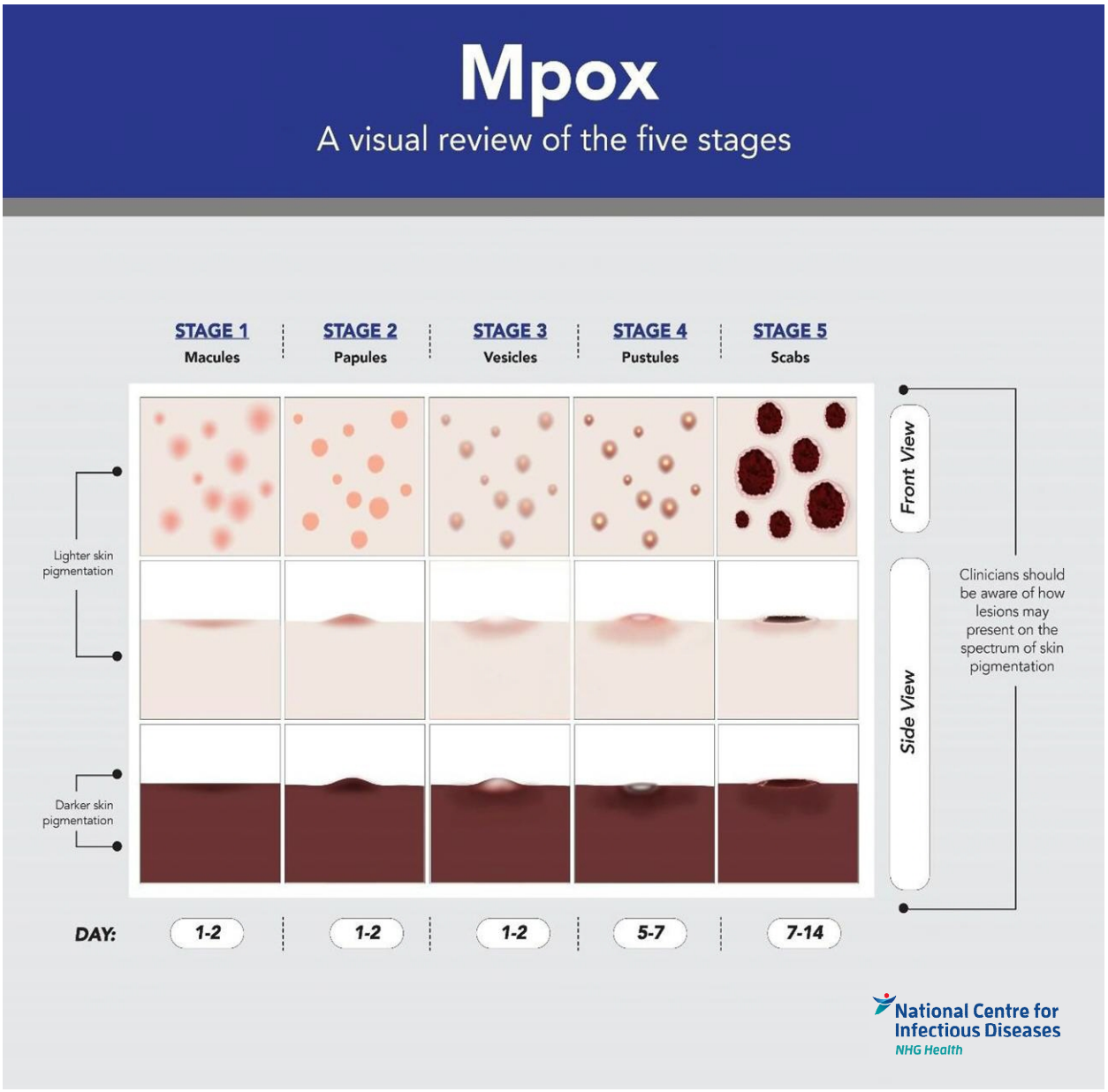
j) DailyMed. TRIFLURIDINE solution.
Accessed at: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=abc1d07f-91ee-4421-bc9b-457d0ed41f4c

k) PALM007 Writing Group, 17 Apr 2025 Tecovirimat for Clade I MPXV Infection in the Democratic Republic of Congo. *New England Journal of Medicine* 2025; 392(15): 1484–1496.
Accessed at: https://doi.org/10.1056/NEJMoa2412439

LIST OF ANNEXES

Annex A	Visual Examples of Mpox Rash and Distinguishing Mpox from Chickenpox
Annex B	Mpox Therapeutics
Annex C	JYNNEOS Modified Vaccine Ankara Bavarian Nordic (MVA-BN) – Guidance for Vaccination Providers
Annex D	NCID Drug Information Leaflet for Tecovirimat and Trifluridine 1% Eye Drop
Annex E	NCID Patient Information Leaflet for Tecovirimat and Trifluridine 1% Eye Drop
Annex F	Patient Information Leaflet on Mpox/Public Health Advice for Patients with Mpox

ANNEX A: VISUAL EXAMPLES OF MPOX RASH AND DISTINGUISHING MPOX FROM CHICKENPOX



MONKEYPOX

VISUAL EXAMPLES OF MONKEYPOX RASH



Photo Credit: NHS England High Consequence Infectious Diseases Network

MONKEYPOX

VISUAL EXAMPLES OF MONKEYPOX RASH



Photo Credit: UK Health Security Agency

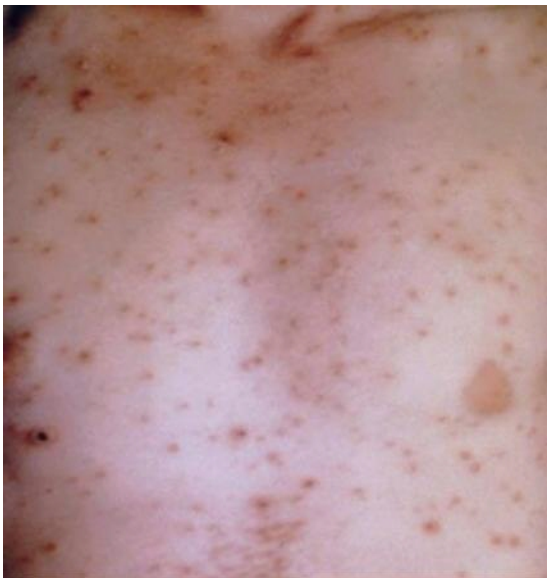
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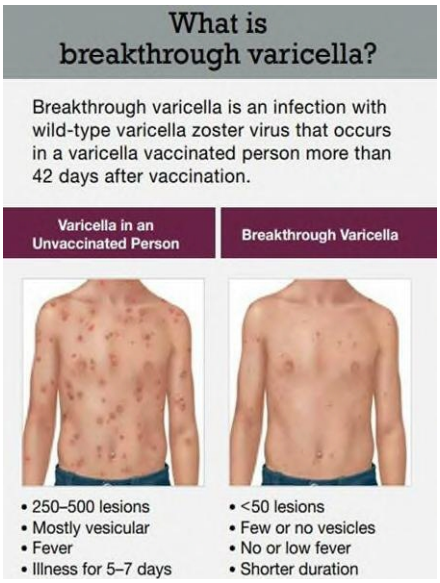
MPOX VERSUS CHICKENPOX

	Mpox	Chickenpox
Fever	1-3 days before rash	1-2 days before rash
Appearance	**Classic disease:** Lesions often in one stage of development (macular, popular, vesicular and pustular). Lesions typically described as painful until healing phase when they become pruritic. Vesicles are well circumscribed and located in deep dermis, so do not readily rupture (unlike chickenpox and herpes vesicles) **2022 Outbreak:** Rash in 95-100% of patients, 64% <10 lesions, 73% anogenital, 41% mucosal (anogenital, oropharyngeal, urethral, nasal, eye), 10% had only a single genital lesion, 14% proctitis/anorectal pain. Lesions likely occur as a result of close contact, starting at site of inoculation	Lesions often in multiple stages of development (vesicles, papules and pustules) “Dewdrop on a rose petal” appearance. Crops of vesicles with surrounding erythema that are often excoriated and crusted
Rash development	Slow	Rapid
Rash distribution	May be present on palms and soles. In classic disease, more dense on face, but in 2022 outbreak presentation more variable	Absent on palms and soles, more dense on trunk
Lymphadenopathy	Typically present	Typically absent

References: WHO, BMJ best practice (Monkeypox)

VISUAL EXAMPLES OF CHICKENPOX (VARICELLA) AND BREAKTHROUGH VARICELLA





Chickenpox in an unvaccinated adult.

Numerous lesions in various stages of development (vesicles, papules, pustules, crusting).

Source: CDC, PHIL Photo ID# 4493 and https://www.cdc.gov/chickenpox/hcp/communication-resources/breakthrough-varicella-infographic.html

ANNEX B: MPOX THERAPEUTICS

a) Please note that most cases of mpox do not need specific antiviral treatment, but supportive care only.
b) Any treatment should be in consultation with an Infectious Disease specialist, and an ophthalmologist for cases involving ocular disease, where appropriate.
c) Tecovirimat may be considered for severe cases of mpox particularly if patients require more than supportive care. Combination therapy with brincidofovir or cidofovir, with or without VIGIV, may be considered in selected patients, particularly those with severe immunocompromising condition, protracted or life-threatening disease, or disease progression despite treatment.
d) Trifluridine (ocular) may be considered for mpox eye disease if available, and if there are no contraindications.
e) Documented informed consent should be obtained by the treating medical team for the use of tecovirimat, brincidofovir, cidofovir, vaccinia immune globulin intravenous, and trifluridine for mpox, as these products may be unregistered in Singapore and/or used off-label for mpox, in accordance with the Singapore Medical Council's Ethical Code and Ethical Guidelines. Where unregistered therapeutic products are used, healthcare providers must comply with the applicable HSA Special Access Route requirements.
f) **Please refer to detailed product information leaflets and drug information sheets for full drug prescribing information. Dosing and administration of these therapeutics, particularly in paediatric patients and patients with renal or hepatic impairment, should be verified against the relevant product information.**

CLINICAL RECOMMENDATIONS FOR TREATMENT OF MPOX

Therapeutic	Current Proposed Use Case (off-label for Mpox; based on US CDC)	Recommended Dosing Regimen in patients with normal renal/hepatic function (referenced based on dosing regimen indicated for smallpox infection or vaccinia adverse events)			Contraindications Precautions and Common adverse events (AE) (note this is non-exhaustive)	Monitoring
		Adult Population	Paediatric Population	Duration of Treatment		
Tecovirimat (Capsule)[7]	May be considered for patients with severe mpox or at high risk of progression to severe disease, following specialist assessment. Combination therapy may be considered in selected patients, particularly those with severe immunocompromising condition or progressive disease.	Oral Dosage by body weight: • Less than 40 kg: Refer to the corresponding weight-based dosing regimen in the paediatric column • 40 kg to less than 120 kg: 600 mg (3 capsules) every 12 hours • 120 kg and above: 600 mg (3 capsules) every 8 hours Note: Oral capsules must be taken within 30 minutes after a full meal containing moderate or high fat.	Oral dosage by body weight: • Less than 3 kg: 33.3 mg every 12 hours • 3 kg to less than 6 kg: 50 mg every 12 hours • 6 kg to less than 13 kg: 100 mg every 12 hours • 13 kg to less than 25 kg: 200 mg (1 capsule) every 12 hours • 25 kg to less than 40 kg: 400 mg (2 capsules) every 12 hours • 40 kg to less than 120 kg: 600 mg (3 capsules) every 12 hours • 120 kg and above: 600 mg (3 capsules) every 8 hours Note: Oral capsules must be taken within 30 minutes after a full meal containing moderate or high fat.	14 days	**Contraindications**: None **Precautions:** For patients weighing less than 13 kg, oral dosing and administration are based on the CDC EA-IND protocol and differ from the standard FDA-approved product information. Preparation and administration should follow the protocol and be verified by a pharmacist. **AE**: Generally well tolerated Headache (12%) Occasional: gastrointestinal (nausea 5%, vomiting 2%, abdominal pain, 2%)	• Monitor blood glucose, symptoms of hypoglycaemia (when coadministered with repaglinide) • Midazolam — tecovirimat may reduce midazolam effectiveness; monitor clinical response
Tecovirimat (Intravenous)	May be considered for patients with severe mpox or at high risk of severe disease who require systemic antiviral treatment and are unable to tolerate or absorb oral tecovirimat, or where IV treatment is clinically indicated following specialist assessment.	Intravenous infusion dosage by body weight: • 35 kg to less than 120 kg: 200 mg every 12 hours by IV infusion over 6 hours • 120 kg and above: 300 mg every 12 hours by IV infusion over 6 hours	Intravenous infusion dosage by body weight: • 3 kg to less than 35 kg: 6 mg/kg every 12 hours by IV infusion over 6 hours* • 35 kg to less than 120 kg: 200 mg every 12 hours by IV infusion over 6 hours • 120 kg and above: 300 mg every 12 hours by IV infusion over 6 hours *Note: Patients weighing at least 13 kg should be switched to Tecovirimat Capsules to complete the 14-day treatment course as soon as oral therapy can be tolerated.	14 days	**Contraindications**: IV tecovirimat is contraindicated when creatinine clearance is below 30 mL/min (risk of hydroxypropyl-β-cyclodextrin accumulation) and should be used with caution at CrCl 30–89 mL/min with renal function monitoring **Precautions:** Assess renal function before treatment **AE:** Infusion Site Pain (73%), Swelling (39%), Erythema (23%), Extravasation (19%) and Headache 15%)	• Assess renal function, including CrCl, as clinically indicated during treatment • Monitor for infusion-site reactions and headache • Monitor blood glucose, symptoms of hypoglycaemia (when coadministered with repaglinide) • Particular caution is required in children younger than two years due to potential accumulation of the excipient

