



**HEALTH DEPARTMENT
GOVERNMENT OF SINDH**

Mpox Guidelines

Provincial Disease Surveillance and Response Unit

Directorate General Health Services Sindh @ Hyderabad



Background:

Mpox is a rare viral disease that was first identified in 1958 in monkeys in Africa. It is usually a self-limiting disease, it can be severe in some cases and may even be fatal. The disease is primarily transmitted to humans through contact with infected animals or people, and it can cause a range of symptoms, including fever, rash, and swollen lymph nodes. It is important to take steps to prevent and control the spread of the disease, including practicing good hygiene, avoiding contact with infected animals, and ensuring prompt diagnosis and treatment of suspected cases.

Causative Agent

- Causative agent: Mpox virus (Orthopoxvirus family) closely related to the variola virus, which causes smallpox in humans.
- Two phylogenetically distinct clades
 - Central African (Congo Basin): More frequent and severe, death rate 10%
 - West African clade: Less frequent and severe, death rate 1%

Natural Host:

- The natural host of Mpox is not completely understood, but it is believed to be primarily a zoonotic disease
- Virus circulates among a range of wild animals rope squirrels, tree squirrels, Gambian pouched rats, sooty mangabey, and other species.

Modes of transmission:

1. **Animal-to-human transmission:** The primary mode of transmission of Mpox is through direct contact with infected animals, such as handling or eating infected animals or their meat. The virus can be transmitted through bites, scratches, or contact with infected bodily fluids or tissues.
2. **Human-to-human transmission:** It can be transmitted from person to person through respiratory droplets, contact with infected bodily fluids, or contact with contaminated surfaces.
3. **Contact with contaminated objects:** Virus can survive on surfaces and objects, such as clothing or bedding, and can be transmitted through contact with contaminated objects.
4. **Nosocomial transmission:** This can occur through close contact of infected person or exposure to infected bodily fluids or contaminated objects in healthcare settings. High-risk group are health care workers
5. **Zoonotic transmission:** People who live in or visit areas where Mpox is endemic may be at risk of zoonotic transmission through contact with infected animals or their habitats



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Signs and symptoms:

Typically develop in three stages:

1. Incubation period: Ranges from 5 to 21 days with no visible symptoms. The infected person may feel generally unwell.
2. Invasion period: Lasts for 1 to 3 days and is characterized by the following symptoms:
 - Fever
 - Headache
 - Muscle aches
 - Backache
 - Swollen lymph nodes
 - Chills
 - Fatigue

During this stage, the infected person may also experience a rash, which can appear on the face, trunk, and limbs.

3. Eruptive period: Lasts for 1 to 3 weeks and is characterized by the development of lesions or pustules on the skin. The lesions go through several stages, including:
 - Macules (flat, red spots)
 - Papules (raised, firm bumps)
 - Vesicles (fluid-filled blisters)
 - Pustules (filled with pus)

The lesions may appear in different stages on different parts of the body and may be accompanied by fever, headache, and muscle aches. The lesions eventually crust over and scab, and then fall off, leaving a scar.

Case Definitions

1. **Suspected case:** A person of any age presenting in a mpox non-endemic country with an unexplained acute rash AND one or more of the following signs or symptoms
 - Headache
 - Acute onset of fever ($>38.5^{\circ}\text{C}$)
 - Lymphadenopathy (swollen lymph nodes)
 - Myalgia (muscle pain/body aches)
 - Back pain
 - Asthenia (profound weakness)

*Unexplained rash is a rash for which the following common causes of acute rash do not explain the clinical picture: drug eruption, food allergy, varicella-zoster, herpes zoster, measles, herpes simplex, bacterial skin infections, primary or secondary syphilis; and any other locally relevant common causes of papular or vesicular rash. In addition, An Unexplained rash includes Unexplained genital, ano-genital, or oral lesion(s) (for example, ulcers, nodules) or proctitis (for example, anorectal pain, bleeding)



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2. 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 appropriate PPE; 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 Mpox in the 21 days before symptom onset
- Reported travel history to a Mpox endemic country in the 21 days before symptom onset
- Has had multiple or anonymous sexual partners in the 21 days before symptom onset
- Has a positive result of an orthopoxvirus serological assay, in the absence of smallpox vaccination or other known exposure to orthopoxviruses
- Is hospitalized due to the illness

3. **Confirmed case:** A suspected or probable case with laboratory confirmation of Mpox infection. This can be done through testing of blood or lesion samples for Mpox virus DNA or by isolation of the virus in cell culture.

