MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

CLINICAL MANAGEMENT OF MONKEYPOX

July 6, 2022

BACKGROUND

Monkeypox (MPX) is a viral zoonotic disease that belongs to the *Orthopoxvirus* genus of the *Poxviridae* family. Human disease was first identified in 1970 in a 9-month-old boy in the Democratic Republic of the Congo and since then most cases have been reported across Central and West Africa.

There are two known clades (subtypes) of MPX, one in West Africa (WA) and one in the Congo Basin (CB) region (5). Historically, the CB subtype appears to be more virulent, with a case fatality ratio (CFR) ranging from 1% to 10%, whilst the WA subtype is associated with an overall lower mortality rate of < 3%. Recent data for the latter report a CFR of 1.4%. It is important to note that mortality in different settings may differ substantially.

CASE DEFINITIONS

Refer to the Ministry of Health and Wellness (MOHW) Surveillance protocol for Monkeypox.

SYMPTOMS AND SIGNS OF MONKEYPOX

MPX can cause a range of clinical signs and symptoms. ***Initial phase*** of clinical illness typically **last 1 to 5 days** where patients will present with:

- Fever
- Headache

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

- Back pain
- Muscle aches
- Lack of energy
- Lymphadenopathy – which is a distinctive feature of this disease

This is followed by a ***second phase***, which typically occurs **1 to 3 days after fever** subsides with the appearance of a **rash.**

The **rash** presents in sequential stages: macules→ papules→ vesicles→ pustules→ umbilication before crusting over and desquamating over a period of 2 to 3 weeks.

MINISTRY OF HEALTH & WELLNESS
☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm
Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

Figure 1: Progression of the rash in MPX

The lesions range in size **from 0.5 to 1 cm** in diameter and from a **few to several thousand** in number. The eruption tends to be centrifugal, starting on the face and extending towards the palms and soles of the hands and feet, and can involve the oral mucous membranes, conjunctiva, cornea and/or genitalia. Observations from current outbreaks in European and North American countries describe lesions starting in the genital area, but more information is needed.

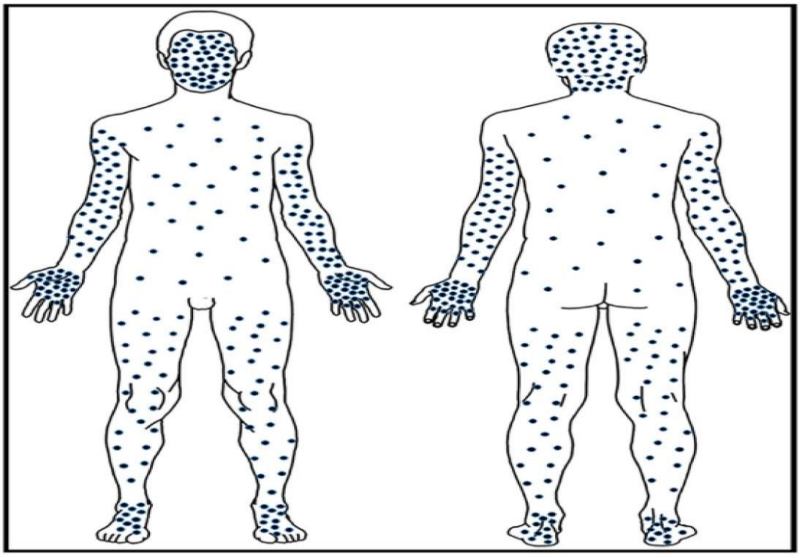


Figure 2: Distribution of Rash in Monkeypox

Patients may develop **lymphadenopathy** – which was described in 98.6% of a cohort of over 200 patients with MPX in the Democratic Republic of the Congo.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

Oral ulcers are common and may affect a patient's ability to eat and drink leading to dehydration and malnutrition. Inflammation of the pharyngeal, conjunctival and genital mucosae may also occur.

A recent large prospective observational study describing the natural history of 216 patients with MPX in the Democratic Republic of the Congo described the most common clinical symptoms to be **rash (96.8%), malaise (85.2%) and sore throat (78.2%).**

The most common findings on physical examination were the classic MPX **rash (99.5%); lymphadenopathy (98.6% – the cervical region was most frequently affected [85.6%], followed by the inguinal region [77.3%]); and mouth/throat lesions (28.7%)**.

COMPLICATIONS OF MONKEYPOX

Though uncommon, patients with MPX may develop severe and life-threatening complications. The confluence of skin lesions are susceptible to bacterial skin and soft tissue infections such as *cellulitis, abscesses, necrotizing soft tissue infections* requiring meticulous local wound care; subcutaneous accumulation of fluid in the crusting phase leading to intravascular depletion and shock; and exfoliation resulting in areas of skin that may require surgical debridement and grafting.

Other rarer complications include *severe pneumonia and respiratory distress, corneal infection which may lead to vision loss, loss of appetite, vomiting and diarrhoea* which may lead to severe dehydration, electrolyte abnormalities and shock, cervical lymphadenopathy which may lead to

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

retropharyngeal abscess or respiratory compromise, sepsis, septic shock, and, encephalitis and death.