[7] Note: No oral dose adjustment is required for Tecovirimat in mild, moderate or severe renal impairment (including ESRD on haemodialysis) or in hepatic impairment (Child-Pugh A, B or C)

Therapeutic	Current Proposed Use Case (off-label for Mpox; based on US CDC)	Recommended Dosing Regimen in patients with normal renal/hepatic function (referenced based on dosing regimen indicated for smallpox infection or vaccinia adverse events)			Contraindications Precautions and Common adverse events (AE) (note this is non-exhaustive)	Monitoring
		Adult Population	Paediatric Population	Duration of Treatment		
Brincidofovir (Tablet)	Alternative or adjunctive treatment that may be considered for selected patients with severe mpox or at high risk of severe disease, including those with clinically significant progression despite tecovirimat, contraindications to tecovirimat, or severe immunocompromising condition.	Patients weighing 48 kg and above: 200 mg as two 100 mg tablets once weekly for two doses (on days 1 and 8) Note: Tablets may be taken on an empty stomach or with a low-fat meal (~400 kcal, ~25% of calories from fat). Tablets must not be crushed or divided.	Patients weighing 48 kg and above: 200 mg as two 100 mg tablets once weekly for two doses (on days 1 and 8) For patients weighing less than 48 kg, use oral suspension. Note: Tablets may be taken on an empty stomach or with a low-fat meal (~400 kcal, ~25% of calories from fat). Tablets must not be crushed or divided.	Two doses, one week apart (Days 1 and 8). Do not extend beyond two doses.	**Contraindications**: None **Precautions:** • Increased mortality was observed with prolonged brincidofovir use in a trial for another disease (CMV prevention); an increased risk is possible if used for longer than the recommended two doses on Days 1 and 8 • Do NOT co-administer with IV cidofovir • Do not extend beyond two doses • Perform liver function tests (LFTs) before starting treatment • Pregnancy testing prior to initiation (in women with childbearing potential) • Advise individuals of childbearing potential to avoid becoming pregnant and to use effective contraception during treatment and for at least 2 months after the last dose • Advise individuals of reproductive potential with partners of childbearing potential to use condoms during treatment with and for at least 4 months after the last dose **AE**: • Diarrhoea: monitor for GI adverse events and dehydration; if clinically significant, withhold the second (Day 8) dose - 5% discontinued for diarrhoea in trials; nausea (5%), vomiting (4%), abdominal pain (3%) • Hepatotoxicity: ALT >3× ULN in 7% and bilirubin >2× ULN in 2% in the first 2 weeks; severe hepatobiliary events (hyperbilirubinemia, acute hepatitis, hepatic steatosis, veno-occlusive disease) in <1%. Generally reversible. Consider discontinuation if ALT remains persistently >10× ULN. Withhold the Day 8 dose if ALT elevation is accompanied by clinical signs of liver inflammation or increasing direct bilirubin, alkaline phosphatase or INR • Rarely severe hepatic events, <1% (hepatic sinusoidal obstruction syndrome, acute hepatitis, raised bilirubin, hepatic steatosis) • Embryo-foetal toxicity • Potential carcinogenicity • Male infertility • Others: Peripheral oedema (<2%), Rash, maculo-papular rash or pruritic rash (<2%)	• Monitor LFTs during therapy as clinically indicated • Interactions: OATP1B1/1B3 inhibitors (HIV and HCV protease inhibitors, cyclosporine, clarithromycin, erythromycin, gemfibrozil, single-dose rifampin) markedly increase brincidofovir exposure (cyclosporine: AUC +374%). • Consider alternatives where possible or give the inhibitor at least 3 hours after brincidofovir and increase monitoring.
Brincidofovir (Suspension)[8]	Same indications as brincidofovir tablets. The oral suspension may be used in patients requiring weight-based dosing or unable to swallow tablets.	Patients weighing 10 kg to less than 48 kg: 4 mg/kg oral suspension once weekly for two doses (on Days 1 and 8) Note: Oral suspension is taken on an empty stomach and shaken before use.	• Pediatric patients weighing less than 10 kg: 6 mg/kg oral suspension once weekly for 2 doses (on Days 1 and 8) • Pediatric patients weighing 10 kg to less than 48 kg: 4 mg/kg oral suspension once weekly for 2 doses (on Days 1 and 8) • Pediatric patients weighing 48 kg or above: 200 mg (two 100 mg tablets or 20 mL oral suspension) once weekly for 2 doses (on Days 1 and 8) Note: Oral suspension is taken on an empty stomach and shaken before use.	Two doses, one week apart (Days 1 and 8). Do not extend beyond two doses.		

[8] No dose adjustment required in renal impairment (including dialysis) or hepatic impairment (Child-Pugh A–C).

Therapeutic	Current Proposed Use Case (off-label for Mpox; based on US CDC)	Recommended Dosing Regimen in patients with normal renal/hepatic function (referenced based on dosing regimen indicated for smallpox infection or vaccinia adverse events)			Contraindications Precautions and Common adverse events (AE) (note this is non-exhaustive)	Monitoring
		Adult Population	Paediatric Population	Duration of Treatment		
Cidofovir (Intravenous) *(to be concurrently administered with probenecid and hydrated)*	Alternative or adjunctive antiviral treatment that may be considered for selected patients with severe mpox or at high risk of progression, including those with clinically significant progression despite tecovirimat, suspected tecovirimat resistance, or those unable to receive tecovirimat. Use should be based on individualised assessment of benefits and risks, particularly given the potential for serious nephrotoxicity. Note: Clinical effectiveness for human mpox has not been established; FDA-approved only for CMV retinitis in AIDS; mpox use is off-label, extrapolated from in vitro and animal orthopoxvirus data.	5mg/kg/dose, with consideration for redosing after 1 – 2 weeks Administer oral probenecid 2g 3 hours before cidofovir infusion, followed by 1g at 2 hours and 8 hours after completion of the 1-hour cidofovir infusion (total 4g) 1 litre of normal saline, 1 – 2 hours before each cidofovir infusion If tolerated, 1 more litre of normal saline over 1-3 hours during/ immediately following cidofovir	5mg/kg/dose, with consideration for redosing after 1 – 2 weeks Requires premedication of Probenecid 25-40 mg/kg/dose (maximum 2000 mg) given 3 hours before cidofovir, then 10–20 mg/kg/dose (maximum 1,000 mg per dose) at 2 hours and 8 hours after completion of the cidofovir infusion Before each cidofovir, IV 10–20 mL/kg (maximum 1,000 mL) of normal saline infused over 1 hour During cidofovir, IV 10–20 mL/kg (maximum 1,000 mL) of normal saline over 1 hour. Follow with maintenance fluids	Once weekly for 2 weeks; further dosing individualised according to clinical response, renal tolerance and specialist advice.	**Contraindications to (any of the below):** • Serum creatinine >1.5 mg/dL (approximately >130 µmol/L) • Creatinine clearance ⩽ 55mL/min • Urine protein ⩾ 100mg/dL (or ⩾ 2+ proteinuria) • Concomitant use of nephrotoxic agents. Such agents must be discontinued at least 7 days prior to starting therapy with cidofovir • Hypersensitivity to cidofovir; history of clinically severe hypersensitivity to probenecid or other sulfa-containing medications **AE**: WARNING: Renal impairment is the major toxicity of cidofovir. • Proteinuria (⩾ 100mg/dL) (50%) • Neutropenia (⩽ 500 cells/mm$^{3)}$ (24%) • Decreased intraocular pressure/Ocular Hypotony (24%) • Decreased serum bicarbonate (⩽16 mEq/L) (16%) • Fever (14%) • Infection (12%) • Creatinine elevation (⩾2.0mg/dL) (12%) • Pneumonia (9%) • Dyspnea (8%) • Anterior iritis/uveitis (11%) • Nausea with vomiting (7%) • Fanconi syndrome (1%) **Precautions:** Cidofovir may cause severe nephrotoxicity, including acute renal failure, and neutropenia. Oral probenecid and adequate IV hydration are required with each infusion to reduce the risk of nephrotoxicity. Avoid concomitant nephrotoxic medications. Use during pregnancy only if the potential benefit justifies the potential risk to the foetus; should not be administered to nursing mothers (in animal studies, cidofovir was embryotoxic and teratogenic; it is not known whether cidofovir is excreted in human milk). • Women of childbearing potential should be advised to use effective contraception during and for 1 month following treatment. • Men should be advised to practise barrier contraceptive methods during and for 3 months after treatment.	• Assess renal function (including serum creatinine), serum bicarbonate, urine protein and full blood count, within 48 hours before each dose • If serum creatinine increases by 27–35 µmol/L above baseline: Reduce the maintenance dose from 5 mg/kg to 3 mg/kg • Discontinue cidofovir if serum creatinine increases by ⩾0.5 mg/dL (approximately ⩾44 µmol/L) above baseline, or if ⩾3+ proteinuria develops • Monitor for ocular complications: changes in visual acuity, uveitis or iritis, decreased intraocular pressure • Probenecid interactions: zidovudine levels rise substantially — reduce by 50% or withhold on the day of infusion; also monitor with beta-lactam antimicrobials, NSAIDs, diuretics and ACE inhibitors

