Guidelines for the Management of Monkeypox Virus Infection

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INTRODUCTION

Health Regulation Sector (HRS) forms an integral part of Dubai Health Authority (DHA) and is mandated by DHA Law No. (6) of 2018 to undertake several functions including but not limited to:

- Developing regulation, policy, standards, guidelines to improve quality and patient safety and promote the growth and development of the health sector
- Licensure and inspection of health facilities as well as healthcare professionals and ensuring compliance to best practice
- Managing patient complaints and assuring patient and physician rights are upheld
- Governing the use of narcotics, controlled and semi-controlled medications
- Strengthening health tourism and assuring ongoing growth
- Assuring management of health informatics, e-health and promoting innovation

ACKNOWLEDGMENT

The Health Policy and Standards Department (HPSD) developed this Guideline collaboration with Subject Matter Experts and would like to acknowledge and thank these health professionals for their dedication toward improving quality and safety of healthcare services in the Emirate of Dubai.

Health Regulation Sector

Dubai Health Authority

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EXECUTIVE SUMMARY

Monkeypox Virus infection is a known human pathogen that is endemic in some Central and West African countries and can be occasionally serious and even fatal. In view of the recent Global outbreaks in multiple non-endemic countries, mainly Europe, with potential spread to other parts of the world.

To ensure protective and preventative measures are adopted within the community, DHA has developed this document which recommends measures to be taken to protect the patients, staff and healthcare professionals from the Monkeypox virus, as health facilities re-engage in providing routine care. There are recommendations within the guideline, each addressing an important component to build an effective and efficient system to prevent, prepare and respond to the Monkeypox virus.

As information is rapidly evolving and the situation is subject to change, this document will be updated accordingly.

DEFINITIONS

Confirmed case: A case meeting the definition of either a suspected or probable case and is laboratory confirmed for monkeypox virus by detection of unique sequences of viral DNA either by real-time polymerase chain reaction (PCR) and or sequencing.

Probable case: A person meeting the case definition for a suspected case.

AND

One or more of the following:

- has an epidemiological link (face-to-face exposure, including health care workers without respiratory protection;
- direct physical contact with skin or skin lesions, including sexual contact; or contact with contaminated materials such as clothing, bedding or utensils) to a probable or confirmed case of monkeypox in the 21 days before symptom onset;
- reported travel history to a monkeypox endemic country the 21 days before symptom onset
- has had multiple sexual partners in the 21 days before symptom onset
- is hospitalized due to the illness

Suspected case: A person of any age presenting in a monkeypox non-endemic country with an unexplained acute rash

AND

one or more of the following signs or symptoms, **since 15 March 2022:**

- Headache
- Acute onset of fever (>38.5°C),
- Myalgia
- Back pain
- Asthenia
- Lymphadenopathy, mostly cervical

AND

for which the following common causes of acute rash do not explain the clinical picture: varicella zoster, herpes zoster, measles, herpes simplex, bacterial skin infections, disseminated g*onococcus* infection, primary or secondary syphilis, chancroid, lymphogranuloma venereum, granuloma inguinale, molluscum contagiosum, allergic reaction (e.g., to plants); and any other locally relevant common causes of papular or vesicular rash.

ABBREVIATIONS

AMC	:	Airport Medical Center
CDC	:	Centres for Disease Control and Prevention
CRP	:	C-Reactive Protein
DHC	:	Dubai Healthcare Coroprate
ED	:	Emergency Department
HIV	:	Human Immunodeficiency Virus
IVF	:	Intravenous Fluids
LVF	:	Liver Function Test
MBG	:	Molecular Biology & Genetics Laboratory
MPV	:	Mean Platelet Volume
MMR	:	Measles, Mumps, and Rubella
NAT	:	Nucleic Acid Test
PCR	:	Polymerase Chain Reaction
PCT	:	Procalcitonin
PHC	:	Primary Healthcare
PPE	:	Personal Protective Equipment
STD	:	Sexually Transmitted Diseases
TAT	:	Turn Around Time
VZV	:	Varicella Zoster Virus

WHO : World Health Organisation

1. BACKGROUND

Monkeypox is a viral zoonosis caused by an enveloped double-stranded DNA virus that belongs to the *Orthopoxvirus* genus of the *Poxviridae* family and infects humans and a range of non-human primates. There are two distinct genetic clades of the Monkeypox virus – the Central African (Congo Basin) clade and the West African clade.

Monkeypox endemic countries are: Benin, Cameroon, the Central African Republic, the Democratic Republic of the Congo, Gabon, Ghana (identified in animals only), Ivory Coast, Liberia, Nigeria, the Republic of the Congo, Sierra Leone, and South Sudan.