DIFFERENTIAL DIAGNOSIS OF MONKEYPOX

The rash which develops in MPX may resemble other infectious diseases or other conditions, including:

- Varicella zoster virus (VZV, chickenpox)
- Herpes simplex virus (HSV)
- Primary or Secondary syphilis
- Disseminated gonococcal infection (DGI),
- Hand, foot and mouth disease
- Chancroid,
- Lymphogranuloma venereum (LGV),
- Granuloma inguinale
- Molluscum contagiosum,
- Measles,
- Scabies,
- Rickettsia pox,
- Chikungunya,
- Zika virus,
- Dengue fever,
- Vasculitis and other bacterial skin and soft tissue infections

TRANSMISSION

Human-to-human transmission can occur through **direct contact** with infectious skin or mucocutaneous lesions, this includes face-to-face, skin-to-skin, mouth-to-mouth or mouth-to-skin contact and respiratory droplets (and possibly short-range aerosols requiring prolonged close contact).

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

The virus then enters the body through broken skin, mucosal surfaces (e.g. oral, pharyngeal, ocular and genital), or via the respiratory tract.

The infectious period can vary, but generally patients are considered infectious until skin lesions have crusted, the scabs have fallen off and a fresh layer of skin has formed underneath.

Transmission can also occur from the environment to humans from contaminated clothing or linens that have infectious skin particles (also described as fomite transmission). If shaken, these particles can disperse into the air and be inhaled, land on broken skin or mucosal membranes and lead to transmission and infection.

Transmission in pregnancy

In utero transmission of MPX has been documented as well as transmission from mother to child via direct contact.

MPX virus infection may lead to adverse outcomes for the fetus, such as death or spontaneous abortion.

APPROACH TO THE PATIENT

Caring for patients with suspected or confirmed MPX requires early recognition of suspects, rapid implementation of appropriate IPC measures, testing of likely pathogens to confirm diagnosis, symptomatic management of patients with mild or uncomplicated MPX and monitoring for and treatment of complications and life-threatening conditions such as severe dehydration, severe pneumonia and sepsis.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

All patients presenting to the healthcare facility must enter the **Monkeypox disease care pathway** and be screened based on a standardized case definition, including assessment of symptoms, and meets criteria for a suspect case.

All persons with suspected, probable or confirmed infection with **MPX must be immediately isolated** to contain virus transmission. Standard precautions and Disease based transmission precautions (Contact/Droplet and Aerosol) must be in place.

Until proven negative, all suspected cases should remain in the isolation care pathway.

Screening all persons should be carried out at the **first point of contact** with the health system in order to identify individuals that have suspected or confirmed Monkeypox.

Medical masks and alcohol-based hand sanitizer should be available for patients presenting at screening areas. Signs should be posted for both respiratory hygiene and hand hygiene and instructions to put on a well-fitting medical mask if any respiratory symptoms. Screening activities should be conducted maintaining a distance of at least 1 m from patients and using a “no touch” approach.

Persons with symptoms that meet the case definition for suspected MPX should enter the MPX clinical care pathway and immediately be given a **well-fitting medical mask** if possible and isolated in a well-ventilated single room.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

If a well-ventilated single room is not available, then group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation (at least 1 m between patients).

Suspected cases should not be cohorted together with confirmed cases.

MANAGEMENT OF MONKEYPOX PATIENT

The management of MPX is based on supportive therapy. However some patient groups, clinical symptoms and signs that may have a higher risk of severe disease and should be monitored closely.

Table 1: Risk factors and clinical findings described as being associated with severe disease and poor outcomes

Patient groups at higher risk of severe disease or complications	• Children, pregnant women, persons who are immunosuppressed such as persons living with HIV having poorly controlled disease. • Though data are lacking, patients with chronic skin conditions (e.g. atopic dermatitis), acute skin conditions (i.e. burns) may also be at higher risk for complications, such as bacterial infection.
Clinical signs and symptoms of complications	• Nausea and vomiting, painful cervical lymphadenopathy causing dysphagia, poor oral intake, eye pain, vision abnormalities, hepatomegaly, sepsis, dehydration, respiratory distress/pneumonia, and/or confusion.
Laboratory abnormalities	• Elevated hepatic transaminases (AST and/or ALT), low blood urea nitrogen (BUN), low albumin, elevated white blood count (WBC), or low platelet count.
Skin lesion severity score	• From smallpox experience: - Mild (< 25 skin lesions) - Moderate (25–99 skin lesions) - Severe (100–250 skin lesions) - Very severe (> 250 skin lesions).

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

LOCATION FOR MANAGEMENT

WHO recommends that patients with suspected or confirmed MPX with mild, uncomplicated disease and not at high risk for complications can be isolated at home, for the duration of the infectious period, as long as a home assessment determines IPC conditions are fulfilled at home setting.