Therapeutic	Current Proposed Use Case (off-label for Mpox; based on US CDC)	Recommended Dosing Regimen in patients with normal renal/hepatic function (referenced based on dosing regimen indicated for smallpox infection or vaccinia adverse events)			Contraindications Precautions and Common adverse events (AE) (note this is non-exhaustive)	Monitoring
		Adult Population	Paediatric Population	Duration of Treatment		
Vaccinia Immune Globulin (Intravenous) *Note: VIGIV is also indicated for certain severe complications of replication-competent vaccinia vaccination, such as ACAM2000.	Adjunctive treatment that may be considered in selected patients with severe mpox, particularly those with severe immunocompromising condition in whom an adequate antibody response may be impaired, following specialist assessment. OR May be considered for post-exposure prophylaxis in selected persons exposed to mpox who are severely immunocompromised or have contraindications to mpox vaccination, following individualised specialist assessment.	Initial dose of 6,000U/kg. Higher doses (e.g., 9,000 or 24,000 units/kg) may be considered if there is inadequate clinical response, based on specialist assessment. In patients with risk factors for thrombosis, the maximum daily dose should not exceed 12,000 units/kg.	Initial dose of 6,000U/kg. Higher doses (e.g., 9,000 or 24,000 units/kg) may be considered if there is inadequate clinical response, based on specialist assessment. In patients with risk factors for thrombosis, the maximum daily dose should not exceed 12,000 units/kg. Note: safety and effectiveness in patients <16 years have not been established.	Single dose with possible repeat dosing.	**Contraindications:** • Isolated vaccinia keratitis • History of anaphylactic or severe systemic reaction to human globulins • IgA deficiency with antibodies against IgA and a history of IgA hypersensitivity **AE:** The most common adverse drug reactions to VIGIV (>10%) are headache, nausea, Rigors, and dizziness. Other rarer adverse reactions include: • Acute anaphylaxis • Thrombosis (use minimum dose and infusion rate practicable, ensure adequate hydration before administration) • Aseptic meningitis syndrome • Hemolysis or hemolytic anaemia • Noncardiogenic pulmonary edema [Transfusion-Related Acute Lung Injury (TRALI)] • Acute renal dysfunction/failure • Transmission of infectious agents from human plasma **Precautions:** • Administer VIGIV in a setting equipped to manage anaphylaxis • Use with caution in patients at risk of renal dysfunction or thrombosis; ensure adequate hydration and administer at the lowest practicable infusion rate • In patients with thrombotic risk factors, the maximum daily dose should not exceed 12,000 units/kg • Caution in orthopoxvirus keratitis: one animal study suggests an increased risk of corneal scarring when VIGIV is administered in the setting of orthopoxvirus keratitis — weigh this risk when considering VIGIV for patients with ocular mpox • Use glucose-specific testing methods, as maltose in VIGIV may cause falsely elevated glucose readings with certain systems — falsely elevated readings can lead to inappropriate insulin administration and life-threatening hypoglycaemia • Defer live attenuated vaccines (measles, mumps, rubella, varicella) until approximately 3 months after VIGIV; revaccinate patients who received a live virus vaccine shortly before VIGIV, 3 months after the VIGIV dose • Pregnancy: Assess risk/benefit for each individual case (immune globulins have been widely used in pregnancy without apparent negative reproductive effects). Caution in nursing mothers — unknown whether excreted in human milk	• Check baseline parameters (blood pressure, pulse rate, temperature) before starting, and every 30 minutes during infusion and at one hour after completion of the infusion; increase frequency as clinically indicated • Infusion rates: initiate at 0.01–0.02 mL/kg/minute for the first 30 minutes, increase by 0.01–0.02 mL/kg/minute for the next 30 minutes, then up to 2 mL/minute for the remainder (maximum 0.04 mL/kg/minute if under 50 kg) • Check parameters before each rate increase. If well tolerated, the rate may be gradually increased • Continue hourly monitoring after reaching maximum tolerated rate till infusion completed • Monitor for hypersensitivity reactions, renal dysfunction, thrombosis, haemolysis, aseptic meningitis and TRALI

Therapeutic	Current Proposed Use Case (off-label for Mpox; based on US CDC)	Recommended Dosing Regimen in patients with normal renal/hepatic function (referenced based on dosing regimen indicated for smallpox infection or vaccinia adverse events)			Contraindications Precautions and Common adverse events (AE) (note this is non-exhaustive)	Monitoring
		Adult Population	Paediatric Population	Duration of Treatment		
Trifluridine (Ophthalmic 1% solution)	Topical antiviral treatment recommended for mpox keratitis and which may be considered for mpox conjunctivitis, in consultation with an ophthalmologist*. OR Prophylactic use may be considered for selected patients at increased risk of ocular autoinoculation, including those with eyelid/periocular lesions, children younger than eight years, or individuals unable to reliably follow hand hygiene and avoidance of hand-to-eye contact instructions, following specialist assessment. *Note: Ocular involvement is an indication to consider systemic antiviral therapy (e.g. tecovirimat) alongside topical treatment.	Instil one drop into the affected eye(s) every 2 hours while awake (maximum 9 drops per eye per day) for the first 2 weeks or until complete corneal re-epithelialisation*. Following re-epithelialisation, continue one drop every 4 hours while awake (minimum 5 drops per eye per day) for an additional 7 days. *Note: If there are no signs of improvement after 7 days of therapy or complete re-epithelialization has not occurred after 14 days of therapy, other forms of therapy should be considered.	Instil one drop into the affected eye(s) every 2 hours while awake (maximum 9 drops per eye per day) for the first 2 weeks or until complete corneal re-epithelialisation. Following re-epithelialisation, continue one drop every 4 hours while awake (minimum 5 drops per eye per day) for an additional 7 days#. *Note: Safety and effectiveness of trifluridine ophthalmic solution have not been established in children younger than six years. Use in this age group requires individualised specialist assessment. #Note: If there are no signs of improvement after 7 days of therapy or complete re-epithelialization has not occurred after 14 days of therapy, other forms of therapy should be considered.	Until corneal re-epithelialisation, followed by a further 7 days of treatment. Continuous administration beyond 21 days should be avoided, because of potential ocular toxicity; persistent disease requires ophthalmological reassessment and consideration of alternative treatment.	**Contraindications:** Hypersensitivity to trifluridine or any of the constituents of the product. **AE:** • Ophthalmic: Burning sensation of eyes (< 5%), stinging of eyes (< 5%), eyelid edema (3%)* • Hypersensitivity: local ocular hypersensitivity reaction • Ophthalmic: dry eye syndrome, epithelial keratopathy, eye irritation, hyperemia, increased intraocular pressure, ocular stromal edema and superficial punctate keratitis *Note: Rates are from HSV keratitis clinical trials in the product label, not mpox-specific estimate. **Precautions**: • Trifluridine use for mpox is off-label and should be undertaken under ophthalmologist supervision • May cause transient conjunctival or corneal irritation • Given its mutagenic and carcinogenic potential observed in preclinical studies, and limited human safety data during pregnancy and breastfeeding, use in pregnant or breastfeeding patients only if the potential benefits outweigh the risks • Avoid topical corticosteroids in ocular mpox (risk of viral persistence and corneal damage • If VIGIV is being considered in a patient with mpox keratitis, seek ophthalmology and infectious diseases specialist input for an individualised assessment	Ophthalmology assessment and monitoring throughout treatment, including response to therapy and ocular toxicity. Reassess if there is no improvement within seven days or if complete corneal re-epithelialisation has not occurred within 14 days.

ANNEX C: JYNNEOS MODIFIED VACCINE ANKARA BAVARIAN NORDIC (MVA-BN) - GUIDANCE FOR VACCINATION PROVIDERS

GUIDANCE FOR JYNNEOS VACCINATION PROVIDERS

This guidance is specific to administering the **JYNNEOS** smallpox / mpox vaccine.

1. OVERVIEW FOR VACCINATION PROVIDERS

a) This vaccination program is offered under the direction of the Ministry of Health (MOH). All vaccination providers must report all serious adverse events to HSA.

b) The JYNNEOS Modified Vaccinia Ankara (MVA) vaccine, hereafter referred to as the JYNNEOS vaccine, is a suspension for subcutaneous injection, administered as a single-dose or a 2-dose series given 28 days apart (see *Dosage and Administration*). The dose consists of 0.5 mL in a single-dose vial.

c) The vaccine should be thawed and brought to room temperature before injection. Once thawed, the vaccine can be kept at 2 – 8 degrees Celsius (refrigerator) for up to 4 weeks from date of thaw. Do not re-freeze.

d) Where a patient requires two doses, the second dose is considered invalid if given too early, i.e., before Day 24. If the patient returns late for the second dose, it should be given at the earliest opportunity, and there is no need to re-start the vaccination or repeat doses.

e) Besides the usual patient particulars and contact information, essential medical information as per the vaccination screening form should be collected using either a paper version of the hardcopy vaccination form itself, or entered directly through electronic means, such as IT systems provided by MOH for appointment booking, and/or the electronic medical record (EMR) system used by the institution or clinic, or a combination of paper and electronic forms. The information is used to determine contraindications and precautions to receiving the JYNNEOS vaccine.

f) Vaccination should be done on a **voluntary** basis. Individuals receiving the JYNNEOS vaccine should be provided information about the vaccine risks, benefits, potential adverse effects and alternatives. This is through providing them with the Vaccine Information Sheet (VIS, **Appendix C1**). After vaccination, the patient should be given a vaccination card (**Appendix C2**), either in hard-copy or through electronic means, which provides a record of the JYNNEOS vaccine they received, post-vaccination advice, and a reminder of their next vaccination appointment.

2. INFORMATION ABOUT MPOX

a) Mpox is a viral disease that is primarily transmitted through direct contact with skin or genital lesions, body fluids, or contaminated items such as bedding (fomites).

b) Symptoms appear 3-21 days after exposure. Symptoms may include fever, headache, myalgia, skin nodules, vesicles and pustules, which can occur in oral or genital mucosa, or in the peri-anal region, as well as lymphadenopathy. Most patients recover in 3-4 weeks and remain infectious until their vesicles or ulcers scab over, the scabs fall off and skin lesions heal completely.

c) Individuals at higher risk for severe or fatal mpox include immunocompromised persons (including HIV infection), pregnant women, and young children.

3. INFORMATION ABOUT THE JYNNEOS VACCINE

a) The JYNNEOS vaccine is a live but non-replicating viral vaccine, based on the Modified Vaccine Ankara Bavarian Nordic (MVA-BN) strain. This is considered a third-generation smallpox vaccine, which has efficacy in preventing smallpox, mpox, vaccinia and other orthopoxvirus infections. It cannot cause smallpox, mpox or any other disease.

b) Vaccine efficacy was inferred from immunogenicity data from clinical studies, and from efficacy data in animal challenge studies. Studies have also estimated that one or two doses of the JYNNEOS vaccine could provide around 80% protection against mpox, although current data is still limited to conclude on the level and duration of the protection conferred by vaccination.

c) JYNNEOS vaccination is currently available in Singapore for the following indications:

i. POST EXPOSURE PROPHYLAXIS (PEP)
For persons who have already had unprotected close contact with a confirmed mpox case.

ii. PRE-EXPOSURE PROPHYLAXIS FOR OCCUPATIONAL EXPOSURE (PrEP)
PrEP with JYNNEOS vaccination can be offered to healthcare workers directly caring for mpox patients following risk-based assessment and is recommended to laboratory personnel involved in the isolation, culture, and/or manipulation of mpox viruses in BSL3 laboratories registered with MOH. It is not recommended for general healthcare personnel who perform standard clinical assessments or routine diagnostic testing.

iii. PRE-EXPOSURE PROPHYLAXIS FOR NON-OCCUPATIONAL EXPOSURE (PrEP)
For persons at high-risk for potential exposure to mpox.

d) For PEP, JYNNEOS vaccine should be given within 4 days of exposure for optimal effectiveness in preventing disease, similar to ACAM2000. If given 4-14 days after exposure, vaccination may be less effective in preventing disease but may still reduce disease symptoms or severity.

e) Persons who received smallpox vaccination in childhood before it was discontinued (in 1981 for Singapore, but this date may be different in other countries), may proceed for PEP or PrEP

using the JYNNEOS vaccine, if eligible. Dosing recommendations in individuals with prior smallpox vaccination may differ from vaccine-naïve individuals (please refer to *Dosage and Administration*).

f) Common adverse effects after JYNNEOS vaccination include redness, tenderness, swelling or itching at the injection site. Common systemic adverse effects include fatigue, headache and body aches.

g) Post-vaccination adverse effects are classified as Grade 3 if they prevent daily routine activity or require medical intervention, and Grade 4 if they are potentially life threatening and require an emergency room visit or hospitalisation. The incidence of severe adverse effects (Grade 3-4) was low in the vaccine group and ranged from 0.1 to 4.2% with the highest frequency observed for fatigue. Health authorities are monitoring for serious adverse events (SAE) and adverse effects of special interest (AESI) including myocarditis.

h) Because myocarditis is an SAE observed with ACAM2000, and myocarditis has been reported as a rare SAE with COVID-19 vaccination, as a precaution, it is advisable to postpone COVID-19 vaccination for 4 weeks after receiving JYNNEOS vaccination.

i) In the converse situation, if JYNNEOS vaccination is being given for post-exposure prophylaxis or in the context of high levels of community transmission but the patient recently received COVID-19 vaccination (within the past 2 weeks), JYNNEOS vaccination can proceed because the clinical risk-benefit to prevent mpox would favour giving the vaccine. No minimum interval between COVID-19 vaccination with these vaccines and JYNNEOS vaccination is necessary.

j) As with any vaccine, syncope or anaphylaxis can occur after vaccination. Observe vaccinees for 15 minutes post vaccination to check for vaso-vagal reactions or anaphylaxis. If vaccinees have any allergic reactions to gentamicin, ciprofloxacin, or to chicken or egg protein and is assessed to be suitable for vaccination, he/she should be observed for 30 minutes post vaccination.

4. SCREENING PATIENTS BEFORE VACCINATION

Screening data

a) Patient particulars and essential medical information should be collected using either the hardcopy vaccination screening form made available to the eligible institutions or via electronic means such as the electronic medical record (EMR) system used by the institution or clinic. The information is needed to determine the eligibility, contraindications and precautions to receiving the JYNNEOS vaccine. The screening form has a section where vaccine recipients affirm that the personal particulars and medical information that they provided is correct. The doctor or nurse should review the allergy and medical information carefully before making a decision on whether to proceed with vaccination.