The virus has tendency to cause outbreaks which may reflect declining immunity in all communities due to cessation of smallpox vaccination in the 80s. The most recent 2022 outbreak is spreading rapidly in non-endemic countries and mainly Europe and it has alerted many health authorities globally, including World Health Organization (WHO) and CDC to take preliminary actions in order to contain the outbreak before expanding further. More research is needed in order to better define this outbreak and make solid recommendations regarding prevention, specific anti-viral treatment and pre/post exposure prophylaxis.

2. SCOPE

2.1. To ensure the safe and efficient management of patients with Monkeypox virus in DHA licensed Health Facilities.

3. PURPOSE

3.1. Ensure that there is a standardized protocol for relevant healthcare professional to deal with patients presenting with Monkeypox virus and its complications.

4. APPLICABILITY

4.1. DHA licensed Health Facilities

5. RECOMMENDATION ONE: CLINICAL PRESENTATION OF MONKEYPOX VIRUS

5.1. Monkeypox is Acute febrile illness with distinctive skin rash that is usually self-limited with the symptoms lasting from 2 to 4 weeks.

5.1.1. Some patients, mainly those infected with Central African Variant, can progress into severe form with bronchopneumonia, sepsis, encephalitis, and infection of the cornea with possible loss of vision. Children, elderly and immunocompromised patients can also have severe form of the infection. They can have higher case fatality rates too.

5.2. The incubation period of monkeypox is usually from 6 to 13 days but can range from 5 to 21 days. It can be shorter in some cases.

5.3. Illness can be divided into multiple clinical phases:

5.3.1. Invasion or prodromal period: (lasts between 0-5 days) characterized by fever, intense headache, lymphadenopathy, back pain, myalgia and intense

asthenia. All patients should be examined for lymphadenopathy which is a distinctive feature of monkeypox compared to other diseases that may initially appear similar (chickenpox, measles, smallpox).

5.3.2. Skin eruption phase: usually begins within 1-3 days of appearance of fever and usually starts on the face and tends to be more concentrated on the face (in 95% of cases), and extremities (in 75% of cases) rather than on the trunk. It can also affect palms of the hands and soles of the feet, oral mucous membranes (in 70% of cases), genitalia (30%), and conjunctivae (20%), as well as the cornea. The number of lesions varies from a few to several thousand.

5.3.3. Rash evolution and resolution: the rash evolves sequentially from macules (lesions with a flat base) to papules (slightly raised firm lesions), vesicles (lesions filled with clear fluid), pustules (lesions filled with yellowish fluid), and crusts which dry up and fall off.

5.3.4. In severe cases, lesions can coalesce until large sections of skin slough off.

5.4. Patients with severe Monkeypox Virus infection can present with high-grade fever, rash, bronchopneumonia, sepsis or multi-organ failure.

6. **RECOMMENDATION TWO:** DIFFERENTIAL DIAGNOSIS OF MONKEYPOX INFECTION

6.1. Other causes of acute febrile illness should be taken into consideration upon evaluating patients with suspected monkeypox virus infection. In the context of

clear epidemiological link and exposure history with classical skin rash and lymphadenopathy, the diagnosis of monkeypox virus infection might seem straightforward.

6.2. However, in patients with early invasive infection and non-specific symptoms, mainly fever and body aches, other viral or bacterial illnesses should be entertained into differential diagnosis list.

6.3. COVID-19 infection is still circulating actively and testing for SARS-2 PCR is indicated especially in patients with fever and upper Respiratory Tract complaints.

6.4. COVID-19 vaccine related adverse events like fever, body aches and lymphadenopathy need also to be entertained, so both infection and vaccine history should be part of initial patient assessment

6.5. The most important differential diagnosis are Chickenpox and smallpox but there are some clinical features that distinguish chickenpox mainly from Monkeypox in practice. First of all is lack of lymphadenopathy in both chickenpox and smallpox and the type of skin lesions and their eruption/evolution features. Other differential diagnoses include:

a. Measles, mainly early phases as measles rash has a different distinctive presentation

b. Bacterial skin infections, like staphylococcal or streptococcal skin infection

c. Scabies, mainly nodular forms

d. Mycoplasma pneumonia infection

e. Atypical Herpes simplex infection

f. Molluscum contagiosum

g. Drug-induced reactions

h. Other inflammatory or allergic skin conditions

i. Invasive fungal or bacterial infections with cutaneous manifestation in patients with advanced immune suppression.

6.6. Another important differential diagnosis mainly in sexually active adults is primary or secondary syphilis, disseminated gonococcal infection, Acute HIV sero-conversion, and other sexually transmitted infections with fever and rash.

7. **RECOMMENDATION THREE:** TRANSMISSION OF MONKEYPOX VIRUS

7.1. Monkeypox virus infection is a zoonotic illness with documented human-human transmission which means that infection can be transmitted within species and will required extra infection control measures.