Decision to isolate and monitor a patient at home should be made on a case-by-case basis and be based on their clinical severity, presence of complications, care needs, risk factors for severe disease and access to referral for hospitalization if condition deteriorates. Patients isolating at home should be ambulatory, have good food and water intake, be able to feed, bathe and dress themselves, and require minimal to no assistance from a caregiver

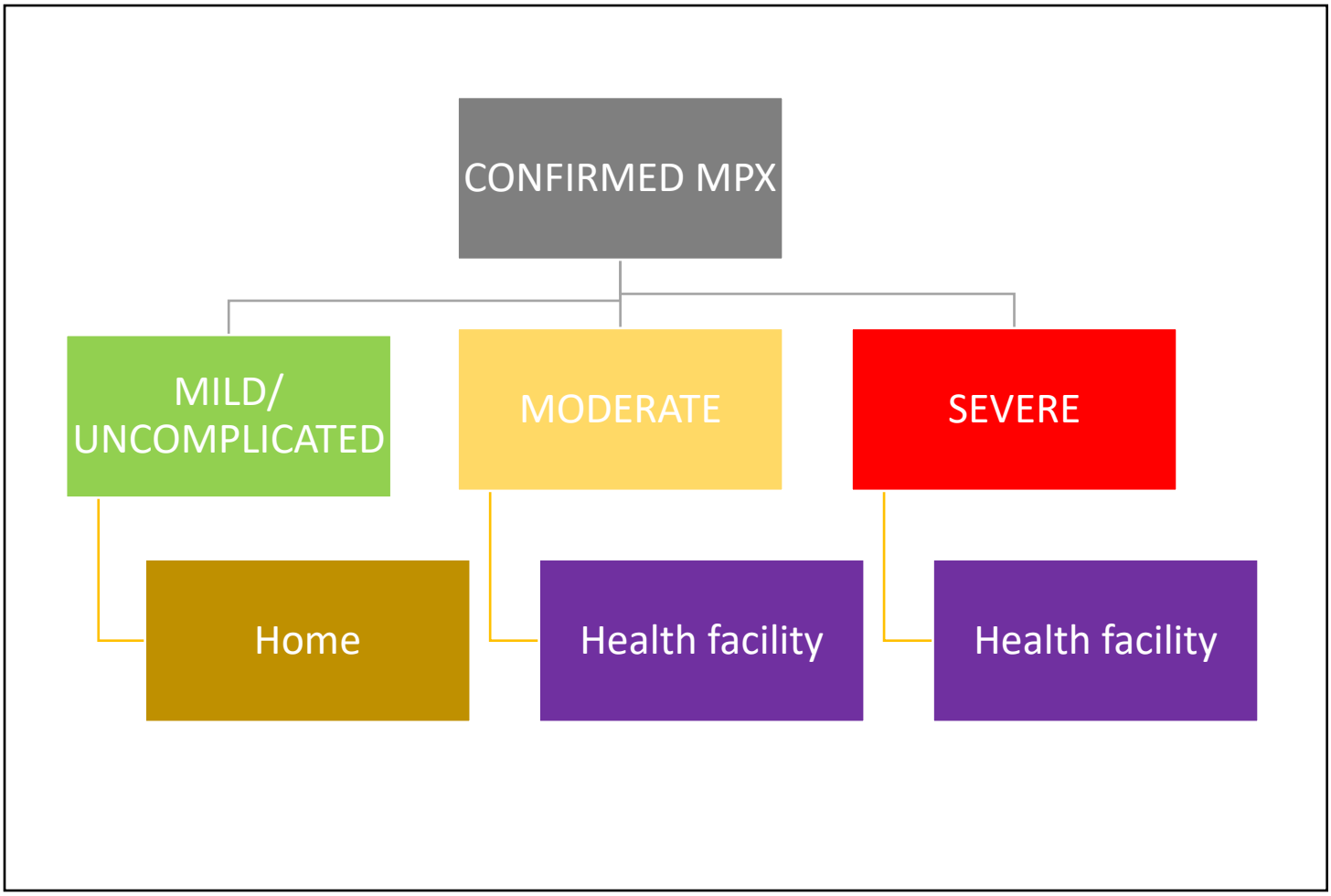
If vulnerable populations are living in the home setting and adequate IPC requirements cannot be met, consider isolation in a health facility.

Vulnerable persons that should be identified in the home due to their increased risk of adverse outcomes if infected with MPX include young children, pregnant women and persons who are immunosuppressed, such as persons living with HIV not on antiretroviral therapy (ART).

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm



INVESTIGATIONS FOR A MONKEYPOX CASE

- Lesion swabs for Monkeypox, Influenza and other viral pathogens (Refer to laboratory protocol regarding sampling for MPX)
- Complete blood count with differential
- Chemistry panel: liver function test
- HIV/ Syphilis
- Blood cultures
- ESR, CRP

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

CLINICAL TREATMENT

A. *UNCOMPLICATED CASE OF MONKEYPOX*

Decision to isolate and monitor a patient at home should be made on a case-by-case basis and be based on their clinical severity, presence of complications, care needs, risk factors for severe disease and access to referral for hospitalization if condition deteriorates.

Component of management	Symptoms/Signs	Management
Protection of compromised skin and mucous membranes	Skin rash	Clean with simple soap and water or dilute saline. • Tetracycline/Fucidin • Cover with light dressing if extensive lesion present • Do not touch/ scratch the lesions • In case of secondary infection relevant systematic antibiotics may be considered For weeping lesions the solution of 1 in 10,000 $KMNO_4$
	Genital ulcers	• Sitz bath
	Oral ulcers	Warm saline gargles/ oral topical anti-inflammatory gel
	Conjunctivitis	Usually, self-limiting • Consult Ophthalmologist if symptoms persist or there are pain/ visual disturbances
Rehydration therapy and nutritional support	Dehydration can occur in association with poor appetite, nausea, vomiting and diarrhoea	Encourage ORS or oral fluids • Intravenous fluids if indicated • Encourage nutritious and adequate diet
Symptom alleviation	Fever	• Tepid sponging • Paracetamol as required
	Itching/Pruritus	• Antihistamines (by mouth)
	Nausea and vomiting	• Consider anti-emetics
	Headache/ malaise	• Paracetamol and adequate hydration

N.B: *Empiric or prophylactic use of antibiotics should be discouraged, as it increases the risk of emergence and transmission of multidrug-resistant (MDR) bacteria.*

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

B. SEVERE CASES OF MONKEYPOX

WHO recommends that patients at high risk for complications (i.e. young children, pregnant women, and those who are immunosuppressed) or those with severe or complicated MPX be admitted to the hospital for closer monitoring and clinical care under appropriate isolation precautions to prevent transmission of MPX virus.