Vaccine information for patients and consent to get vaccinated

a) Individuals receiving the JYNNEOS vaccine should be provided information about the vaccine risks, benefits, potential adverse effects and alternatives. This is achieved by providing the VIS (**Annex C1**), which summarizes all this information, to the vaccine recipient prior to

vaccination. The screening form has a section where vaccine recipients affirm that they have been provided with the information, and wish to proceed with the vaccination. Vaccinating children or persons without mental capacity to understand the information or provide valid consent will be addressed in the section on Special populations.

Children under 18 years of age

a) While JYNNEOS is approved for use in individuals 18 years of age and older, the Expert Committee for Immunisation has recommended that children aged 6 months and older can also be given the vaccine. In children, JYNNEOS would typically be used for post exposure prophylaxis of close contacts. The child's parents or legal guardians should be counselled about the risks and benefits of JYNNEOS vaccination, so that they can make an informed consent decision on whether to proceed with vaccination. Close contacts aged below 6 months may be considered for vaccinia intravenous immunoglobulin for post-exposure prophylaxis.

Allergies

a) Persons who had history of anaphylaxis or severe allergic reaction to a previous dose of the JYNNEOS vaccine **SHOULD NOT** be vaccinated with the same vaccine again. Doctors should inform the patients who experience an allergy to first dose that they have a medical contraindication to the second dose, and flag this in the institution's and national drug allergy reporting system (i.e. CMIS).

b) The vaccine should not be routinely given to individuals who have had a sudden life-threatening allergic reaction (such as anaphylaxis) to any ingredient of JYNNEOS. JYNNEOS includes trace residues of chicken protein, benzonase, gentamicin and ciprofloxacin from the manufacturing process. Such persons should be aware of the precaution against receiving JYNNEOS vaccination. These include persons with a history of severe allergic reaction (e.g., anaphylaxis) to chicken or egg protein AND currently avoiding all chicken and egg products, or to the other trace residues. If the prescribing doctor assesses that the benefits outweigh the risks and, after discussion and shared decision-making with the patient, decides to proceed to issue a precaution and vaccinate the patient, the patient should be observed for 30 minutes after vaccination. Alternatively, such persons may be referred for an allergist consultation prior to vaccination.

c) Persons with atopic dermatitis or eczema, who were contraindicated from receiving ACAM2000 vaccine, **CAN** receive JYNNEOS vaccination.

Pregnant women

a) Pregnant women may be at increased risk of severe or fatal mpox infection, and *in utero* infection can lead to significant risks of fetal loss. There is limited data about JYNNEOS vaccine safety and efficacy in this population for preventing mpox.

b) In the Post Exposure Prophylaxis (PEP) setting, JYNNEOS may be offered, but the prescribing doctor should carefully consider the clinical risk-benefit for the pregnant patient and her fetus, and discuss this with the patient, so that she can make an informed decision on whether to proceed with vaccination.

c) In the Pre-Exposure Prophylaxis (PrEP) setting, the clinical risk-benefit considerations are even more challenging. If the risk is due to occupational exposure, the pregnant potential vaccinee may wish to consider temporary re-deployment for the duration of her pregnancy, and get vaccinated after delivery. If the risk is due to non-occupational or sexual exposure, the pregnant potential vaccinee should be counselled regarding the limitations to vaccine efficacy, and the need to maintain other harm reduction precautions.

Immunocompromised persons

a) Immunocompromised persons are at increased risk of developing severe or fatal mpox infection. Based on currently available data, immunocompromised persons do not appear to be at increased risk of adverse effects from JYNNEOS vaccination. Therefore, although vaccination may be less effective in immunocompromised persons, they may develop some protection and therefore benefit from vaccination.

b) There is a wide range of immunocompromising conditions and treatments. The degree of being immunocompromised is also a spectrum that may change over time.

c) If the patient is on short-term aggressive immunosuppression for an acute condition or flare, PrEP vaccination may be postponed temporarily in order to achieve optimal vaccine effectiveness. However, PEP vaccination should proceed, if the vaccinee is a close contact who has already been exposed.

Bleeding tendencies and SC injection

a) This vaccine is administered via subcutaneous (SC) injection and can be administered in patients with bleeding tendencies, on anti-coagulation, or on anti-platelet agents. If there is any bleeding after injection, advise patient to hold pressure at the injection site for 3-5 minutes, until resolved.

Fever within past 24 hours

a) Persons presenting for vaccination should be asked if they have had a fever (temperature > 37.5C) within the past 24 hours. If they have, they should re-schedule vaccination when their fever has resolved.

Breastfeeding

a) Women who are breastfeeding can receive JYNNEOS vaccination, as this is a live but non-replicating virus vaccine.

Planning pregnancy

a) Women who are planning a pregnancy do not need to defer conception, as this is a live but non-replicating virus vaccine. Women who become pregnant after the first dose and before the second dose may decide not to receive the second dose of vaccine, if the risk of exposure has passed.

5. STORAGE AND HANDLING

For vaccination clinics

a) The vaccine should be kept at the appropriate temperatures during storage.
   a. At +2 to +8 degrees Celsius (refrigerator), vaccine shelf-life is 4 weeks from date of thaw.

b) Check vaccine expiry dates before administering vaccine.

c) Vaccine should be thawed and allowed to reach room temperature before administering vaccine.

d) Do not refreeze thawed vials.

6. DOSAGE AND ADMINISTRATION

Dosage

The JYNNEOS vaccine dose is 0.5 mL in a single-dose vial, to be administered subcutaneously. This applies to all individuals above 6 months. The number of doses to be administered is as below:

Indication	**Doses** (0.5mL / dose)
Post Exposure Prophylaxis in Close Contacts	
Immunocompetent (≥6 months old)	Single dose @ day 0
Immunocompromised (≥6 months old)	Dose 1 @ day 0 Dose 2 @ day 28
Pre-Exposure Prophylaxis	
Immunocompetent with childhood smallpox vaccination*	Single dose @ day 0
Immunocompetent, vaccine-naïve	Dose 1 @ day 0 Dose 2 @ day 28
Immunocompromised	Dose 1 @ day 0 Dose 2 @ day 28

*These individuals are generally aged 45 years and above (as of 2024), as smallpox vaccination was no longer mandatory from March 1981 in Singapore.

Vaccine Administration

a) The patient should be seated when receiving the vaccine.

b) Using aseptic technique, cleanse the vial stopper with a single-use alcohol swab.

c) Withdraw 0.5 mL of the JYNNEOS vaccine, using a 23G or 25G needle.

d) Use an alcohol swab to clean the injection site.

e) Administer the vaccine subcutaneously (SC) where appropriate.

f) Apply plaster to injection site.

g) Dispose of used needles in sharps box. Do not recap needle and do not re-use needle or syringe.

7. POST-VACCINATION CARE

a) Vaccine recipients should be given the Vaccine Information Sheet (**Annex C1**) while being screened, and a vaccination card (**Annex C2**) after vaccination before they leave the clinic. Vaccine recipients should also be given instructions for follow-up with their doctors if symptoms worsen, persist, or new and serious problems emerge.

b) Vaccine recipients should be reassured that most symptoms will resolve within 1 to 3 days, and symptomatic treatment for injection site pain, myalgia or fever can be taken. This includes 1 to 2 tablets of paracetamol every 6 hours as needed (unless they have a paracetamol allergy).

c) If vaccinees develop symptoms of vaso-vagal syncope, anaphylaxis, severe allergic reactions, these should be managed appropriately as part of clinical care.

8. OTHER VACCINE QUESTIONS

Mpox symptoms
If PEP patients have symptoms suggestive of an mpox infection, they should be transferred immediately to an area with appropriate transmission-based precautions, assessed and tested if necessary.

Testing before JYNNEOS vaccination
If patients are asymptomatic, there is no requirement to test for mpox before getting JYNNEOS vaccination.

Interchangeability of smallpox/mpox vaccine
There are no data available on the interchangeability of the JYNNEOS vaccine with other smallpox/mpox vaccine such as ACAM2000. Both doses should be given using the same vaccine.

Exposed to mpox after two doses of JYNNEOS
Persons who have had two doses of JYNNEOS (such as for Pre-Exposure Prophylaxis) who become exposed to mpox should not receive Post Exposure Prophylaxis, but should monitor for any symptoms up to 21 days after the last exposure.

Exposed to mpox after first dose and prior to second dose of PrEP
Persons who have contact with an mpox case after their first dose and before their second dose (if this is indicated), should receive their second dose as scheduled.

Re-exposed to mpox after a single previous dose of PEP
Persons who have contact with an mpox case after having received a single previous dose of JYNNEOS should receive a second dose at least 28 days after the last dose received.

Concomitant use of other vaccines
There is little data for any minimum intervals between JYNNEOS vaccination and other vaccines. As JYNNEOS is based on a live, attenuated non-replicating orthopoxvirus, JYNNEOS typically may be administered without regard to timing of other vaccines. This includes simultaneous administration of JYNNEOS and other vaccines on the same day, but at different anatomic sites if possible.

If JYNNEOS vaccine is offered for prophylaxis in the setting of an outbreak, vaccination should not be delayed because of a recent receipt of Moderna, Novavax, or Pfizer-BioNTech COVID-19 vaccine. In this instance, no minimum interval between COVID-19 vaccination and JYNNEOS is needed.

Patients, particularly adolescent or young adult males, might consider waiting for 4 weeks after JYNNEOS vaccination before receiving COVID-19 vaccination, as a precaution for myocarditis. However, if COVID-19 vaccination was recently received, and patient requires JYNNEOS vaccination for prophylaxis, JYNNEOS vaccination can proceed based on the clinical risk-benefit.

Special populations

There are several populations which may be unable to provide consent for vaccination. These include persons with dementia or others lacking mental capacity, and students who are minors. Such groups will require consent from their guardian or next-of-kin.

9. MANAGING INADVERTENT VACCINE ERRORS

Second dose given earlier than the recommended interval

The vaccine manufacturer advises against giving the second dose before the minimum interval of 28 days. However, the general best practice is that a dose may be administered up to 4 days before the minimum interval (known as “grace period”, which would be a minimum of 24 days after the first dose). Vaccine doses should not be administered before the minimum interval; this incident should be documented in the medical record as a medication error. An internal investigation should be conducted to determine the root cause for the incident. However, if the second dose is inadvertently administered before the minimum interval, the dose need not be repeated for immunocompetent persons. For severely immunocompromised persons, to achieve full immunity, a repeat dose $\geq$ 28 days from the dose given in error should be considered.

Second dose given later than the recommended interval

If the patient returns later than the recommended appointment for the second dose, the second dose should still be given and is still considered valid. The vaccination series does not need to be re-started, and no additional doses are needed.

Inadvertent vaccination of a pregnant woman

If the JYNNEOS vaccine was inadvertently given to a woman who later realizes she was pregnant at the time of vaccination, this should be documented in the medical record. The vaccine recipient should be advised to seek consultation with her doctor and reassured that the vaccine does not contain any replicating virus.

Inadvertent administration by non-SC route

If the vaccine was inadvertently administered by some other route than the recommended SC, this incident should be documented in the medical record as a medication error. An internal investigation should be conducted to determine the root cause for the incident, and measures taken to prevent its recurrence. Consultation with HSA and MOH may be required to determine if the vaccine dose needs to be repeated, and vaccine recipients informed accordingly.

Inadvertent vaccination using an expired vaccine

If the vaccine administered is discovered to have passed its expiry date, this incident should be documented in the medical record as a medication error. An internal investigation should be conducted to determine the root cause for the incident, and measures taken to prevent its recurrence. Consultation with HSA and MOH, with guidance from infectious diseases specialists

may be required to determine if the vaccine dose needs to be repeated, and vaccine recipients informed accordingly.

Inadvertent use of vaccine with unacceptable temperature excursions during storage

If the vaccine administered is discovered to have had unacceptable temperature excursions during its storage, this incident should be documented in the medical record as a medication error. An internal investigation should be conducted to determine the root cause for the incident, and measures taken to prevent its recurrence. Consultation with MOH and HSA may be required to determine if the vaccine dose needs to be repeated, and vaccine recipients informed accordingly.

10. SERIOUS ADVERSE EVENT (SAE) REPORTING TO HSA

Vaccination providers are responsible for responding to HSA requests for information about serious adverse events following administration of JYNNEOS vaccine to recipients.