7.2. Animal-to-human transmission can occur from direct contact with the blood, bodily fluids, or cutaneous or mucosal lesions of infected animals. Human to animal transmission can occur from infected people to their home pets.

7.3. Human-to-human transmission can result from close contact with respiratory secretions, skin lesions of an infected person or recently contaminated objects or

surfaces. Transmission via droplet respiratory particles usually requires prolonged face-to-face contact

7.4. Transmission can also occur via the placenta from mother to fetus, which can be complicated by congenital monkeypox.

7.4.1. Transmission can also occur during peri and post-partum periods.

7.5. While close physical contact is a well-known risk factor for transmission, it is unclear at this time if monkeypox can be transmitted specifically through sexual transmission routes.

7.5.1. More epidemiological and sequencing data collected from 2022 outbreak among young homosexual men will shed more light into this possible route of transmission.

7.6. Once a patient is defined as a case of suspected or probable monkeypox virus infection, all required infection control measures should be implemented immediately and Public Health Department in Dubai Health Authority notified.

7.6.1. This step aims to start contact tracing at the earliest in order to control the outbreak locally.

7.7. Transmission in healthcare setting under current masking recommendations and enhanced hand hygiene practices is less likely to occur, however, there is still a risk of catching the infection occupationally and transmitting it to colleagues, other family members or to the community.

7.7.1. Hence, the most important steps in stopping or educing transmission are early diagnose, case and contact isolation and appropriate Personal Protective Equipment and adherence to hand hygiene.

8. **RECOMMENDATION FOUR:** LABORATORY DIAGNOSIS

8.1. Most important step in controlling the outbreak reply on early and accurate diagnosis of monkeypox virus infection.

8.1.1. Effective communication between different units is the key for this. Confirmation of monkeypox depends on the type and quality of the specimen and the type of laboratory test.

8.2. For the timbering, in Dubai Health Corporate, samples from public and private sector will be processed free of charge in a dedicated virology lab in the city and required arrangement will be made through Public Health, Infectious Diseases unit and Rashid Hospital Microbiology lab.

8.3. Once the test is available in-house, all stakeholders will be updated about new process.

8.4. Effective communication and precautionary measures between specimen collection teams and laboratory staff is essential to maximizing safety in the manipulation of monkeypox specimens.

8.5. In order to interpret test results, ensure all lab forms are filled and sent to dedicated labs in Dubai for sample processing.

8.6. Proper communication with Public Health, Infectious Diseases unit and DHA Microbiology lab is crucial for a smooth and safe biohazardous sample transportation and processing;

8.6.1. Specimens should be collected by staff wearing full PPE including gown, gloves and masks.

8.6.2. Nucleic acid testing (NAT, viral PCR) is the primary diagnostic tool for detection of Monkeypox, and collection of appropriate specimens is important to increase diagnostic yield and help in taking necessary precautions early on.

8.6.3. Electron microscopy and viral culture can be used for diagnosis, but are lower in sensitivity compared to NAT and are not indicated for routine case work up. Also they are not widely available and required high biosafety level virology labs.

8.6.4. As orthopoxviruses are serologically cross-reactive, antigen and antibody detection methods do not provide monkeypox-specific confirmation. Serology and antigen detection methods are therefore not recommended for diagnosis or case investigation.

8.6.5. Additionally, recent or remote vaccination with a vaccinia-based vaccine (e.g. anyone vaccinated before smallpox eradication, or more recently

vaccinated due to higher risk such as orthopoxvirus laboratory personnel) might lead to false positive results.

8.6.6. The best specimens for laboratory diagnosis of Monkeypox infections is skin lesions. Lesion material, scrapings, biopsy tissue (non-formalin fixed), lesion fluid can be collected.

8.6.7. Multiple samples (2-3) from different body sites showing active lesions with collections offer highest diagnostic yield. The procedure is simple and physicians from different specialties (PHC, ED, Infectious Diseases, Internal Medicine) can be trained to collect adequate samples.

8.6.8. Other body fluids, mainly throat swab can be collected, especially during early invasive phase; i.e. the first 5-7 days of infection

8.6.9. PCR blood tests are usually inconclusive because of the short duration of viremia relative to the timing of specimen collection after symptoms begin and should not be routinely collected from patients.

8.6.10. Skin biopsy is not needed for majority of cases and in case required for atypical or dry lesion, contact Dermatology team in your facility to arrange for skin biopsy

8.6.11. A labelling system should clearly distinguish all specimens, including those from monkeypox patients which require special handling.

8.6.12. Lesion samples must be stored in a dry, sterile tube (no viral transport media) and kept cold.

8.6.13. Measures should be taken to minimize the risk of laboratory transmission when testing routine clinical specimens from confirmed or suspected monkeypox patients.