Vital signs and pain assessment	• Temperature, heart rate, blood pressure, respiratory rate, peripheral oxygen saturation, level of consciousness using the alert, voice, pain, unresponsive scale (Glasgow coma scale), point of care glucose, and body weight and height to calculate BMI and children's mid-upper arm circumference (MUAC) • Pain scale
General condition	• Is the patient able to eat and drink without support? • Is the patient able to sit and walk independently? • Has the patient had recent weight loss since onset of symptoms?
Rash characterization	• Stage of rash: macules, papules, vesicles, pustules, crusted over, exfoliation • Location of the rash (face, arms, torso, genitals, legs, mucosa) • Number of lesions *(28,94)*: – Mild (< 25 skin lesions) – Moderate (25–99 skin lesions) – Severe (100–250 skin lesions) – Very severe (> 250 skin lesions) • If exfoliation present: % body affected (> 10% is concerning)
Presence of bacterial secondary infection	• Cellulitis, abscess, pyomyositis, necrotizing soft tissue infection
Neurologic status	•Glasgow coma scale, seizures, coma
Volume status	• Presence of dehydration: mild, moderate, or severe
Signs of perfusion	• Pulse rate, strength, capillary refill • Urine output (> 0.5 mL/kg/hr = good in adults; 1.0 mL/kg/hr in children)

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

	• Mottling of skin
Respiratory system	• Respiratory rate, SpO_2, signs of respiratory distress
Nutritional assessment	• Change in appetite, weight loss, body weight, height, calculation of BMI, MUAC in children • Signs of malnutrition – use standardized tool (e.g. Malnutrition Universal Screening Tool) ()
Laboratory tests	• Na, K, HCO_3, BUN, creatinine, AST, ALT, glucose, white blood count, Hg, platelet, PT/INR, Cl, calcium, albumin

The following are recommendations for the treatment of complications seen with severe cases

Complication	**Treatment**
Skin exfoliation	• Patients with heavy rash burden may develop exfoliation (in severe cases similar to partial thickness burns), which can be significant leading to dehydration and protein loss. • Estimate % skin affected and consider treatment like burns. • Minimize insensible fluid loss and promote skin healing. • Ensure adequate hydration and nutrition. • Obtain consultation with appropriate consultants such as surgeon, dermatologist and/or wound care specialists. • Bedside or surgical debridement as needed. • Skin grafting in rare and severe cases.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

Necrotizing soft tissue infection	• This is a life-threatening condition of the deep soft tissue that affects the muscle fascia which causes necrosis, tissue destruction and systemic toxicity. Suspect if patient develops oedema, crepitus, malodorous discharge or pain out of proportion to appearance of infection. Though can be caused by MPX virus, consider bacterial pathogens as well. Start broad spectrum antibiotics to cover Staphylococcus sp. and Streptococcus sp. Consult surgeon for this surgical emergency. • Use local laboratory sensitivity patterns for guidance on correct antimicrobial selection and appropriate use.
Pyomyositis	• This occurs when pus develops within the muscle and should be suspected when the patient has muscle tenderness. Though this can be caused by MPX virus, it may also commonly be caused by skin flora such as Staphylococcus sp. or Streptococcus sp. Ultrasound can assist in diagnosis. Collect blood cultures, start broad spectrum antibiotics, and proceed to surgical incision and drainage. Send sample for microbiology and culture to support antimicrobial therapy selection (55). • Use local laboratory sensitivity patterns for guidance on correct antimicrobial selection and appropriate use
Cervical adenopathy	• Can occur in up to 85.65% of cases with lymphadenopathy. • When large cervical adenopathy is combined with multiple oropharyngeal lesions patients may be at risk for complications such as respiratory compromise and retropharyngeal abscesses. Patients are also at risk for dehydration due to decreased food and water intake.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

	• Obtain consultation with appropriate specialists, such as surgeon, anaesthesiologist and infectious disease clinicians. Under their care, in severe cases, steroids may be used.
Ocular lesions	• One of the most significant sequelae of MPX is corneal scarring and loss of vision. • Patients may present with non-specific ocular symptoms such as conjunctivitis. • Eye care with ophthalmologist evaluation. • Ophthalmic antibiotics/antivirals if indicated for co-infection. • Vitamin A supplementation, especially to malnourished children. • Good eye care that includes eye lubrication and saline-soaked protective eye pads. • Avoid steroid ointments (may prolong presence of MPX in ocular tissue). .
Pneumonia	• Manage according to local protocol for severe acute respiratory infections. Use local laboratory sensitivity patterns for guidance on correct antimicrobial selection and appropriate use
Acute respiratory distress syndrome (ARDS)	• Oxygen, non-invasive ventilation, mechanical ventilation. • Manage according to local protocol for severe acute respiratory infections.
Severe dehydration	• Severe dehydration and hypovolaemic shock can be seen in patients with MPX due to intravascular volume loss due to extensive rash and/or gastrointestinal losses due to diarrhoea and vomiting accompanied by poor oral intake. • The treatment for severe dehydration is resuscitation with intravenous or intraosseous (IV/IO) fluid, given as one or multiple boluses with close monitoring of fluid responsiveness.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