Vaccination providers are advised to remind vaccine recipients to inform them of any adverse events experienced that may be associated with the vaccine, and also to check with the recipients for any allergic reactions following the administration of the first dose of vaccine when they return for their second dose of the vaccine. Recipients with allergic reactions to the first dose should not receive the second dose. The new information of allergy should be entered in CMIS/similar electronic alert system. More information on the completion of the vaccination series for these recipients will be provided when more data becomes available.

Vaccination providers are required to report any suspected serious adverse events to HSA as soon as possible. All fatal and life-threatening events are to be reported as soon as possible, within 24 hours.

Vaccination providers are required to specify the **brand name** and **batch number** when reporting suspected adverse events to HSA.

Please report the adverse events to HSA via Critical Medical Information System (CMIS) module of the healthcare institutions electronic medical records portal, where available. Alternatively, you can also report online at https://www.hsa.gov.sg/adverse-events, at Tel: 6866 1111.

* Serious adverse events are defined as:

- Death;
- A life-threatening adverse event;
- Inpatient hospitalization or prolongation of existing hospitalization;
- A persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions;
- A congenital anomaly/birth defect;
- An important medical event that based on appropriate medical judgement may jeopardize the individual and may require medical or surgical intervention to prevent one of the outcomes listed above.

APPENDICES

APPENDIX C1: JYNNEOS Vaccination Information Sheet

APPENDIX C2: JYNNEOS Vaccination Card

APPENDIX C1: JYNNEOS VACCINATION INFORMATION SHEET

VACCINATION INFORMATION SHEET – WHAT YOU NEED TO KNOW
SMALLPOX/MPOX VACCINE (JYNNEOS) FOR PREVENTION OF MPOX

1. What is mpox?

Mpox is a viral disease which can spread through direct contact with skin or genital lesions, body fluids, or contaminated items such as bedding. Symptoms appear 3-21 days after exposure, and include fever, skin rash, blisters and swollen lymph nodes. Most patients recover in 3-4 weeks, and are infectious until their skin lesions heal up. Individuals with weakened immune systems, pregnant women, and young children may be at higher risk for severe or fatal infection.

2. What is the JYNNEOS smallpox/mpox vaccine?

The JYNNEOS vaccine was developed for prevention of smallpox but has some efficacy in preventing mpox, which is a closely related virus. JYNNEOS is made using a weakened vaccinia virus that is live but modified so that it cannot cause smallpox, mpox or other infection. The vaccine consists of one or two doses, as may be recommended for you.

3. Who are at high risk of mpox infection and eligible for vaccination?

Mpox vaccination can reduce the risk of infection and severe disease from mpox, and is used as:

- Post Exposure Prophylaxis (PEP) for close contacts of confirmed mpox cases/patients. PEP should be administered as soon as possible after exposure to the mpox cases/patients.
- Pre-Exposure Prophylaxis (PrEP) for persons at high risk of exposure to mpox virus. Please refer to prevailing guidance by MOH on the eligibility for PrEP, which may change depending on the mpox situation.

4. Who should not get the vaccine?

If you have a fever (temperature above 37.5 Celsius), you may need to postpone vaccination. If you already have symptoms that could be mpox (such as fever, skin rash or blisters), please let the nurse or doctor know immediately.

If you had anaphylaxis or severe allergic reactions to certain vaccine components, such as gentamicin, ciprofloxacin, benzonase, egg protein or chicken, you may not be able to get vaccinated. If you had anaphylaxis or a severe allergic reaction to a previous dose of JYNNEOS vaccine, you should not receive the second dose. Please discuss these issues with the doctor giving JYNNEOS vaccination.

If you are pregnant, are younger than 18 years old, or have a weakened immune system, and have been recommended to receive vaccination because of exposure, please discuss your concerns with the doctor giving JYNNEOS vaccination.

5. How is the vaccine given?

This vaccine is given as a subcutaneous injection where appropriate. If you have been advised to receive a second dose, you should return to do so in 28 days, unless otherwise advised.

6. What are the ingredients in the JYNNEOS vaccine?

The JYNNEOS vaccine contains Modified Vaccinia Ankara-Bavarian Nordic (MVA-BN), a weakened, live vaccinia virus which cannot cause smallpox, mpox or other infectious diseases. Vaccine ingredients include Tris (trimethamine), sodium chloride. The vaccine may contain protein from chicken embryo fibroblast cells used to grow the virus, benzonase, gentamicin, and ciprofloxacin.

7. Does the JYNNEOS vaccine work?

After completing vaccination, almost all people develop antibodies and should therefore have a good level of protection against mpox. The vaccine needs time to work and should reach the highest protection by 2 weeks after the completion of vaccination.

While it has been estimated that the JYNNEOS vaccine could provide around 80% protection against mpox, current data is still limited to conclude on the level and duration of the protection conferred by vaccination. You are strongly advised to continue adhering to other precautions to protect yourself against the disease.

8. What are possible side effects of the JYNNEOS vaccine? How do I manage side effects?

People sometimes faint after medical procedures, including vaccination. Please inform the nurse if you feel dizzy after vaccination.

Pain, redness, swelling or itching at the injection site are the most common side effects. Fever, chills, headache, muscle aches can also happen. Most side effects are mild, and usually get better within a few days. The table below lists some common side effects, and how to manage them.

Side Effects	**How to Manage**
Pain, redness, swelling at the injection site	Paracetamol 1 to 2 tablets every 6 hours as needed (Adults) 10-15 mg/kg/dose every 6 hours (Children between 3 months and 12 years)
Fever, chills	
Headache, muscle aches	
Tiredness	Rest
Lymph node swelling at neck or arms	Usually gets better by itself in a week or so

Very rarely, this vaccine can cause a severe allergic reaction or anaphylaxis. Signs of a severe allergic reaction include: difficulty breathing, swelling of your face, throat, eyes or lips, a fast heartbeat, dizziness and weakness, a bad rash all over your body. **If you experience a severe allergic reaction, seek medical attention immediately.** Call 995 or go to the nearest A&E immediately.

Like all medicines, this vaccine can rarely cause other side effects not listed. See a doctor if you experience side effects that worsen and persist more than 2-3 days.

9. Any Other Advice Before or After Vaccination?

Before the vaccination, wear a short-sleeve or top with sleeves that are easy to roll up. Have something to eat prior coming for the vaccination and bring along your identification, referral letter (if any), medical benefit-related documents (if any) and vaccination card (if available). If you are suspected of having or are confirmed to have mpox, see a doctor immediately to be assessed.

JYNNEOS can usually be given without regard to timing of other vaccines. However, it is advisable to wait 4 weeks after JYNNEOS vaccination before receiving COVID-19 vaccinations because of possible risk of myocarditis (inflammation of the heart muscle).

10. Has JYNNEOS been approved in Singapore? Is there a special financial assistance program similar to the COVID-19 Vaccine Injury Financial Assistance Programme (VIFAP) if I suffer from a serious adverse event (SAE) from the vaccination?

This vaccine has been approved by the Health Sciences Authority (HSA) Singapore. The VIFAP for COVID-19 is not extended to JYNNEOS vaccination for mpox.

11. What should I do if I develop mpox symptoms in spite of getting vaccination?

Vaccination is estimated to be 80% effective, so breakthrough infection can happen. If you develop symptoms, please seek medical attention and inform your healthcare provider of your exposure

The content of this information sheet was updated on 10 April 2025.

APPENDIX C2: JYNNEOS VACCINATION CARD

Information about JYNNEOS Vaccination

The JYNNEOS vaccine you have received consists of one or two doses, as may have been recommended for you.

The vaccine has been assessed to be safe for use. However, just like other vaccines, you may experience some side effects such as headache, body aches, tiredness and soreness at the injection site, or fever. These usually get better after 1-3 days, and may be a sign that your immune system is making a protective response against mpox.

MINISTRY OF HEALTH
SINGAPORE

SMALLPOX/MPOX (JYNNEOS) VACCINATION CARD

Please bring this card for your next appointment

PERSONAL PARTICULARS

Name:
_____

NRIC/FIN.:
_____

DOB.:
_____

Appointment Date	Time	Place

Smallpox / Mpox Vaccination Record

Vaccine Dose	Date of Vaccination	Vaccine Brand	Place of Vaccination
¨ #1		¨ JYNNEOS (MVA-BN) Smallpox/Mpox Vaccine	
¨ #2 (if applicable)		¨ JYNNEOS (MVA-BN) Smallpox/Mpox Vaccine	

After Vaccination Advice

Possible Side Effects	How to Manage
Pain, redness, swelling at the injection site	If not allergic to paracetamol: 1 to 2 tablets every 6 hours as needed (Adults) 10-15 mg/kg/dose every 6 hours as needed (Children between 3 months and 12 years)
Fever, chills	
Headache, muscle pain, joint pain	
Tiredness	Rest
Lymph node swelling at neck or arms	Usually gets better by itself in a week or so

See a doctor if: - the side effects persist or get worse
- the fever persists for more than 48 -72 hours (2 -3 days)

This vaccine may cause an allergic reaction in very rare instances. If you experience eyelid/lip swelling, hives or other rashes, consult a doctor for treatment and to decide if you should receive the second dose of vaccine.

If you experience a severe allergic reaction (difficulty breathing, swelling of your face, throat, eyes or lips, a fast heartbeat, dizziness and weakness, a bad rash all over your body) seek immediate medical attention by calling 995 or going to the nearest A&E.

ANNEX D: NCID DRUG INFORMATION LEAFLET FOR TECOVIRIMAT AND TRIFLURIDINE 1% EYE DROP

TECOVIRIMAT (TPOXX®) 200MG ORAL CAPSULES

1. Dosage form and strength available

Tecovirimat capsules are hard gelatin with an opaque orange body imprinted in white ink with "SIGA" followed by the SIGA logo followed by the "®", and an opaque black cap imprinted in white ink with "ST-246®", containing white to off-white powder.
Each capsule contains 200 mg of tecovirimat active ingredient.
Each bottle contains 42 capsules (NDC 50072-200-42) with an induction seal and child-resistant cap.
Excipients: Colloidal silicon dioxide, croscarmellose sodium, hydroxypropyl methyl cellulose, lactose monohydrate, magnesium stearate, microcrystalline cellulose, and sodium lauryl sulfate.



2. Background

Tecovirimat is a potent inhibitor of the orthopoxvirus VP37 envelope wrapping protein and blocks its interaction with cellular Rab9 GTPase and TIP47, preventing formation of egress-competent enveloped virions (necessary for cell-to-cell and long -range dissemination of virus).
Depending upon the poxvirus species, its inhibitory activity is from 600- to several thousand-fold greater than that of cidofovir and other drugs used for treatment of orthopoxviruses. In cell culture assays, the effective concentrations of tecovirimat resulting in a 50% reduction in virus-induced cytopathic effect (EC50), were 0.016–0.067μM, 0.014–0.039 μM, 0.015 μM, and 0.009 μM for variola, mpox, rabbitpox, and vaccinia viruses, respectively. There is no structural resemblance of tecovirimat to any other compound currently used in human therapeutics; therefore, no comparison or correlation can be made to human experience for any other known drug.

Tecovirimat is FDA-approved for the treatment for smallpox in 2018 and is currently available for mpox treatment through a CDC expanded access Investigational New Drug (EA-IND) request process. Tecovirimat is authorized in Europe and the United Kingdom for the treatment of smallpox, mpox, and other indications.
Tecovirimat has been shown to be effective against various orthopoxviruses in multiple animal challenge models. Efficacy studies were conducted in cynomolgus macaques infected with MPXV and New Zealand white (NZW) rabbits infected with rabbitpox virus, with survival as primary efficacy endpoint. The animals were lethally challenged with the respective orthopoxviruses and tecovirimat was administered orally daily for 14 days. Treatment with tecovirimat for 14 days resulted in statistically significant improvement in survival relative to placebo, except when given to cynomolgus macaques starting at Day 6 post-challenge (See **Table D-1**).

Tecovirimat was made available during the 2022 U.S. mpox outbreak under EA-IND. From May 29, 2022, through April 4, 2024, there were 7,571 patients who were prescribed or treated with tecovirimat under the EA-IND based on the returned IND Patient Intake forms. No efficacy outcomes were available for tecovirimat under the EA-IND. 148 adverse events were reported in 82 patients, however no serious adverse events have been observed. There were 44 deaths reports in patients who received tecovirimat, but none was attributed to tecovirimat administration.