8.6.14. These may include: limiting the number of staff testing specimens, wearing appropriate personal protective equipment, using rigorously applied standard precautions, and avoiding any procedures that could generate infectious aerosols.

9. **RECOMMENDATION FIVE:** MANAGEMENT OF MONKEYPOX INFECTION CASES

9.1. At this time, there are no specific treatments available for monkeypox infection, but monkeypox outbreaks can be controlled.

9.1.1. The main management outlines will be isolation and supportive care for infected patients plus contact tracing and quarantine for close contacts.

9.1.2. As highlighted above, most important step in controlling the infection relies on early diagnosis, case and contact isolation/current time and personal protective equipment with hand hygiene.

9.2. Clinical care for monkeypox should be fully optimized to alleviate symptoms, manage complications and prevent long-term sequelae;

a. Reassure infected patients or their families that most cases are self –limiting and will fully resolve over 2-4 weeks' duration.

b. Isolate suspected cases who are clinically stable and who have mild to moderate symptoms in their homes and confirmed cases who have mild to moderate symptoms and are stable to be isolated in their homes if a proper isolation setting is available, for example a single occupancy room with attached bathroom and proper ventilation.

c. Manage any underlying chronic medical co-morbid condition.

d. Give IVF, supportive care.

e. Antihistamines if rash is itchy

f. Manage other STDs as clinically indicated (Ceftriaxone, Azithromycin, Doxycycline).

g. Manage any secondary bacterial infections with narrow spectrum antibiotics.

h. Manage Sepsis and any organ failure as per clinical guidelines.

i. In case VZV is highly suspected, start Aciclovir, valaciclivir or famciclovir pending PCR report.

j. For severe cases, consider IV Cidofovir therapy.

k. Smallpox vaccine, cidofovir/Brincidofovir, ST-246, and vaccinia immune globulin (VIG) can be used to control a monkeypox outbreak when available.

10. RECOMMENDATION SIX: INFECTION CONTROL AND ISOLATION MEASURES

10.1. Precautions to Prevent Monkeypox Transmission

10.1.1. A combination of standard, contact, and droplet precautions should be applied in all healthcare settings when a patient presents with fever and vesicular/pustular rash.

10.1.2. Because of the theoretical risk of airborne transmission of monkeypox virus, airborne precautions should be applied whenever possible.

10.1.3. Notify Public Health team immediately if you suspect a case of Monkeypox virus infection immediately on DHA provided numbers

10.2. Isolation

10.2.1. Follow updated DHA and national guidelines related to Monkeypox.

10.2.2. Consider Home isolation for stable positive patients and those with controlled medical co-morbidities with home facilities for self-isolation in single well-ventilated room.

10.2.3. Patients who do not require hospitalization for medical indications may be isolated at home using protective measures.

a. They will be followed up by Primary Healthcare teams.

10.2.4. For febrile patients and those with moderate-severe infection or uncontrolled medical conditions, send them for institutional isolation.

10.2.5. Isolate patients suspected of having monkeypox in a well ventilated room as soon as possible.

10.2.6. Suspected cases can de-isolate once result is known to be negative for monkeypox.

10.2.7. Precautions should be taken to minimize exposure to surrounding persons.

a. These precautions may include placing a surgical mask over the patient's nose and mouth—if tolerable to the patient—and covering any of the patient's exposed skin lesions with a sheet or gown.

10.3. Personal Protective Equipment (PPE)

10.3.1. Personal protective equipment should be donned before entering the patient's room and used for all patient contact.

10.3.2. Use of disposable gown and gloves for patient contact.

10.3.3. Use of NIOSH-certified N95 (or comparable) filtering disposable respirator that has been fit-tested for the healthcare worker using it, especially for extended contact in the inpatient setting.

10.3.4. Use of eye protection (e.g., face shields or goggles), as recommended under standard precautions, if medical procedures may lead to splashing or spraying of a patient's body fluids

10.3.5. Proper hand hygiene after all contact with an infected patient and/or their environment during care.

10.3.6. Correct containment and disposal of contaminated waste in accordance with facility-specific guidelines for infectious waste or local regulations pertaining to household waste.

10.3.7. Care when handling soiled laundry (e.g., bedding, towels, personal clothing) to avoid contact with lesion material.

10.3.8. Ensure that used equipment has been cleaned and reprocessed appropriately.

10.3.9. Ensure procedures are in place for cleaning and disinfecting environmental surfaces in the patient care environment.

10.4. Use of Personal Protective Equipment in patients on Home Isolation:

10.4.1. Persons with monkeypox should wear a surgical mask, especially those who have respiratory symptoms (e.g., cough, shortness of breath, sore throat). If this is not feasible (e.g., a child with monkeypox), other household members should consider wearing a surgical mask when in the presence of the person with monkeypox.