	Adequate IV fluid intake refers to the volume that will correct signs of hypovolaemia. See Harriet Lane management of hypovolemia in children.
Sepsis and septic shock	• Sepsis and septic shock differ from severe dehydration as it results from an immune response to an infection. Management of sepsis requires early identification, management of infection and supportive care, including fluid resuscitation to maintain organ perfusion to reduce and prevent further organ injury; and may also require vasopressors as well as control of infection. • Use local laboratory sensitivity patterns for guidance on correct antimicrobial selection and appropriate use
Encephalitis	• Consider lumbar puncture for cerebrospinal fluid (CSF) evaluation to evaluate for other treatable conditions. • Monitor and assess airway, breathing, circulation, disability (ABCD) and give emergency treatments. • Monitor neurological status (Glasgow coma scale). • Control seizures with anti-epileptics (42). • Antibiotics/antivirals if indicated for co-infections. • Use local laboratory sensitivity patterns for guidance on correct antimicrobial selection and appropriate use
Nutritional considerations	• Assess the nutritional status of all patients. If food intake is limited due to weakness, the patient should be assisted with feeding by a health care provider. If the patient is unable to tolerate oral nutrition, consider enteral nutrition. The placement of a nasogastric tube by an experienced provider could be

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

	considered along with nasogastric feeding. Always ensure proper placement of nasogastric tube before administering feeds to avoid risk of aspiration. • Take special care with patients at risk for refeeding (critically unwell, low BMI, reduced food intake for > 5 days, a history of alcohol abuse or receiving the following drugs: insulin, chemotherapy, antacids or diuretics) and start enteral feeding slowly with close monitoring. • Patients with reduced levels of consciousness are at risk for aspiration and should not be forced to eat. If severe malnutrition is present, refer to WHO published guideline

C. CARING FOR WOMEN DURING AND AFTER PREGNANCY

WHO recommends pregnant or recently pregnant women with mild or uncomplicated MPX may not require acute care in hospital but monitoring in a health facility may be preferred; those with severe or complicated disease should be admitted to a health facility for care as they require optimized supportive care and/or interventions to improve maternal and fetal survival.

Induction of labour and caesarean section should only be undertaken when medically justified and based on maternal and fetal condition.

Interventions to accelerate labour and childbirth (e.g. augmentation, episiotomy, operative vaginal birth) should only be undertaken if medically justified and based on maternal and fetal clinical condition per the WHO recommendations for intrapartum care () (92).

Delayed umbilical cord clamping (not earlier than 1 minute after birth) is recommended for improved maternal and infant health and nutrition outcomes.

There is no evidence that delaying cord clamping increases the possibility of viral transmission from the mother to the newborn.

The proven benefits of a 1–3 minute delay, at least, in clamping the cord outweigh the theoretical, and unproven, harms.

Individualized decisions should be taken about postponing planned (elective) induction or caesarean section in pregnant women with suspected or confirmed mild MPX (93).

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

Placenta and any pregnancy related tissue or fluids, such as amniotic or fetal tissue fluid, must be disposed of following specific IPC protocols for potentially infectious materials

D. CARING FOR INFANTS AND YOUNG CHILDREN

WHO recommends that newborn infants of mothers with MPX should be monitored closely for evidence of potential congenital or perinatal exposure or infection. Mothers and infants or young children can also be exposed through close contact.

Given these potential risks, young children may be considered for care in health facility to monitor for disease progression, and if they occur to recognize and treat these complications with optimized supportive care.

Young children should not be isolated alone. There should be one person (parent or caregiver), who is healthy and not at high risk, providing care to the child with MPX with appropriate IPC measures

General protective IPC measures should be taken by mothers with MPX when handling and feeding their infants, e.g. washing hands before and after each feeding, wearing a mask (if possible) and covering any lesions on the areola or on areas which have direct contact with the infant.

Alternatively, if only one breast has lesions, mothers can express/pump from the breast with lesions on the areola and discard the milk and feed from the non-affected breast. In all cases, monitor the mother-infant pair closely for development of signs and symptoms of MPX and treat accordingly.

If the infant is less than 6 months and is separated from their mother who has MPX, the infant should be fed with donor human milk or appropriate breastmilk substitutes, informed by feasibility, safety, sustainability, cultural context, acceptability to mother and service availability.

For infants 6–23 months of age who cannot access donor human milk or appropriate breastmilk substitutes, whole cream animal pasteurized milk is appropriate as part a balanced diet along with complementary foods.

E. CARING FOR SEXUALLY ACTIVE POPULATIONS

WHO recommends all patients should be advised to abstain from sex until ALL skin lesions from MPX have crusted, the scabs have fallen off and a fresh layer of skin has formed underneath.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

For persons living with HIV: particularly those with poorly controlled disease who have MPX may be at greater risk for severe disease. Data suggest they may be at risk for genital ulcers, secondary bacterial infection, and prolonged duration of illness.