Table D-1. Survival rates in tecovirimat studies in cynomolgus macaques and NZW rabbits exhibiting clinical signs of orthopoxvirus disease

	Treatment Initiation[a]	Survival Percentage (No. survived/n)		p-value[b]	Survival Rate Difference[c] (95% CI)[d]
		Placebo	Tecovirimat		
Cynomolgus Macaques					
Study 1	Day 4	0% (0/7)	80% (4/5)	0.0038	80% (20.8%, 99.5%)
Study 2	Day 4	0% (0/6)	100% (6/6)	0.0002	100% (47.1%, 100%)
Study 3	Day 4	0% (0/3)	83% (5/6)	0.0151	83% (7.5%, 99.6%)
	Day 5		83% (5/6)	0.0151	83% (7.5%, 99.6%)
	Day 6		50% (3/6)	0.1231	50% (-28.3%, 90.2%)
NZW Rabbits					
Study 4	Day 4	0% (0/10)	90% (9/10)	< 0.0001	90% (50.3%, 99.8%)
Study 5	Day 4	NA[e]	88% (7/8)	NA	NA

[a]Day post-challenge tecovirimat treatment was initiated
[b]p-value is from 1-sided Boschloo Test (with Berger-Boos modification of gamma = 0.000001) compared to placebo
[c]Survival percentage in tecovirimat treated animals minus survival percentage in placebo treated animals
[d]Exact 95% confidence interval based on the score statistic of difference in survival rates
[e]A placebo control group was not included in this study.
KEY: NA = Not Applicable

Preliminary analysis of PALM007 (Tecovirimat for Treatment of Monkeypox Virus) clinical trial (NCT05559099) reported that the study did not meet its primary endpoint of achieving statistically significant improvement in time to lesion resolution within 28 days post-randomization for patients in the Democratic Republic of the Congo (DRC) with mpox, who were administered tecovirimat versus placebo. However, clinical benefit was observed in patients receiving tecovirimat early (symptoms that began 7 days or shorter before randomisation) and those with severe disease (defined by WHO as having 100 or more skin lesions). In addition, tecovirimat exhibited similar safety profile comparable to placebo.

There are currently 4 ongoing randomised clinical trials (STOMP, UNITY, Platinum-CAN, EPOXI), evaluating the safety and effectiveness of tecovirimat in the treatment of patients with mpox infection.

3. Therapeutic indications

Tecovirimat may be used to children and adults with laboratory-confirmed or suspected mpox who meet the eligibility criteria as described below, following the CDC EA-IND protocol.

a) Patients with **severely immunocompromised condition(s) are known to be at high risk for protracted or life-threatening manifestations of mpox** regardless of disease severity at presentation. These conditions are defined as
   - HIV with CD4 < 200 cells/mm^3
   - Leukaemia or lymphoma
   - Generalized malignancy
   - Solid organ transplantation
   - Therapy with alkylating agents within 180 days prior to mpox illness onset
   - Antimetabolites within 180 days prior to mpox illness onset
   - Radiation therapy within 180 days prior to mpox illness onset

- Tumour necrosis factor inhibitors within 180 days prior to mpox illness onset
- High-dose corticosteroids (equivalent of 20 mg or greater of prednisone for at least 14 days) within 90 days prior to mpox illness onset
- Being a recipient with hematopoietic stem cell transplant < 24 months post-transplant or ≥ 24 months but with graft-versus-host disease or disease relapse, or having autoimmune disease with immunodeficiency as a clinical component
- Other comparable severe immunocompromising condition

b) Patients who might be at **high risk for protracted or life-threatening manifestations of mpox** based on prior experience from other orthopoxvirus infections in humans, categorised as below.
   - Persons with active skin conditions placing the person at higher risk for disseminated infection defined as: atopic dermatitis; active exfoliative skin condition(s) such as eczema, burns, impetigo, active varicella zoster virus infection, psoriasis, or Darier disease (keratosis follicularis)
   - Pregnant or lactating individuals, regardless of illness severity or underlying comorbidities at presentation
   - Children (< 18 years), regardless of illness severity or underlying comorbidities at presentation

c) Patients with **protracted or life-threatening manifestations of mpox at presentation** as defined by one of the following:
   - Lesions affecting ≥ 25% of body surface that may be confluent, necrotic, and/or haemorrhagic in appearance or cause sepsis.
   - Disease resulting in airway compromise or affecting the nervous system.
   - Cardiac (e.g., myocarditis) and/or neurologic disease (e.g., encephalitis) which might occur in a small number of patients with mpox.
   - Ocular or periorbital infection, regardless of the time since infection onset

As the full scope of protracted or life-threatening MPXV infections is unknown, tecovirimat may also be considered on a case-by-case basis for unusual situations wherein discussion with NCID / Paeds-Obs-Neonatal Workgroup and the treating clinician deem treatment to be potentially beneficial.

Given that tecovirimat is an HSA unregistered medication, written informed consent should be obtained from the patient/next-of-kin/legally appointed representative for administration of this medication, after the risk/benefits are discussed. On a voluntary basis, patients administered tecovirimat may also be offered participation in an ongoing observational national study, 'PROTECT'. (A Multi-centred Prospective Study to Detect Novel Pathogens and Characterize Emerging Infections. (The PROTECT study group) DSRB 2012/00917.

4. Other indications

Patients with complications from replication-competent vaccinia virus vaccination with ACAM2000 (e.g., serious inadvertent inoculation with vaccinia, eczema vaccinatum, severe generalized vaccinia, or progressive vaccinia), or secondary transmission from close contact with the vaccinee are eligible for treatment with tecovirimat. Tecovirimat may be used if a patient is ineligible for Vaccinia Immune Globulin Intravenous (VIGIV) treatment, after VIGIV treatment has been exhausted, or in conjunction with VIGIV and/or other therapies depending on the severity of the

disease or risk of severe disease based on the treating clinician's clinical judgment and with expert consultation.

5. Dosage

Standard duration of tecovirimat treatment is 14 days but should be individualised based on clinical response and tolerability. The recommended doses for children and adults are shown in **Table D-2**.

Table D-2. Recommended doses for children and adults

Weight (kg)	Recommended dose and frequency
<3	33.3mg every 12 hourly
3-5	50mg every 12 hourly
6-12	100mg every 12 hourly
13-24	200mg every 12 hourly
25-39	400mg every 12 hourly
40 to 119	600mg every 12 hourly
120	600mg every 8 hourly

The safety and efficacy data for treatment courses beyond 14 days are limited, however patients with severe immunocompromise may benefit from extended courses when new or progressively worsening lesions occur despite a 14-day tecovirimat course.

Extending the duration of tecovirimat courses beyond 14 days is permissible based on the treating physician's clinical judgement of the potential benefits and harms and if necessary, expert consultation should be obtained.

6. Administration

Tecovirimat should be taken with a full glass of water within 30 minutes after a full meal containing moderate or high fat (ideally about 600 calories or 25 g of fat), to improve bioavailability.

For patients on nasogastric tube (NGT) feeding, NGT administration may be utilised allowed, however compatibility studies on enteral administration of tecovirimat have not been conducted.

For administration of doses below 200mg and in patients who cannot swallow [a,b]. Please refer to the administration guide in **Appendix D-1**, which follows the CDC IND protocol.

[a] Opening tecovirimat capsules and mixing in water for children weighing < 13 kg, which differs from the FDA-approved tecovirimat package insert, is allowed under IND protocol.
[b] Use of water for oral dose preparation and administration is not in the FDA-approved labelling but is allowed under IND protocol.

7. Renal impairment

No dosage adjustment is required for patients with mild, moderate or severe renal impairment or patients with end stage renal disease (ESRD) requiring haemodialysis.

8. Hepatic impairment

No dosage adjustment is required for patients with mild, moderate or severe hepatic impairment (Child Pugh Class A, B, or C).

9. Contraindications

a) Patient or legally authorized representative is unwilling to sign an informed consent and/or refuses tecovirimat treatment.
b) Known allergy to tecovirimat and/or inactive ingredients in tecovirimat.

10. Special warnings and precautions

a) Paediatric population

Tecovirimat pharmacokinetics has not been evaluated in paediatric patients. The recommended paediatric dosing regimen is expected to produce tecovirimat exposures that are comparable to those in adult subjects based on a population pharmacokinetic modelling and simulation. The dosage for paediatric patients is based on weight. Considering the serious, and potentially deadly, risks associated with orthopoxvirus infections, the potential benefits of treatment with oral or intravenous tecovirimat may outweigh the unknown paediatric risks associated with tecovirimat.

b) Geriatric population

Clinical studies of tecovirimat did not include sufficient numbers of subjects aged 65 and over to determine whether the safety profile of tecovirimat is different in this population compared to younger subjects. Of the 359 subjects in the clinical study of tecovirimat, 10% (36/359) were ≥ 65 years of age, and 1% (4/359) were ≥ 75 years of age. No alteration of dosing is needed for patients ≥ 65 years of age.

11. Pregnancy and lactation

a) Pregnancy

Tecovirimat has not been studied in pregnant women. However, reproductive development studies have been performed in mice and rabbits and no embryo-foetal abnormalities were recorded. Pregnant mice were administered tecovirimat orally at doses up to 1,000 mg/kg/day from gestation Days 6-15 (approximately 23 times higher than human exposure at the recommended human dose). Considering the serious, and potentially deadly, risks associated with orthopoxvirus infections, the potential benefits of treatment with tecovirimat may outweigh the unknown pregnancy risks associated with tecovirimat.

b) Lactation

Tecovirimat has not been studied in nursing women. Considering the serious, and potentially deadly, risks associated with orthopoxvirus infections, the potential benefits of treatment with tecovirimat may outweigh the unknown risks associated with tecovirimat use during lactation. Because of the potential for virus transmission through direct contact with the breastfed infant, breastfeeding is not recommended while the nursing individual has active lesions. A lactating individual may consider interrupting breastfeeding and may consider pumping and discarding breast milk during treatment.

In lactating mice given oral tecovirimat doses up to 1,000 mg/kg/day, mean tecovirimat milk to plasma ratios up to approximately 0.8 were observed at 6- and 24-hours post-dose when administered orally on lactation Day 10 or 11.

12. Storage

Tecovirimat capsules should be stored at room temperature at 20−25°C (68−77°F). Excursions are permitted to 15−30°C (59−86°F).

13. Drug interactions
Tecovirimat is a weak inhibitor of CYP2C19 and CYP2C8, and a weak inducer of CYP3A4. Refer to **Table D-3** below for summary of clinically significant interactions.

Table D-3. Significant drug interactions

Drug name	Drug interaction effect	Clinical recommendation
Repaglinide	Increased concentrations of repaglinide, AUC and Cmax 29% and 27%	Monitor blood glucose and monitor for hypoglycaemic symptoms in patients when tecovirimat is co-administered with repaglinide
Midazolam	Decreased concentration of midazolam, AUC decreased by 32%	Monitor for effectiveness of midazolam

14. Interaction with antiretroviral therapy
Cabenuva
Initiation of long-acting cabotegravir/ rilpivirine should be avoided during tecovirimat therapy and for 2 weeks after conclusion of tecovirimat.

Tecovirimat is a substrate of UGT1A1, UGT1A4. There are no clinical or in-vitro study evaluating drug interaction effects for concomitant administration of tecovirimat with inhibitors and inducers of UGT1A1, HGT1A4.

List of interacting drugs above is not exhaustive. Physicians should consult the full prescribing information, a drug interaction database or a pharmacist.

15. Interaction with vaccines
No vaccine-drug interaction studies have been performed in human subjects. Studies in mice and non-human primates have indicated that tecovirimat co-administered with live smallpox vaccine (vaccinia virus) may reduce the immune response to the vaccine. The clinical impact of this interaction on vaccine efficacy is unknown.

16. Adverse reactions
Based on a safety study of oral tecovirimat in 359 healthy adult subjects ages 18–79 years in a phase 3 clinical trial, the most frequently reported adverse reactions were headache and nausea. Adverse reactions that occurred in at least 2% of subjects in the tecovirimat treatment group are shown in **Table D-4**.