Reporting of suspected cases

The Mpox is an emerging disease, and suspected cases must be reported by all Public and private healthcare facilities and labs using the notification form immediately to:

- District Health officer / District Focal Person
- Town / Taluka Focal person
- Focal Person at Divisional Directorate
- Focal Person at Director General Health Services Sindh

Note: Failure to report reportable infectious diseases by healthcare organizations and/or professionals is accountable by law/services rules.

Referral / Transportation of Patient:

- Patients should be transported in a vehicle that is clean and disinfected.
- Vehicle should be properly ventilated to prevent airborne transmission of the virus.
- Vehicle should follow appropriate IPC measures, such as regular cleaning and disinfection of high-touch surfaces.
- Healthcare providers who transport the patient should use appropriate personal protective equipment, including gloves, gowns, masks, and eye protection
- Patient's exposed skin lesions need to be covered with a sheet or gown.
- Patient should be placed in a private compartment or area within the vehicle to minimize the risk of transmission to others.



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Patient placement at HCF:

- Infected person should be isolated in a designated separate area of healthcare facility to prevent transmission of the virus to others.
- Patients should be placed in a private room with negative pressure ventilation to minimize the risk of airborne transmission.
- Restricted the patient movement as much as possible unless indicated.
- Use portable machines for investigation e.g. portable x-rays machines
- Cohorting of cases should be considered only when there is a significant shortage in single rooms with the following considerations
 - Cohorting only for confirmed cases.
 - Place the patients with distance between beds.
 - Place physical separations between the beds.
 - Disallow any visitors or caregivers.
 - Avoid performing aerosol generating procedures inside the room.
 - Any aerosol generating procedures (AGPs) should be performed in a single bed negative pressure room.
- Healthcare providers who care for the patient should use appropriate PPEs

Personal Protective Equipment

- PPEs should be donned prior to entry to the isolation room and doffed prior to exit,
- Donned and doffed in correct sequence whenever handling suspected or confirmed cases
- Healthcare providers should wear gloves and gown during handling of infectious materials, such as bodily fluids or contaminated objects. Gloves and gown should be changed after each patient contact and should be removed and discarded
- Healthcare providers should wear a mask during handling of suspected / confirmed case with objective to prevent infection.
- Healthcare providers should wear eye protection, such as goggles or a face shield, to prevent contact with infectious droplets or airborne particles.
- Healthcare providers should follow appropriate IPC measures, such as hand hygiene, environmental cleaning and disinfection, and safe injection practices.

Application of standard precautions for all patients.

Strict adherence to standard precautions should be followed whenever handling patients. These include:

- Proper hand hygiene.
- Use of Personal Protective Equipment's (PPEs) in a correct sequence (gowns, masks, goggles if splashes are expected, and gloves).
- Sharp safety.
- Aseptic technique
- Environmental cleaning and disinfection



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Environmental infection control measures

- Use of PPE (gloves, gowns, masks, and eye protection) by healthcare providers during caring / examination of suspected or confirmed Mpox case
- Frequently cleaning and disinfection of all surfaces (floors, walls, and furniture etc.) using suitable disinfectants.
- Dry dusting, sweeping, or vacuuming should be avoided. Use Wet cleaning methods
- Limit the movement of suspected or confirmed Mpox case
- Implementation of appropriate waste management practices,
- Use negative pressure rooms for isolation of suspected or confirmed cases.
- Availability of hand hygiene facilities, including soap and water or alcohol-based hand sanitizers, for healthcare providers, patients, and visitors.
- Adherence to standard precautions when handling contaminated laundry that generated from Mpox cases.
- Contaminated clothing and linen should be washed in high temperature washing cycle
- Transportation of food tray to the patients should be delivered from the food server' to the nurse and accordingly the nurse delivers it to the patient.
- Generated wastes from patients' room should be handled as infectious waste and discarded accordingly.