10.4.2. Disposable gloves should be worn for direct contact with lesions and disposed of after use.

10.4.3. Skin lesions should be covered to the best extent possible (e.g., long sleeves, long pants) to minimize risk of contact with others.

10.5. Monitoring People Who Have Been Exposed (contacts)

10.5.1. Contacts of animals or people confirmed to have monkeypox should be monitored for symptoms for 21 days after their last exposure. Symptoms of concern include: Fever, ≥ 38°C, Chills, New lymphadenopathy (peri-auricular, axillary, cervical, or inguinal), New skin rash

10.5.2. Contacts should be instructed to monitor their temperature twice daily. If symptoms develop, contacts should immediately self-isolate and communicate with DHA for further guidance.

10.5.3. If fever or rash develop, contacts should self-isolate and communicate with DHA for further guidance.

10.5.4. Refer to **appendix 7** for communication contacts.

10.5.5. If only chills or lymphadenopathy develop, the contact should remain at their residence and self-isolate for 24-hours.

a. During this time, the individual should monitor their temperature for fever; if a fever or rash develop, communicate with DHA for further guidance.

b. If fever or rash do not develop and chills or lymphadenopathy persist, the contact should be evaluated by a clinician for potential cause.

Clinicians can consult with DHA for further guidance. if monkeypox is suspected.

c. Contacts who remain asymptomatic can be permitted to continue routine daily activities (e.g., go to work, school). Contacts should not donate blood, cells, tissue, breast milk, semen, or organs while they are under symptom surveillance.

10.6. Monitoring exposed healthcare professionals

10.6.1. Transmission of monkeypox requires prolonged close interaction with a symptomatic individual. Brief interactions and those conducted using appropriate PPE in accordance with Standard Precautions are not high risk and generally do not warrant PEP.

a. Any healthcare worker who has cared for a monkeypox patient should be alert to the development of symptoms that could suggest monkeypox infection, especially within the 21-day period after the last date of care, and should notify Occupational health clinics in their hospitals

b. Healthcare workers who have unprotected exposures (i.e., not wearing PPE) to patients with monkeypox do not need to be excluded from work duty, but should undergo active surveillance for symptoms, which includes measurement of temperature at

least twice daily for 21 days following the exposure. Prior to reporting for work each day, the healthcare worker should be interviewed regarding evidence of fever or rash.

c. Healthcare workers who have cared for or otherwise been in direct or indirect contact with monkeypox patients while adhering to recommended infection control precautions may undergo self-monitoring or active monitoring as determined by the health department.

d. Exposure risk assessment and public health recommendations for individuals exposed to a patient with monkeypox

10.7. Duration of Isolation Procedures

10.7.1. Follow Public Health recommendations

10.7.2. For individuals with monkeypox, isolation precautions, either in healthcare facilities or home settings, should be continued until all lesions have resolved and a fresh layer of skin has formed. This can take up to 21 days

10.8. Following the discontinuation of isolation precautions, affected individuals should avoid close contact with immunocompromised persons until all crusts are gone.

11. **RECOMMENDATION SEVEN:** HANDLING OF BODY OF INFECTED DECEASED PATIENTS

11.1. Follow DHA and UAE National Guidelines related to Deceased.

11.1.1. For in-depth information please follow the DHA Standards for Mortuary Services.

11.2. The following are general guidance for handling bodies of Monkeypox infected patients:

11.2.1. All post-mortem procedures including ritual body washing of deceased bodes require adherence to standard precautions with the use of appropriate personal protective equipment (PPE) and facilities with appropriate safety features.

11.2.2. When possible, personnel with an up-to-date smallpox vaccination (within 3 years) should participate in mortuary care for patients with confirmed or suspected monkeypox.

a. If unvaccinated personnel must be utilized, persons without contraindications to vaccination are preferred.

11.2.3. The body should be prepared following routine healthcare facility procedures for cleaning and containing body fluids and then wrapped in a plastic shroud.

a. Wrapping should be done in a manner that prevents contamination of the outside of the shroud; a change of gown and gloves may be necessary.

11.2.4. Persons who transfer remains from a mortuary stretcher onto the autopsy table should wear a gown and gloves.

11.2.5. Personnel who handle dead bodies of infected patients should follow all required steps as instructed by Infection Control team.

12. **RECOMMENDATION EIGHT:** INFORMATION FOR VETERINARIANS

12.1. Veterinarians should consider all mammals susceptible to monkeypox and be aware of how the disease transmits from animal to animal.

12.1.1. The route of transmission from animal-to-animal may occur through respiratory droplets, inhalation of aerosolized virus or organic matter containing virus particles (e.g., via the disturbance of virus in contaminated bedding), skin abrasions, the eye, or through the ingestion of infected animal tissues.