Table D-4. Adverse reactions reported in ≥ 2% of healthy adult subjects receiving at least one dose of tecovirimat 600mg

Adverse reactions	Tecovirimat 600mg, n = 359 (%)	Placebo, n = 90 (%)
Headache	12	8
Nausea	5	4
Abdominal pain	2	1
Vomiting	2	0

a) Adverse Reactions Leading to Discontinuation of Tecovirimat
Six subjects (2%) had their treatment with tecovirimat discontinued due to adverse reactions. Each of these subject's adverse reactions (with severity) is listed below:

- EEG change, abnormal
- Mild upset stomach, dry mouth, decreased concentration and dysphoria
- Mild nausea and fever, moderate diarrhoea, severe headache
- Mild palpable purpura
- Mild nausea, fever and chills
- Mild facial redness, facial swelling, and pruritus

b) Less Common Adverse Reactions

Clinically significant adverse reactions that were reported in < 2% of subjects exposed to tecovirimat and at rates higher than subjects who received placebo are listed below:

- Gastrointestinal: dry mouth, chapped lips, dyspepsia, eructation, oral paraesthesia
- General and administration site: pyrexia, pain, chills, malaise, thirst
- Investigations: abnormal electroencephalogram, haematocrit decreased, haemoglobin decreased, heart rate increased
- Musculoskeletal and connective tissue: arthralgia, osteoarthritis
- Nervous system: migraine, disturbance in attention, dysgeusia, paraesthesia
- Psychiatric: depression, dysphoria, irritability, panic attack
- Respiratory, Thoracic and Mediastinal Disorders: oropharyngeal pain
- Skin and subcutaneous tissue: palpable purpura, rash, pruritic rash, facial redness, facial swelling, pruritus

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Healthcare professionals are required to report any suspected serious adverse reactions observed with the use of trifluridine eye drop to the Health Sciences Authority (HSA) Vigilance and Compliance Branch at:

- Tel: 6866 1111
- Fax: 6478 9069
- Report online at https://www.hsa.gov.sg/adverse-events

17. References

a) SIGA Technologies Inc. TPOXX Prescribing Information. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/208627s007lbl.pdf.

b) Lexicomp. Tecovirimat (United States: Availability limited to health department/CDC expanded access protocol): Drug information. UpToDate. Last access 21/8/2024

c) Expanded Access IND Protocol: Use of Tecovirimat (TPOXX®) for Treatment of Human Non-Variola Orthopoxvirus Infections in Adults and Children. IND 116,039, CDC IRB #6402 Version 6.4 Revised June 5, 2024

d) SIGA News Release dates 15/8/2024. Topline Results from PALM 007 Study of SIGA's Tecovirimat in Treatment of Mpox Released. Available at SIGA Technologies, Inc. - Topline Results from PALM 007 Study of SIGA's Tecovirimat in Treatment of Mpox Released. Last accessed 21/8/2024

e) Centres for Disease Control and Prevention. Tecovirimat (TPOXX) for Treatment of Mpox. Last accessed 21/8/2024

Appendix D-1: Instructions for opening and mixing tecovirimat capsules with water or food for those who cannot swallow pills, especially for infants and children (from IND 116,039 Tecovirimat (CDC IRB #6402) Attachment 3: Opening and Mixing Tecovirimat Capsules with Food. Version 6.3 dated May 5, 2023)

1. Introduction

If your doctor prescribes tecovirimat for your child and your child cannot swallow capsules, the capsules may be opened to mix the contents with water or food to give a drug-water or drug-food mixture. This sheet explains how to open the capsules and mix with water, milk, chocolate milk or food for infants and children.

Each capsule of tecovirimat gives 200 mg of drug. Your child's dose is based on their weight. See the table below to locate the dose for your child and follow the corresponding instructions. Children who weigh 40 kg or more will receive the adult daily dose. Adults who are unable to swallow capsules may also use these instructions to open capsules and mix with food.

2. Materials required

- 1, 2, or 3 tecovirimat capsules depending on weight (1 capsule = 200 mg of drug)
- 1 oral syringe that measures in millilitres (mL) or a tablespoon
- 1 dosing cup of suitable size or a small bowl
- One of these foods/liquids: water, milk, chocolate milk, baby food, apple sauce, yogurt, pudding, or chocolate syrup

3. Directions for making the drug-water or drug-food mixture:

Step 1

Find your child's weight in Column A using the **Table D-5** on the next page. Use the information from the Row with your child's weight for the rest of the directions.

Step 2

Column B is information on the dose of drug you will be giving to your child. In order to prepare this dose, use Column C to find the number of capsules you will need to prepare the dose and remove the correct number of capsules from the tecovirimat pill bottle.

Step 3

Hold the tecovirimat capsule with your fingers over a dosing cup of suitable size or bowl. Carefully pull the capsule open and pour out the contents (white powder) completely into the dosing cup/bowl. Look inside the capsule to make sure no powder is left inside the capsule. Repeat for additional capsules, if applicable.

Step 4

- **If making a dose for a child that weighs less than 13 kg:**

Add 20 mL of water into the dosing cup containing the drug powder. Thoroughly mix by swirling the cup for at least 30 seconds until there are no clumps. Do not use a spoon or any other utensil to mix. This makes the water and drug mixture.

- **If making a dose for a child that weighs 13 kg or more:**

Add 2 tablespoons (30 mL) of liquid (e.g. milk, chocolate milk) or soft food (e.g. apple sauce, yogurt) into the dosing cup/bowl containing the drug powder. Thoroughly mix the powder with food or liquid very well with a spoon. Ensure the prepared mixture is uniform. This makes the drug-food (or drug-liquid) mixture.

Step 5

Give the amount as directed in Column E within 30 minutes of preparation. If you have any questions, check with your healthcare provider for how much and how often to give tecovirimat to your child.

4. Important notes:

- Use the final drug-water or drug-food mixture within 30 minutes of preparation.
- Discard leftover final drug-water or drug-food mixture and preparation materials.
- You will need to make a new final drug-water or drug-food mixture for each dose.

Table D-5. Instructions for tecovirimat drug-water or drug-food mixture preparation

A Weight in pounds (weight in kg)	B Dose	C Number of tecovirimat capsules needed to prepare the dose [b]	D Amount of water[c] or food/liquid to add	E How to prepare the drug-water or drug-food mixture and the amount to give or take Note: For a child weighing less than 28 pounds (13 kg), dosing should be followed by a feeding.
Under 7 pounds[a] (3 kg)	33.3 mg every 12 hours	1 	20 mL water	Carefully open 1 capsule and empty the entire contents into a dosing cup of suitable size. Add 20mL of water to the dosing cup and **thoroughly mix by swirling the cup for at least 30 seconds until there are no clumps. Do not use a spoon or any other utensil to mix**. Immediately after mixing, use an oral syringe to draw up and **administer 3.3 mL of the water and drug mixture**. Discard the remaining mixture. Give this amount 2 times each day, making a new mixture for each dose.
7 pounds to under 13 pounds[a] (3 kg to < 6 kg)	50 mg every 12 hours	1 	20 mL water	Carefully open 1 capsule and empty the entire contents into a dosing cup of suitable size. Add 20mL of water to the dosing cup and **thoroughly mix by swirling the cup for at least 30 seconds until there are no clumps. Do not use a spoon or any other utensil to mix**. Immediately after mixing, use an oral syringe to draw up and **administer 5 mL of the water and drug mixture**. Discard the remaining mixture. Give this amount 2 times each day, making a new mixture for each dose.
13 pounds to under 28 pounds[a] (6 kg to < 13 kg)	100 mg every 12 hours	1 	20 mL water	Carefully open 1 capsule and empty the entire contents into a dosing cup of suitable size. Add 20mL of water to the dosing cup and **thoroughly mix by swirling the cup for at least 30 seconds until there are no clumps. Do not use a spoon or any other utensil to mix**. Immediately after mixing, use an oral syringe to draw up and **administer 10 mL of the water and drug mixture**, either directly or mixed in a small amount of soft food (e.g., apple sauce, yogurt). Discard the remaining mixture. Give this amount 2 times each day, making a new mixture for each dose.
28 pounds to under 55 pounds (13kg to < 25 kg)	200 mg (1 capsule) every 12 hours	1 	2 tablespoons (30 mL) of food or liquid	Carefully open 1 capsule and mix the capsule contents with 30 mL of liquid (e.g., milk, chocolate milk, water) or soft food (e.g., apple sauce, yogurt). Administer the entire mixture within 30 minutes of preparation. Give this amount 2 times each day after a full meal containing moderate to high fat.
55 pounds to under 88 pounds (25 kg to < 40 kg)	400 mg (2 capsules) every 12 hours	2 	2 tablespoons (30 mL) of food or liquid	Carefully open 2 capsules and mix the capsule contents with 30 mL of liquid (e.g., milk, chocolate milk, water) or soft food (e.g., apple sauce, yogurt). Administer the entire mixture within 30 minutes of preparation. Give this amount 2 times each day after a full meal containing moderate to high fat.
88 pounds to under 264 pounds (40 kg to < 120 kg)	600 mg (3 capsules) every 12 hours	3 	2 tablespoons (30 mL) of food or liquid	Carefully open 3 capsules and mix the capsule contents with 30 mL of liquid (e.g., milk, chocolate milk, water) or soft food (e.g., apple sauce, yogurt). Administer the entire mixture within 30 minutes of preparation. Give this amount 2 times each day after a full meal containing moderate to high fat.
264 pounds and above (> 120 kg)	600 mg (3 capsules) every 8 hours	3 	2 tablespoons (30 mL) of food or liquid	Carefully open 3 capsules and mix the capsule contents with 30 mL of liquid (e.g., milk, chocolate milk, water) or soft food (e.g., apple sauce, yogurt). Administer the entire mixture within 30 minutes of preparation. Give this amount 2 times each day after a full meal containing moderate to high fat.

[a] Do not administer dose without first mixing with water/soft food as outlined above.
[b] Opening tecovirimat capsules and mixing in water for children weighing < 13 kg, which differs from the FDA-approved tecovirimat package insert, is allowed under this IND protocol.
[c] Use of water for oral dose preparation and administration is not in the FDA-approved labeling but is allowed under this IND protocol.

TRIFLURIDINE 1% EYE DROP (VIROPHTA)

1. Dosage form and strength available

The eye drop comes with one vial of lyophilizate and one vial of 5 ml solvent.

- Lyophilizate: 0.05 g of trifluridine
- Solvent: Benzalkonium chloride, E.D.T.A. disodium, sodium chloride, hydroxyethylcellulose, hydrochloric acid, purified water

2. Background

Trifluridine is an antiviral agent that is used topically as an eye drop for herpes simplex infection of the eye. It effectively interferes with viral replication by inhibiting thymidylate synthetase and incorporating into viral DNA in place of thymidine.

Its use in mpox ocular infection is off-label and largely related to the limited animal studies as well as data from the global outbreak in 2022 that demonstrated that trifluridine significantly reduced clinical disease and viral culture positivity (Rao AK, MMWR Morb Mortal Wkly Rep. 2023 Mar 3;72(9):232-243).

3. Therapeutic indications

Trifluridine eye drop is an antiviral use for the treatment or prophylaxis of mpox ocular infection.

4. Dosage

Instil one drop into the affected eye(s) every 2 hours while awake for the first 2 weeks, then 4 times daily for an additional 1 weeks.

Maximum: 9 drops/eye per day

Do not use beyond 3 weeks unless otherwise directed by an ophthalmologist (maximum: 4 weeks).

Use beyond 4 weeks has been associated risk of permanent limbal stem cell damage which can affect vision.

Note: Patients should be managed under the care of an ophthalmologist.

5. Reconstitution and administration of the lyophilizate and solvent

Wash hands before reconstitution



6. Administration of the eye drop

a) Wash hand before instilling the eye drop.
b) Avoid contact of the dropper or tip with the eye or eyelids.
c) Instill one drop into the lower conjunctival sac of the affected eye, looking upwards and lightly pulling the lower eyelid downwards, then with the eye closed, cleanly wipe off any excess drop.
d) Close the bottle immediately after each use and keep it in its original bottle.

7. Missed dose

In the event of missed dose at the scheduled time, instill the missed drop as soon as possible. However, if it is almost time for the next drop, instill the eye drop at the usual time.

8. Renal impairment

No dosage adjustment is provided in the manufacturer's labelling.

9. Hepatic impairment

No dosage adjustment is provided in the manufacturer's labelling.

10. Contraindications

Hypersensitivity to trifluridine or any of the constituents of the product.

11. Special warnings and precautions

a) Any prolonged use beyond 21 days would warrant appropriate ophthalmological monitoring, particularly in the elderly. Current interim CDC guidance cautions against using beyond 4 weeks due to the risk of **permanent limbal stem cell deficiency** with prolonged use (Rao AK, MMWR Morb Mortal Wkly Rep. 2023 Mar 3;72(9):232-243).
b) In case of concomitant treatment with another eye drop, wait at least 15 minutes between each drop.
c) Irritation: mild local irritation of conjunctival and cornea may occur when instilled. This is usually transient.
d) Blurring of vision: avoid driving of car and operate machinery if affected.