– If a person living with HIV is diagnosed with MPX, they should continue ART as before.

– For persons living with HIV who are recently diagnosed with HIV, WHO recommends starting ART as soon as the person is ready and within 7 days per the WHO Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach.

People with lower CD4 counts are possibly at greater risk of complications related to MPX so should be prioritized for starting ART.

– Should a person be diagnosed with both MPX and HIV at the same time, address the most urgent issues and treatment for MPX. It should be noted that the antivirals for MPX have important drug-drug interactions with some of the antivirals used to treat HIV.

– People living with HIV on ART with suppressed viral load are not considered to be immunosuppressed.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

MEDICATION CHOICES AND DOSES

Fever – paracetamol
• **Adults:** 1g PO/IV every 6–8 hours. Maximum dose 4g every 24 hours or (2 g if history of chronic liver disease).
• **Neonates:** Oral dose 10–15 mg/kg every 6 hours. Maximum dose 40 mg/kg/day; IV dose 7.5 mg/kg every 6 hours, maximum dose 30 mg/kg day.
• **All other children:** 10–15 mg/kg every 6 hours, maximum dose 60 mg/kg /day.

Mild pain control – paracetamol
• **Adults:** 1g PO/IV every 6–8 hours. Maximum dose 4g every 24 hours or (2 g if history of chronic liver disease).
• **Children:** Orally or IV 10–15 mg/kg/dose every 4–6 hours as required, maximum usual dose 60 mg/kg/day, but 90 mg/kg/day can be given for short period with medical supervision.

Severe pain control – tramadol
• **Adults:** 50–100 mg PO/IV every 4–6 hours as needed, daily maximum 400 mg/day.
• **Children > 6 months:** 1–2 mg/kg every 4–6 hours, maximum 400 mg/day.

Severe pain control – morphine (oral dose preferred if patient can tolerate; only use immediate release tablets for acute pain)
• **Adults:** Oral dose is 10 mg every 4 hours as needed; maximum dose is 60 mg/day. IV dose is 1–4 mg SQ/IV every 4 hours as needed – monitor SBP and RR prior to administration of morphine (hold for low SBP or respiratory rate).
• **Children:** Oral dose is 0.2–0.4 mg/kg/dose every 4 hours. Titrate dose to pain. IV dose is 0.05–0.1 mg/kg/dose every 4–6 hours as required.

Antihistamine
• **Adults:** Loratadine 10 mg PO once daily or Diphenhydramine 25 to 50 mg, every 4 to 6 hours.

- **Children (> 30 kg): Loratadine 10 mg PO once daily or** Diphenhydramine ages 12 years and older: 25 to 50 mg, every 4 to 6 hours. Children 6 to 11 years: 12.5 to 25 mg, every 4 to 6 hours.

MINISTRY OF HEALTH & WELLNESS
☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm
Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

Nausea and vomiting

1. Ondansetron (associated with QT prolongation, thus it is important to note other medications that may also prolong the QT interval and to monitor regularly with ECGs if available).
• **Adults:** 8 mg PO every 12 hours or 4 mg IV every 8 hours as needed.
• **Children:** 0.15 mg/kg orally or IV 0.15 mg/kg every 12 hours, maximum dose 8 mg.
2. Promethazine
• **Only for adults:** 12.5–25 mg orally every 4–6 hours as needed (can prolong QT interval).

Dyspepsia

• **Adult:** Omeprazole 40 mg PO/IV every 24 hours.
• **Child:** Omeprazole: 5–10 kg: 5 mg once daily; 10–20 kg: 10 mg once daily; ≥ 20 kg: 20 mg once daily.

Diarrhoea

• Diarrhoea should be managed conservatively. The use of anti-motility agents is not generally recommended given the potential for ileus.

Anxiety

This may be a symptom patients experience particularly related to being in isolation or due to worsening symptoms.
• First-line therapy is to talk with a mental health counsellor.
• For moderate to severe anxiety, diazepam can be considered, but an evaluation of the patient's mental status should precede its use. Benzodiazepines should not be given to patients with altered mentation.
– **Adults:** Diazepam 5–10 mg PO every 8 hours as needed as long as mentation is unaffected.
– **Children:** Diazepam 0.05–0.1 mg/kg PO every 6 hours as needed. Continual supervision by a health aid is indicated to keep the child calm. Sedatives should only be used if necessary to perform procedures and give interventions. Reassess need for medication and dosage every 3-4 days. and no continuous dosage for >2weeks.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

ANTIMICROBIAL RECOMMENDATIONS AND DOSAGES FOR BACTERIAL SKIN INFECTION

Adults

Antibiotic	Dose
Cloxacillin (flucloxacillin)	500 mg orally every 8 hours
Cephalexin	500 mg orally every 8 hours
Amoxicillin-clavulanic acid	500–125 mg orally every 8 hours
If concern for community acquired MRSA consider following treatment:	
Clindamycin	600 mg orally every 8 hours
Trimethoprim-sulfamethoxazole	800–160 mg orally every 12 hours
Doxycycline	100 mg orally every 12 hours