12.2. Veterinarians who decide to treat animals with suspected monkeypox should use infection control precautions to protect themselves, staff, clients, as well as other animal patients in the clinic.

12.3. With current global outbreak, there is theoretical risk of transmitting the infection from humans to home pets.

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APPENDICIES

APPENDIX 1 - CLINICAL PATHWAY FOR ISOLATION AND DE-ISOLATION

Clinical data	Decision/instructions
Adult patient who is otherwise well and able to self-isolate at home With or without Mild rash and vital signs are stable Or rash is in areas that can be covered (not face or upper limbs)	• Follow DHA and UAE National Guidelines. • Collect appropriate samples (Throat swab/skin scrapping for vesicle fluids using dry swab) collected by healthcare provider. • No need for skin biopsy in majority of cases, if needed consult the facility dermatologist. • Send samples with request forms to Rashid Hospital Microbiology Lab. • Notify Public Health team with full case contact details • Sick off work pending results (up to 7 days) • If test is positive: continue isolation for up to 21 days or full crusting of all skin lesions and extend sick-off period. • If test is Negative and there is alternate etiology: de-isolate and back to routine activities. • If first test is Negative and picture is compatible with Monkeypox Virus infection, repeat Skin sample collection within 72 hours and continue isolation. • If second test is negative and there is alternative diagnosis, de-isolate and manage as per clinical condition.
Adult patient who is stable clinically but cannot self-isolate at home	• Follow DHA and UAE National Guidelines. • Collect appropriate samples (Throat/skin) as above • Notify Public Health team with full case contact details

	• Isolate immediately with all required Infection Control precautions. • Patients can be admitted to initial evaluating facility or referred to other facilities as per age, case severity and catchment area. • If test is positive: continue isolation for up to 21 days or full crusting of all skin lesions. • If test is Negative and there is alternate etiology: de-isolate and back to routine activities • If first test is Negative and picture is compatible with Monkeypox Virus infection, repeat Skin sample collection within 72 hours. • If second test is negative and there is alternative diagnosis, de-isolate and manage as per clinical condition
Adult patient who is having multiple un controlled underlying co-morbids Fever > 38.5 degrees Rash is 30-50% of body surface area Vital signs are unstable	• Follow DHA and UAE National Guidelines. • Collect appropriate samples (throat/skin) as above • Request other labs as indicated in the guidelines • Notify Public Health team with full case contact details • Isolate immediately with all required Infection Control precautions • Patients can be admitted to initial evaluating facility or referred to other facilities as per age, case severity and catchment area • Stabilize the patient • If test is positive: continue isolation for up to 21 days or full crusting of all skin lesions • If test is Negative and there is alternate etiology: de-isolate and manage as per alternate diagnosis

	• If first test is Negative and picture is compatible with Monkeypox Virus infection, repeat Skin sample collection within 72 hours. • If second test is negative and there is alternative diagnosis, de-isolate and manage as per clinical condition • Manage as per clinical condition
Pregnant woman, at any stage of pregnancy Immunocompromised host Children below the age of 6 years Elderly above the age of 70 years	• Follow DHA and UAE National Guidelines. • Collect appropriate samples (throat/skin) as above • Other labs as indicated in the guidelines • Notify Public Health team with full case contact details. • Isolate immediately with all required Infection Control precautions. • Patients can be admitted to initial evaluating facility or referred to other facilities as per age, case severity and catchment area. • Stabilize the patient. • If test is positive: continue isolation for up to 21 days or full crusting of all skin lesions. • If test is Negative and there is alternate etiology: de-isolate and manage as per alternate diagnosis • If first test is Negative and picture is compatible with Monkeypox Virus infection, repeat Skin sample collection within 72 hours. • If second test is negative and there is alternative diagnosis, de-isolate and manage as per clinical condition.
Critically ill patient regardless of criteria	• Follow DHA and UAE National Guidelines. • Refer to ICU immediately and follow above plan

APPENDIX 2: DIAGNOSTIC AND MANAGEMENT PATHWAY

Patient with suspected Monkey Pox Virus infection

Adult, Child, Pregnant woman

Clinical assessment in ED, PHC, AMC, Private clinic, Private Hospital

<table>
<tr>
<td>
<u>Fever with no rash</u>
Assess for active respiratory, Gastro intestinal, Central Nerves System, Genitourinary complaints required tests as necessary:

Throat swab for Monkeypox virus PCR if meeting case definition
SARS-2 NP PCR +/- Respiratory panel if focus is Respiratory system
Malaria Parasite/ other indicated tests if recent traveller from endemic country
Other baseline tests as clinically indicated like Blood culture, CRP, PCT, Lumbar Puncture, Urine routine and culture, GI panel, stool C/S, wound swab, etc