Guidelines for Visitors

Visitors can play an important role in the spread of disease. It is highly recommended that visitors should follow SOPs as mention below during visiting of suspected or confirmed Mpox.

- Visitors should follow appropriate hand hygiene practices, including washing hands with soap and water or using alcohol-based hand sanitizers before and after visiting the patient.
- Visitors should wear appropriate PPE as recommended by the health authorities.
- Visitors should limit their movement to the patient's room and avoid contact with other patients and healthcare providers.
- Visitors supposed to be not allowed to take food or drink in the patient's room.
- Visitors should immediately report any symptoms of illness or suspected exposure to Mpox to healthcare providers.
- Visitors should remain at home /isolation if they are experiencing symptoms of illness, such as fever, cough, or rash.
- It is important for visitors to follow appropriate infection prevention and control measures to prevent the spread of Mpox to other patients and healthcare providers.



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Discontinue Isolation and Transmission Precautions

Suspected Cases:

- Suspected cases should remain in isolation until evaluated by a healthcare provider and diagnosis has been confirmed or ruled out.
- If Mpox is ruled out, isolation / precautions may be discontinued.
- If Mpox is confirmed, the patient should remain in isolation until they meet the criteria for discontinuing isolation for confirmed cases.
- In case of shortage in bed capacity, and the suspected case is clinically stable, home isolation may be considered after evaluation of healthcare provider
- Suspected Mpox should be educated about disease transmission and advised to seek medical attention if they develop any symptoms of illness or suspected exposure to Mpox.

Confirmed Case

- Confirmed Mpox should remain in isolation / transmission precautions until they meet the criteria for discontinuing of isolation.
- Decision to discontinue isolation should be made in consultation with a HCW .
- Confirmed Mpox may be considered non-infectious if they meet the following criteria:
 - Fever has resolved for at least 72 hours without use of medicine, AND
 - All skin lesions have crusted over and no new lesions have appeared for at least 24 hours, AND Patient is declared disease free by a healthcare provider
- Patients with confirmed Mpox who have weakened immune systems may require longer periods of isolation and monitoring.
- Patients should be educated on appropriate hand hygiene and respiratory etiquette practices, and advised to seek medical attention if they develop any symptoms of illness or suspected exposure to Mpox.

Laboratory Diagnosis

Safety Procedures

1. Wear appropriate PPE when handling Mpox samples,
2. Use aseptic techniques (using sterile instruments) to collect and handle the samples.
3. Laboratory staff involved in handling the samples have received training in handling OF infectious materials and are familiar with the safety procedures and protocols.

Specimen to be collected:

The recommended specimen type is depend on the disease stages

5-21 DAYS	1-4 DAYS	2-4 WEEKS	DAYS TO WEEKS
Incubation Period	Febrile stage	Rash stage	Recovery Stage
No sample collected	Naso / Oropharyngeal swab	Lesion fluid, Lesion roof, Lesion crust	Serum

Collect specimens from at least 3 lesions and preferably from different sites on the body. Lesions swabs, crusts and vesicular fluids should not be mixed in the same tube.



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Appropriate equipment for specimen collection:

- Personal protective equipment
- 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.

Procedure for collection of specimens for nucleic acid testing

- Wear appropriate personal protective equipment
- Gently de-roof 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 at least 3 lesions
- Place the swab into a sterile, leak-proof container.
- Label the tubes with patient information and site of collection, place them in the ziplock plastic specimen bag, and seal them.
- Use waterproof dressing(s) to cover the de-roofed 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 dispose of Needles and immediately autoclave.