Children

Weight	**Amoxicillin-clavulanic acid** 40–50 mg/kg/dose of amoxicillin component every 12 hours OR 30 mg/kg/dose every 8 hours orally	**Cephalexin** 25 mg/kg/dose every 12 hours orally	**Cloxacillin (flucloxacillin)** in neonates: 25–50 mg/kg/dose twice daily; in children: 25 mg/kg/dose every 6 hours
3 < 6 kg	250 mg of amoxicillin/dose twice daily	125 mg every 12 hours	125 mg every 6 hours
6 < 10 kg	375 mg of amoxicillin/dose twice daily	250 mg every 12 hours	250 mg every 6 hours
10 < 15 kg	500 mg of amoxicillin/dose twice daily	375 mg every 12 hours	250 mg every 6 hours

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

15 < 20 kg	750 mg of amoxicillin/dose twice daily	500 mg every 12 hours	500 mg every 6 hours
20 < 30 kg	1000 mg of amoxicillin/dose twice daily	625 mg every 12 hours	750 mg every 6 hours
> 30 kg	Use adult dose	Use adult dose	Use adult dose

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

ANTIVIRALS

- Due to limited supply of antivirals, use may be considered as treatment for those at risk for severe disease, or those that present or develop severe MPX.

1. **Tecovirimat:**

- **Dosage - Immediate release oral capsules administered twice daily for 14 days.**
    - Side-effects of tecovirimat include headache, nausea, abdominal pain and vomiting. It is a weak inducer of cytochrome P450 and thus may have drug interactions with other medications metabolized through the same pathway

2. **Cidofovir:**
    - NOT RECOMMENDED FOR TREATMENT as Cidofovir associated renal toxicity and electrolyte abnormalities have been reported.

3. **NIOCH-14:**
    - NIOCH-14 is an analogue of tecovirimat with comparable activity against orthopoxviruses.
    - Due to the small numbers of patients treated, the clinical efficacy of this therapeutic for MPX is uncertain.

4. **Brincidofovir:**

- **Dosage- Oral tablet or suspension administered to patients as two doses 1 week apart.**
    - Side-effects of this medication include elevation of hepatic transaminases, diarrhoea, nausea, vomiting and abdominal pain.
    - Brincidofovir is not recommended in women who are pregnant due to risk of embryo-fetal toxicity.
    - It is advised that individuals of childbearing potential avoid becoming pregnant and that they use effective contraception during treatment and for at least 2 months after last dose *(*

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

Treatment dose, route, duration (adults) *(65,66,71,73,76)*	**Dose** Oral 600mg PO every 12 hours Intravenous* 3 kg to < 35 kg: 6 mg/kg every 12 hours 35 kg to < 120 kg: 200 mg every 12 hours > 120 kg: 300 mg every 12 hours *Must be administered over 6 hours **Duration** 14 days	**Dose** Oral < 10 kg: 6 mg/kg 10–48 kg: 4 mg/kg > 48 kg: 200 mg (20 mL) **Duration** Once weekly for 2 doses, on days 1 and 8	**Dose** Intravenous 5 mg/kg IV once weekly Must be given with oral probenecid: 2 grams 3 hours prior to each dose and 1 gram at 2 and 8 hours after completion of the infusion Must be given with at least 1 L of 0.9% normal saline over a 1–2 hour period before each infusion **Duration** Once weekly × 2 weeks, then once every other week (based on treatment for CMV retinitis)
Treatment dose, route, duration (paediatrics) *(65,66,71,73,76)*	**Dose** Oral 13–25 kg: 200 mg every 12 hours 25–40 kg: 400 mg every 12 hours > 40 kg: 600 mg every 12 hours Intravenous* 3–35 kg: 6 mg/kg every 12 hours 35–120 kg: 200 mg every 12 hours > 120 kg: 300 mg every 12 hours	**Dose** Oral < 10 kg: 6 mg/kg 10–48 kg: 4 mg/kg > 48 kg: 200 mg (20 mL) **Duration** Once weekly for 2 doses, on days 1 and 8	**Dose** Intravenous 5 mg/kg IV once weekly Must be given with oral probenecid: 2 grams 3 hours prior to each dose and 1 gram at 2 and 8 hours after completion of the infusion Must be given with at least 1 L of 0.9% normal saline over a 1–2 hour period prior to each infusion.

	*Must be given over 6 hours **Duration** 14 days		**Duration** Once weekly × 2 weeks, then once every other week (based on treatment for CMV retinitis)
Dosage forms and strength	**Capsules:** 200 mg orange and black *(65)* **Intravenous:** IV injection single-dose 200 mg/20mL *(71)*	**Tablets:** 100 mg, blue, oval shaped *(73)* **Suspension:** lemon-lime flavoured suspension containing 10 mg/mL *(73)*	**Intravenous:** supplied as single-use vials 75 mg/mL for intravenous infusion *(76)*

IMMUNOGLOBULINS

- Vaccina immune globulin (VIG) is composed of antibodies from individuals inoculated with the smallpox vaccine
- It is unknown if a person with exposure to MPX or with severe infection would benefit from VIG.