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<td>
<u>Fever with rash</u>

At least 2 skin samples for MPV as per collection guidelines
Baseline tests: FBCD, CRP, Urea/electrolytes, creatinine, LFT, VZV serology and PCR,
Other labs as required depending on symptomatology:
Example: urine C/S, urethral swab, Syphilis Ab, HIV Ag/Ab, MMR antibody, HSV serology and PCR, Blood culture, SARS-2 swab

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Patient with mild infection and no contraindication for home isolation

Reassure
Collect required samples
Notify DHA Public Health team
Send samples to Rashid Hospital, Microbiology lab as per required procedure
Give symptomatic treatment
Follow DHA and national guidelines regarding isolation
Refer to subspecialty and manage according to working diagnosis
Test results will be conveyed to managing physician once ready
Follow up all Public Health instructions

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Patient with moderate to severe infection or contraindication for home isolation (example threatened pregnancy, immunosuppressed hosts, children, Psychiatry patients, prisoners)

Follow DHA and UAE National Guidelines
Stabilize the patient
Collect required samples
Notify DHA Public Health team
Send samples to Rashid Hospital, Microbiology lab as per required procedure
Admit to single Negative Pressure room in the ward or ICU whenever available. if not available, admit to a room with HEPA filter and strictly follow all required IC measures
Start IV acyclovir, Valaciclovir or Famciclovir if VZV is highly suspected and stop after getting PCR results
For patients who are febrile with high inflammatory markers and suspected bacterial Foci of infection, start narrow spectrum antibiotic therapy
For patients with STD compatible picture, give Ceftriaxone/Azithromycin or Doxycycline as per STD guidelines
Consider IV Cidofivr after ID consultation

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APPENDIX 3: COLLECTION OF SPECIMENS FOR NUCLEIC ACID TESTING

Appropriate equipment for specimen collection:

- ✓ A small scalpel blade or 25G needle
- ✓ Leak-proof sealed tubes
- ✓ Dry swabs
- ✓ A waterproof sharps container for needles, syringes, scalpels
- ✓ Waterproof plasters
- ✓ A sealable plastic specimen bag.
- ✓ Absorbent packaging material and a strong metal outer container plus biohazard tape to seal it and appropriate disinfectant solution to clean the outside before transport to the laboratory.

Specimen collection Procedure

Ensure proper communication ahead of sample collection to avoid sample waste and handling of biohazardous material inappropriately

- ✓ The healthcare provider collecting the sample should be on full Personal protective equipment
- ✓ Gently deroof a vesicle using a syringe.
- ✓ Rub the base of the lesion firmly using a dry swab while rotating the swab to absorb fluid from the lesion onto the swab, and to get the cellular material from the lesion base.
- ✓ Sample 2-3 lesions using dry swab, do not use any viral transport medial or wet/jelly container
- ✓ Place the swab into a sterile, leak-proof container.
- ✓ Label the tubes with patient information and site of collection, place in the zip-lock plastic specimen bag and seal.
- ✓ Use waterproof dressing(s) to cover the deroofed lesions.
- ✓ After specimen collection, all protective materials (gloves, mask, gown, etc.) and all used collection materials must be placed in biohazard bags and autoclaved or incinerated prior to disposal.
- ✓ Use an appropriate sharps container to disposed Needles and immediately autoclave.

- ✓ Send samples after proper communication to Rashid Hospital Laboratory during working hours
- ✓ For the time being, samples will not be processed over the week end or public holidays

APPENDIX 4- LAB INSTRUCTIONS FOR SAMPLE COLLECTION AND TRANSPORTATION

SPECIMENS COLLECTION AND TRANSPORT GUIDELINES FOR SUSPECT MONKEYPOX CASES

The type of specimen collected will vary depending upon disease progression.

Type of specimens and procedures:

Throat swab: Swab the throat with a sterile dry polyester or Dacron swab. Put swab in container

DO NOT ADD OR STORE IN VIRAL OR UNIVERSALTRANSPORT MEDIA

Lesions fluid: Sanitize lesion with an alcohol wipe, allow to dry.

Use a disposable scalpel or plastic scraper to open and remove the top of the vesicle or pustule. Swab the base of the lesion with a sterile polyester or Dacron swab. Put swab in container

DO NOT ADD ANY VIRAL TRANSPORT MEDIA

Lesions roofs or crusts: Sanitize lesion with an alcohol wipe, allow to dry.