Specimen Storage

Specimen Type	Collection Materials	Storage Temperature	Collection purpose
Skin lesion material, including: <ul style="list-style-type: none">• Swabs of lesion exudate• Lesion roofs• Lesion crusts	Dacron or polyester flocced swabs with VTM or dry swab	Refrigerate (2-8 °C) or freeze (- 20°C or lower) within 1 hour of collection; -20°C or lower after 7 days	Recommended for diagnosis
Oropharyngeal swab	Dacron or polyester flocced swabs with VTM or dry swab	Refrigerate (2-8 °C) or freeze (- 20°C or lower) within 1 hour of collection; -20°C or lower after 7 days *	Recommended for diagnosis if feasible, in addition to skin lesion material

*Long term specimen storage (>60 days from collection) is recommended at -70°C. Repeated freeze-thaw cycles should be avoided because they can reduce the quality of specimens.



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Sample Transportation

Specimens should be stored refrigerated or frozen within an hour of collection and transported to the laboratory as soon as possible after collection. All specimens being transported should have;

- Appropriate triple packaging
- Proper labelling
- Patient history form
- Coolers and cold packs or dry ice

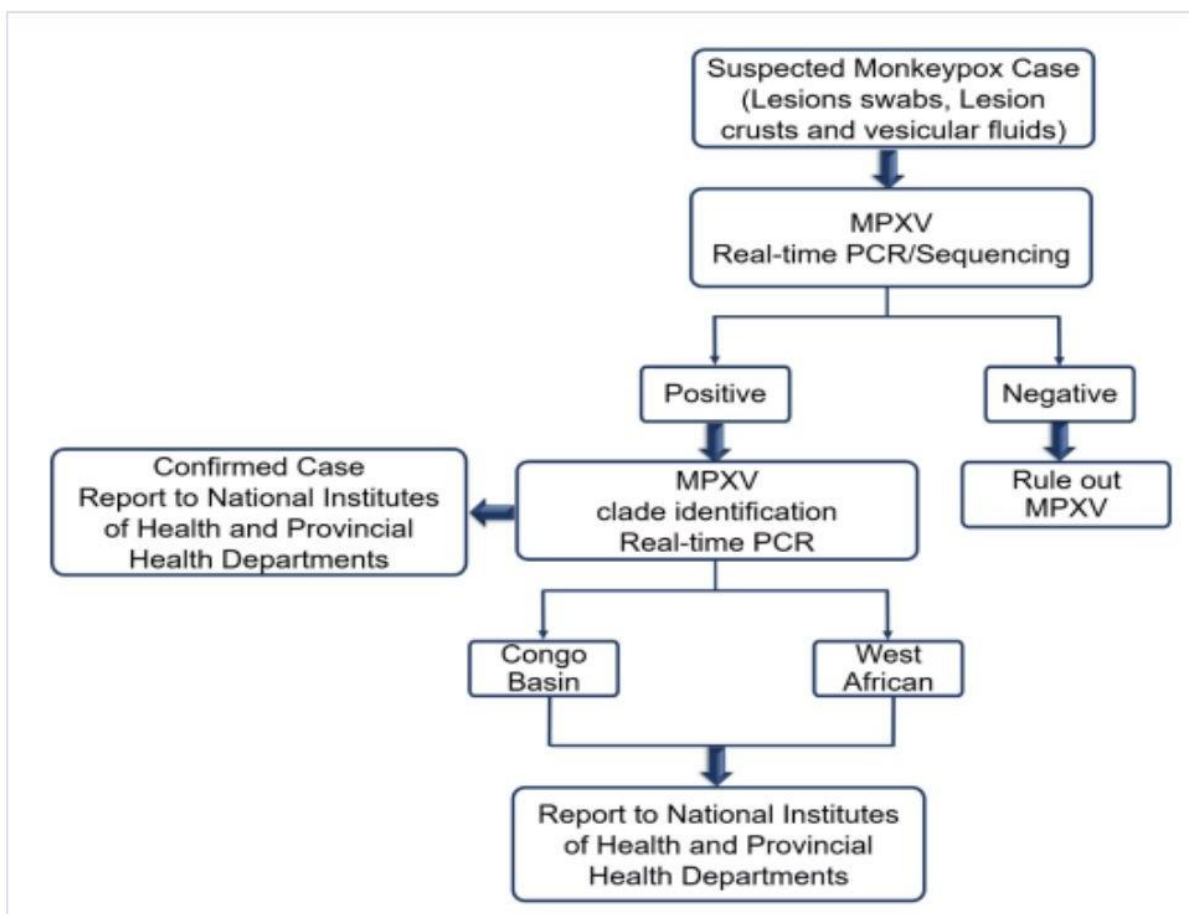


Figure 1: Algorithm for the molecular diagnosis of Mpox virus.



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Public Health Measures

Establishment of Mpox Surveillance system (MpSS)

The following steps can be taken to establish Mpox surveillance system

1. Identify key stakeholders for establishment of the surveillance system including healthcare workers, laboratory personnel, disease surveillance officers, and community leaders.
2. A surveillance plan contain objectives, strategies, and activities of the MpSS.
3. Develop a case definition based on the WHO guidelines. This will help in identification of suspected cases and response.
4. Develop data collection tools, it will help to capture information about suspected and confirmed cases. These may include case investigation forms, laboratory reporting forms, and surveillance data collection tools.
5. Reporting mechanisms should be established to ensure that suspected cases are reported to the health authorities.
6. A data management unit should be established to collect, store, and analyze data.
7. Surveillance staff need to be trained to identify, investigate, and report suspected and confirmed cases of Mpox.
8. It is important to establish laboratory testing capabilities and protocols for Mpox diagnosis. This may involve training laboratory personnel and establishing a referral system for laboratory testing.
9. Response mechanisms should be established to respond to suspected and confirmed cases of Mpox. This may involve setting up functional DSRU at all levels, isolation and treatment facilities, contact tracing, and community education and awareness campaigns.