12. Pregnancy and lactation

a) <u>Pregnancy</u>

Trifluridine eye drop should be used with caution during pregnancy. The minimum effective dose should be used in combination with punctal occlusion to decrease potential absorption. Adverse effects have not been observed during animal reproduction studies. Systemic absorption following eye drop application is limited.

b) Lactation

Trifluridine eye drop should be used with caution during breastfeeding. The amount of trifluridine available systematically is negligible after application of the eye drop,

13. Storage

The eye drop should not be stored for more than 15 days after reconstitution of the solution. Store the eye drop below 25^0C.

14. Drug interactions

There are no known significant drug interactions.

15. Adverse reactions

a) 1% to 10%

- Ophthalmic: Burning sensation of eyes (≤ 5%), stinging of eyes (≤ 5%), eyelid oedema (3%)

b) Frequency not defined:

- Hypersensitivity: local ocular hypersensitivity reaction
- Ophthalmic: dry eye syndrome, epithelial keratopathy, eye irritation, hyperaemia, increased intraocular pressure, ocular stromal oedema and superficial punctate keratitis.

Healthcare professionals are required to report any suspected serious adverse reactions observed with the use of trifluridine eye drop to the Health Sciences Authority (HSA) Vigilance and Compliance Branch at:

- Tel: 6866 1111
- Fax: 6478 9069
- Report online at https://www.hsa.gov.sg/adverse-events

16. References

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b) Interim clinical treatment considerations for severe manifestations of mpox-United States, February 2023. MMWR weekly/March 3, 2023/72(9); 232-243
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ANNEX E: NCID PATIENT INFORMATION LEAFLET FOR TECOVIRIMAT AND TRIFLURIDINE 1% EYE DROP

PATIENT INFORMATION LEAFLET FOR TECOVIRIMAT

1. What is tecovirimat and what are its benefits?

Tecovirimat is an antiviral medication which may be used in treatment of mpox infection in children and adults.

Tecovirimat has been shown to improve symptoms of mpox infection in patients with severe disease or who have received tecovirimat within 7 days of symptoms onset. However, the use of tecovirimat in mpox treatment is currently investigational, kindly refer to your healthcare provider for more information.

2. How will I receive tecovirimat?

Before you are prescribed with tecovirimat, please inform your doctor if you:

- Have any allergies.
- Are on any medications (including herbal and over the counter medications).
- Have any liver or kidney disease.
- Are pregnant or plan to become pregnant.
- Are breastfeeding.
- Have any serious illnesses.

So that your doctor can decide if tecovirimat is suitable for you.

Tecovirimat is available in 200mg capsules. The usual dosage of tecovirimat in adult patients (weighing 40kg to 119kg) is 600mg (3 x 200mg capsules) twice daily.

Adults weighing >120kg will require a higher dosage of 600mg (3 x 200mg capsules) three times daily. Refer to **Table E-1** for recommended dosage.

Table E-1. Recommended doses for children and adults

Weight (kg)	Recommended dose and frequency
<3	33.3mg twice daily*
3 – 5	50mg twice daily*
6 – 12	100mg twice daily*
13 – 24	200mg (1 capsule) twice daily
25 – 39	400mg (2 capsules) twice daily
40 – 119	600mg (3 capsules) twice daily
>120	600mg (3 capsules) three times daily

*Instructions for <200mg dose preparation will be provided separately

Tecovirimat should be taken with a full glass of water within 30 minutes after a full meal containing moderate or high fat (ideally about 600 calories or 25 g of fat) to improve absorption.
It is important to complete the full 14-day course of treatment and do not miss or skip a dose of tecovirimat, unless otherwise instructed by your doctor. If you are unable to swallow the capsules whole, refer to your healthcare provider for more information.

3. What are the important possible side effects of tecovirimat?

- Allergic reactions, e.g. rash, itching, swelling of mouth/lips, face
- Headache
- Nausea, vomiting
- Abdominal pain

Contact your doctor if you have any side effects which bother you or do not go away.

There is not enough data on the safety of tecovirimat during pregnancy and its side effects on pregnant women or their unborn child or during breastfeeding. The use of tecovirimat during pregnancy or lactation can be considered when indicated, after discussion with your healthcare provider.

These may not be all the possible side effects of tecovirimat. It is possible that all of the risks are not known at this time. Serious and unexpected side effects may occur.

4. Are there any medicines that cannot be taken with tecovirimat?

Concomitant use of tecovirimat and certain drugs may result in potentially significant and even life-threatening drug interactions.

It is important to check with your healthcare provider on any potential drug interactions. tecovirimat may interact with some drugs, such as medications used to treat diabetes or antivirals used to treat HIV infection, hence it may not be used with some of these drugs.

You need to report to your doctor the use of any prescription, non-prescription medication, or herbal products.

5. Are there any alternatives to tecovirimat?

If your doctor is considering treatment for you, it is likely that you have severe mpox infection or are at higher risk of severe mpox infection.

There are other treatment options available for mpox infection such as antivirals (e.g., cidofovir, brincidofovir) and antibodies (e.g., vaccinia immune globulin). These treatments may have their own side-effects and may not be suitable for everyone.

Your doctor will discuss these alternatives with you so that you can make an informed decision.

6. What else should I take note of?

Do not start taking a new medicine without telling your doctor, while you are on tecovirimat. Your doctor can advise you if it is safe to take tecovirimat with other medicines.

PATIENT INFORMATION LEAFLET FOR TRIFLURIDINE 1% EYE DROP

1. What is trifluridine 1% eye drop and what are its benefits?

Trifluridine is an antiviral agent that is used topically as an eye drop for the treatment of mpox ocular infection.

Even though its use in mpox ocular infection is off-label, limited animal studies as well as data from the global outbreak in 2022 had demonstrated that trifluridine eye drop significantly reduced clinical disease and viral culture positivity.

2. How will I receive trifluridine 1% eye drop?

Before you are prescribed with trifluridine 1% Eye Drop, please inform your doctor if you:

- Have any allergies.
- Are on any medications (including herbal and over the counter medications).
- Have any liver or kidney disease.
- Are pregnant or plan to become pregnant.
- Are breastfeeding.
- Have any serious illnesses.

So that your doctor can decide if trifluridine 1% Eye Drop is suitable for you.

Instill one drop into the affected eye(s) every 2 hours while awake for the first 2 weeks, then 4 times daily for an additional 1 weeks.

Maximum: 9 drops per eye per day.

Do not use beyond 3 weeks unless otherwise directed by your doctor. If you need to use another eye drop with trifluridine eye drop, wait at least 15 minutes between each drop.

The bottle of reconstituted eye drop should be discarded after 15 days.

3. How do I reconstitute the lyophilizate and solvent:

Wash hands before reconstitution



In the event of missed dose at the scheduled time, instill the missed drop as soon as possible. However, if it is almost time for the next drop, instill the eye drop at the usual time. Do not double the dose to make up for a missed dose.

4. What are the important possible side effects of trifluridine?

- Burning sensation of eyes
- Stinging of eyes

- Swelling of eyelid
- Local hypersensitivity reaction
- Dry eyes
- Blurring of vision: avoid driving of car and operate machinery if affected.
- Use beyond 4 weeks has been associated risk of permanent limbal stem cell damage which can affect vision (a type of cell found in the eye near the cornea, the clear layer on the front of the eye).

Contact your doctor if you have any side effects which bother you or do not go away.

Trifluridine eye drop should be used with caution during pregnancy and breastfeeding.

These may not be all the possible side effects of trifluridine eye drop. It is possible that all the risks are not known currently. Serious and unexpected side effects may occur.

5. Are there any medicines that cannot be taken with trifluridine 1% eye drop?
There are no known significant drug interactions.

You need to report to your doctor the use of any prescription, non-prescription medication, or herbal products.

6. Are there any alternatives to trifluridine 1% eye drop?

If your doctor is considering treatment for you, it is likely that you need it and could be at higher risk of developing complication from the eye infection.

There could be other treatment available for mpox eye infection. These treatments may have their own side-effects and may not be suitable for everyone.

Your doctor will discuss these alternatives with you so that you can make an informed decision.

7. What else should I take note of?
Do not start taking a new medicine without telling your doctor, while you are on trifluridine 1% eye drop. Your doctor can advise you if it is safe to take trifluridine eye drop with other medications.

ANNEX F: PATIENT INFORMATION SHEET – PUBLIC HEALTH ADVICE FOR PATIENTS WITH MPOX

1. Personal Hygiene

Most people with mpox have a mild disease and can recover at home. You remain infectious until all lesions have healed, all scabs have fallen off, and a fresh layer of intact skin has formed. Your doctor will advise you on the appropriate duration of medical leave and follow-up based on your clinical condition.

While you are recovering at home:

- Avoid physical, sexual, or intimate contact with others in particular people who may be at higher risk of severe illness, including young children, pregnant persons, and immunocompromised individuals;
- Wear a face mask if interaction with others cannot be avoided;
- Wash your hands regularly, particularly before and after touching lesions or contaminated surfaces;
- Keep lesions covered and avoid touching or scratching lesions to prevent autoinoculation, and avoid shaving areas with lesions;
- Avoid touching your eyes or wearing contact lenses to prevent ocular inoculation which can lead to inflammation and in serious cases, even cause blindness if the inflammation is severe;
- Do not share clothing, towels, bedding, or other personal items; and
- Clean and disinfect commonly touched or shared surfaces after use.

2. Health Monitoring

Seek medical attention promptly if your condition worsens. Call **995** for an ambulance if you develop serious symptoms such as:

- Difficulty breathing;
- Severe or persistent chest pain;
- Severe headache with neck stiffness;
- Confusion or other significant changes in mental state;
- New weakness, difficulty speaking, or changes in vision;
- Seizures or abnormal movements; or
- Any other rapidly worsening or severe symptoms.

3. Self-Isolation

Self-isolate in a dedicated room and have access to a dedicated bathroom for your sole use:

- Keep your room well-ventilated and avoid using air-conditioners to prevent filter contamination;
- Toilet and shower areas should be cleaned regularly, and toilet lids should be closed before flushing;
- If you are living in a multi-occupant household, you must not share dishes and other eating utensils with household members. Soiled dishes and eating utensils should be washed in a dishwasher or by hand with warm water and soap;
- Make the necessary arrangements to have your meals delivered to you in a contactless manner;

- Minimise contact with pets. Delegate pet care to household members and keep pets away from personal items and bedding. Veterinary attention should be promptly sought for animals that are unwell;
- Apply the recommendations under 'Personal Hygiene' section when interaction with others is unavoidable, e.g., attending medical appointments.

4. Cleaning and Disinfection

Regularly clean and disinfect your surfaces:

- Surfaces can be wiped down with bleach-based detergent-soaked cloth;
- If vacuuming is required, a HEPA-filtered vacuum is recommended to avoid spread of mpox in the air via vacuum exhaust;
- Double-bag trash securely and wipe the exterior of the trash bag with disinfectant wipes before disposal; and
- Laundry should be done in small loads to facilitate easier handling. When handling contaminated bedding and linen for laundry, refrain from shaking the items as they may disperse infectious particles. Wash at high temperature as permitted by the washing machine.

Refer to NEA's Guidelines for Cleaning and Disinfecting Residences for detailed instructions on environmental cleaning, handling of linen, laundry and waste[9].

5. Post-Recovery

After your lesions have healed, all scabs have fallen off and a fresh layer of intact skin has formed, you may resume regular activities and interactions.

You are strongly advised to apply the recommendations under 'Cleaning and Disinfection' section to reduce the risk of transmission to other people in your household. You are also encouraged to maintain vigilance and take the following precautions where relevant:

- Observe and practise good personal hygiene at all times;
- Wash your hands regularly with soap;
- Avoid contact with persons who are unwell, e.g., those with rash/lesions;
- Avoid sharing common items that may be contaminated with bodily fluids;
- Practice safe sex, including avoiding high-risk sexual activities such as having multiple sex partners or engaging in casual sex; and
- When travelling, avoid feeding or touching animals, especially stray or wild animals, and the consumption of bush meat.

[9] Guidelines accessible via this link: https://www.nea.gov.sg/our-services/public-cleanliness/environmental-cleaning-guidelines/guidelines/general-guidelines-for-cleaning-and-disinfecting-residences

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