Use a disposable sterile scalpel, lancet, plastic scraper, curette or needle. Remove the lesion roof or crusts. Place specimen in sterile normal container

DO NOT ADD ANY VIRAL TRANSPORT MEDIA

Lesion biopsy: Use appropriate sterile technique and skin sanitation. Biopsy 2 lesions with 3.5 or 4 mm biopsy punch (2.5 mm for pediatrics). Place biopsy specimen in sterile normal container

NOTES

*Label the specimen with the patient's details and place into two biohazard bags (triple packing)

*All Specimens must be transported to the laboratory immediately and shipped in a cooler box with ice packs, if they cannot be processed immediately they should be kept in refrigerator at 2–8ºC.

*Stability of specimen: Up to 24 hours after collection.

*All specimens should be regarded as potentially infectious, and Health Care Workers s who collect, or transport clinical specimens should adhere rigorously to standard precautions to minimize the possibility of exposure to pathogens.

APPENDIX 5: NON-DHA LABORATORY SAMPLES

Receiving samples from non- DHA Labs

Monkeypox Samples Pathway

For cases meeting case definition were sample collection is indicated, collect samples as mentioned in the guidelines. Contact public health team per the hospital notification system. You can also contact second on call in the infectious disease unit in RH through Rashid Hospital operator **042191000.** The primary physician of the non-DHA facility will need to discuss the case with the above teams.

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Medical diagnostic request form must be filled completely by the physician and sent along with the sample. Samples cannot be accepted without the form

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All samples will be received 24/7 in RH-Lab-CRA. **Ext: 2513**

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Samples will be transported to MBG lab daily at 09:00 am. And 1:00 pm including weekends.

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Result will be reported to IDU team and Public health team. Public health team will be communicating with the referring facility accordingly

- **Test name:** MPX PCR with sequencing
- **Specimen type:** Skin lesions (fluid, roofs, crusts or Biopsy)/ Throat swabs. Dacron or polyester flocked swabs are accepted not Cotton swabs
- **Specimen container**: Sterile container without Viral transport Medium.

- **Specimen labelling must include the following:**
  - ✓ Patients full name
  - ✓ MRN
  - ✓ Collection date and time
  - ✓ Source of specimen
- **Storage:** Store the specimen in 2-8 C immediately after collection, the stability of the sample is 24 hrs. (from collection to testing).
- **Transportation requirements**:
  - ✓ Samples must be transported in triple packaging system (closed container, two biohazard bags and secure transport box preferably temperature monitored), in 2-8 C immediately to Rashid Hospital lab
  - ✓ All specimens should be regarded as potentially infectious, and HCWs who collect, or transport clinical specimens should adhere rigorously to standard precautions to minimize the possibility of exposure to pathogens.
- **Turn Around Time**: 24 hours to 48 hours (from receiving the sample in MBG till reporting the result), the TAT for samples collected during weekends will be 48-72 hrs.

For inquiries regarding kindly contact
*RH-Lab-CRA **042192622, 042192513**.*

APPENDIX 6: POST EXPOSURE MANAGEMENT PATHWAY

Risk group	Definition of exposure during the period of interest	Surveillance for 21 days after the last exposure	Surveillance for 21 days after the last exposure
No risk	No known contact (direct or indirect	None	None
LOW/UNCERTAIN	HCW involved in care of MPX case-patient while wearing at least gown, gloves, eye protection, and medical facemask or respirator (with no known breaches) for all direct and indirect contact episodes,	Active monitoring	None
INTERMEDIATE	Direct contact via intact skin with a MPX case-patient, case-patient materials, crusts, or bodily fluids, OR Indirect contact with a MPX case-patient (including passengers seated in a 6-foot radius to the case-patient on a flight[a]), OR Flight crew who provided service to the MPX case-patient, OR Healthcare worker not wearing at least gown, gloves, eye protection or medical facemask for all direct and indirect contact episodes Laboratory staff within six feet of an analytic instrument (not contained within a BSC and/or not wearing appropriate personal protective equipment to prevent aerosol or another direct exposure) while specimens from a confirmed MPX case-patient were loaded, run, and/or unloaded, or one hour after unloading the specimens.	Active monitoring	Vaccination may be considered in consultation with public health authorities
HIGH RISK	Direct contact via broken skin or mucous membranes with a MPX case-patient, case-patient materials, crusts, or bodily fluids. (Exposure includes inhalation of respiratory droplets or if scab material present while cleaning rooms where a monkeypox case-patient stayed, mucosal exposure to splashes, penetrating injury from used sharps/devices, or any penetrating injury through contaminated gloves or clothing)	Direct active monitoring	Vaccination is recommended

APPENDIX 7: PREVENTIVE MEDICINE SECTION-PHPD CONTACTS

- All private health facilities to electronically notify suspected and confirmed monkeypox directly through the Infectious Disease Notification System (IDNS) web portal.
- All electronic notifications should be followed by immediately calling the preventive medicine section hotlines:
    - Epidemiologist oncall: 0562253800
    - Public health physician oncall: 0562256769