10. The MpSS should be regularly monitored and evaluated to identify strengths and weaknesses and to make necessary improvements. This will help in ensuring the effectiveness of the system in detecting and responding to Mpox outbreaks.

Outbreak Investigation

The following steps should be taken for investigation of Mpox case/outbreak

1. Confirm the outbreak by conducting laboratory tests of suspected case/s.
2. The extent of the outbreak can be determine by identifying the number of cases and their distribution across the affected area. This can be done by door-to-door survey. .
3. Establish the time frame of the outbreak: It is important to determine the period of exposure and track the progression of the outbreak. This can be done by interviewing of affected individuals and their families to identify the onset of symptoms
4. An epidemiological investigation should be conducted to identify
 - The source of the outbreak
 - The mode of transmission,
 - The risk factors associated with the outbreak.

This can be done by interviewing affected individuals / families



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5. A case definition should be established to determine who is included in the investigation. This definition may include clinical signs and symptoms, time, place and person laboratory test results, and other relevant criteria.
6. Active surveillance / search should be established to identify additional cases and to monitor the spread of the disease or condition.
7. The source of the disease should be identified. This may involve investigating possible exposures and conducting environmental or laboratory testing.
8. Generating hypotheses to explain the transmission / risk factors of the disease
9. Testing hypotheses by using appropriate epidemiological methods, such as case-control studies or cohort studies.
10. Control measures should be implemented to prevent further spread of the disease or condition. These measures may include vaccination, isolation and quarantine, and public health education and awareness campaigns.
11. An outbreak investigation report should be prepared summarizing the findings of the investigation and the measures taken to control the outbreak.
12. Monitor and evaluate the outbreak should be done to identify the effectiveness of the control measures and to make necessary improvements.

Contact tracing

Contact tracing is an important method for controlling the spread of Mpox during an outbreak. It helps to identify individuals who may be at risk of infection and allows for prompt medical care and preventive measures. It is important for health authorities to work closely with affected communities and individuals to ensure cooperation and support for contact tracing efforts.