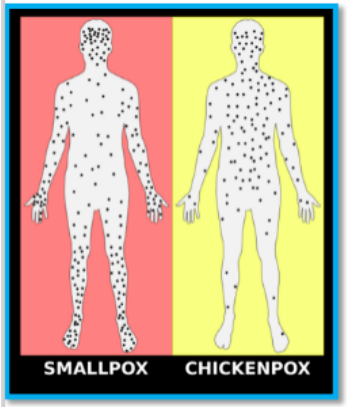
MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

World Health Organization

Monkeypox: Clinical features



Symptoms	Monkeypox	Chickenpox	Measles
Fever	Fever > 38 °C Rash after 1-3 days	Fever to 39 °C Rash after 0-2 days	High fever to 40.5 °C, Rash after 2-4 days
Rash appearance	Macules, papules, vesicles, pustules present at the same stage on any area	Macules, papules, vesicles, present in several stages	Non-vesicular rash in different stages
Rash development	Slow, 3-4 weeks	Rapid, appear in crops over several days	Rapid, 5-7 days
Rash distribution	Starts on head; more dense on face and limbs; appears on palms and soles	Starts on head; more dense on body; absent on palms and soles	Starts on head and spreads; may reach hands and feet
Classic feature	Lymphadenopathy	Itchy rash	Koplik spots
Death	Up to 11%	Rare	Varies widely

Note: Smallpox was eradicated in 1980. Clinically, smallpox was very similar to monkeypox. However, lymphadenopathy was not present in smallpox. Smallpox was more contagious and more often fatal.

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

REFERENCES

1. Jezek Z, Grab B, Szczeniowski MV, Paluku KM, Mutombo M.Human monkeypox: secondary attack rates.Bull World Health Organ.1988;66(4):465–70 (https://www.ncbi.nlm.nih.gov/pubmed/2844429, accessed 9 June 2022).

2.Brown K, Leggat PA.Human monkeypox: current state of knowledge and implications for the future.Trop Med Infect Dis.2016;1(1) (http://dx.doi.org/10.3390/tropicalmed1010008, accessed 9 June 2022).

3.Guidance for managing ethical issues in infectious disease outbreaks.Geneva: World Health Organization; 2016 (https://apps.who.int/iris/handle/10665/250580, accessed 9 June 2022).

4.WHO handbook for guideline development.Geneva: World Health Organization; 2014 (https://apps.who.int/iris/handle/10665/145714, accessed 9 June 2022).

5.Bunge EM, Hoet B, Chen L, Lienert F, Weidenthaler H, Baer LR, et al.The changing epidemiology of human monkeypox – a potential threat? A systematic review.PLoS Negl Trop Dis.2022;16(2):e0010141 (https://journals.plos.org/plosntds/article/file?id=10.1371/journal.pntd.0010141&type=printable, accessed 9 June 2022).

6.Li Y, Zhao H, Wilkins K, Hughes C, Damon IK.Real-time PCR assays for the specific detection of monkeypox virus West African and Congo Basin strain DNA.J Virol Methods.2010;169(1):223–7 (http://dx.doi.org/10.1016/j.jviromet.2010.07.012, accessed 9 June 2022).

7.Beer EM, Rao VB.A systematic review of the epidemiology of human monkeypox outbreaks and implications for outbreak strategy.PLoS Negl Trop Dis.2019;13(10):e0007791 (http://dx.doi.org/10.1371/journal.pntd.0007791, accessed 9 June 2022).

8.Yinka-Ogunleye A, Aruna O, Dalhat M, Ogoina D, McCollum A, Disu Y, et al.Outbreak of human monkeypox in Nigeria in 2017–18: a clinical and epidemiological report.Lancet Infect Dis.2019;19(8):872–9 (https://www.sciencedirect.com/science/article/pii/S1473309919302944, accessed 9 June 2022).

9.Pittman PR, Martin JW, Placide M, Muyembe JJT, Wan Q, Reynolds M, et al.Clinical characterization of human monkeypox infections in the Democratic Republic of the Congo.medRxiv.2022 (https://www.medrxiv.org/content/10.1101/2022.05.26.22273379v1, accessed 9 June 2022).

10.Petersen E, Kantele A, Koopmans M, Asogun D, Yinka-Ogunleye A, Ihekweazu C, et al.Human monkeypox: epidemiologic and clinical characteristics, diagnosis, and prevention.Infect Dis Clin North Am.2019;33(4):1027–43 (http://dx.doi.org/10.1016/j.idc.2019.03.001, accessed 9 June 2022).

11.McCollum AM, Damon IK.Human monkeypox.Clin Infect Dis.2014;58(2):260–7 (http://dx.doi.org/10.1093/cid/cit703, accessed 9 June 2022).

MINISTRY OF HEALTH & WELLNESS

☐ RKA BUILDING, 10-16 GRENADA WAY ☐ 45-47 BARBADOS AVENUE ☐ 24-26 GRENADA CRESCENT ☐ 10A CHELSEA AVENUE
KINGSTON 5, JAMAICA, W.I.
Tel: (876) 633-7400/7433/7771/8172/8174
Website: www.moh.gov.jm

Telephone Nos. 876--967--1100 / 1110 ext. 2236 / 2240 Telefax No. 876--967--0997 e--mail: williamsn@moh.gov.jm

12.Damon IK.Smallpox, monkeypox, and other poxvirus infections.Goldman's Cecil Medicine.2012;2:2117–21 (http://dx.doi.org/10.1016/b978-1-4377-1604-7.00380-8, accessed 9 June 2022).

13.Ogoina D, Iroezindu M, James HI, Oladokun R, Yinka-Ogunleye A, Wakama P, et al.Clinical course and outcome of human monkeypox in Nigeria.Clin Infect Dis.2020;71(8):e210–4 (http://dx.doi.org/10.1093/cid/ciaa143, accessed 9 June 2022).