Definition of a contact:

A contact is defined as a person who, in the period beginning with the onset of the source case's first symptoms, and ending when all scabs have fallen off, has had one or more of the following exposures with a probable or confirmed case of Mpox:

- Face-to-face exposure (including health workers without appropriate PPE)
- Direct physical contact, including sexual contact
- Contact with contaminated materials such as clothing or bedding

Contact identification:

Case-patients can be prompted to identify contacts across a number of contexts, including household, workplace, school/nursery, sexual contacts, healthcare (including laboratory exposure), houses of worship, transportation, sports, bars/restaurants, social gatherings, festivals, and any other recalled interactions. Attendance lists, passenger manifests, etc. can be further used to identify contacts.



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Public Health Advisory on Mpox

The following are the steps involved in contact tracing:

1. Identify and locate contacts: Health authorities must identify individuals who have been in close contact with a confirmed or suspected Mpox case. Close contacts are individuals who have had direct contact with the case (especially within the 21-day period)
2. Monitor contacts: Contacts must be monitored for signs and symptoms of Mpox for at least 21 days after the last exposure to the case.
3. Quarantine contacts: Contacts who are identified as high-risk should be quarantined or isolated to prevent the spread of the disease.
4. Provide medical care: Contacts who become ill with Mpox should receive prompt medical care to prevent severe illness and death.
5. Vaccinate contacts (if available): Contacts who are identified as high-risk may be offered vaccination against Mpox.
6. Provide support: Health authorities should provide counseling and psychological support to the contacts during the quarantine period.
7. Document contacts: All contact tracing activities should be documented, including the names and contact information of contacts, the dates and locations of contact, and the results of monitoring and testing

Monitoring and evaluation of contact tracing quality Indicators for monitoring the quality of Mpox contact tracing include:

1. Proportion of probable and confirmed cases with identified contacts.
2. Number of contacts per probable and confirmed case.
3. Proportion of contacts with complete follow-up information.

Handling of Dead Bodies

Handling of dead bodies infected with Mpox virus requires proper precautions to avoid the risk of transmission of the disease. Following steps need to be taken for handling of dead bodies

1. Wear PPE (gloves, mask, goggles, and protective clothing) before handling the dead body to prevent contact with bodily fluids
2. Cadaver bags should be used for transport of dead bodies of deceased Mpox patients
3. Only authorized personnel should handle the dead body to prevent the spread of the virus. The area where the body is handled should be properly isolated and disinfected before and after handling.
4. Body should be disinfected using disinfectants such as sodium hypochlorite or bleach.
5. Body washing of confirmed or suspected case should be done at hospitals and is not allowed to be transferred to home or public washing authorities.
6. Only experienced and trained morgue staff should deal with bodies of deceased.
7. Prevents relatives from direct surface contact with the body, However, it is acceptable to open the body bag for family viewing while wearing PPE
8. The body should be disposed of safely and appropriately.
9. Proper communication should be made with public health authorities to report any cases of Mpox in the area and to get appropriate guidance on handling the dead body.



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Precautions to be taken during handling of dead bodies:

1. Avoid direct contact with the body or bodily fluids, especially if you have any cuts, wounds or abrasions.
2. Do not touch your face, mouth, or eyes while handling the body or PPE.
3. Ensure proper ventilation of the area while handling the body to prevent the buildup of infectious aerosols.
4. Always wash your hands with soap and water after handling the body or removing PPE.
5. If any symptoms of Mpox develop, seek medical attention immediately.



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Data collection proforma for Suspected Monkeypox (Top Priority)
 (Compulsory fill all information Including Contact Number and Address)

Date Of Report		
Name of Investigator and Contact #		
Reporting Health Care facility & District		
Name		
Age		
Sex	Male <input type="checkbox"/>	Female <input type="checkbox"/>
Marital Status	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Contact Number		
If Female Pregnancy status	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Address		
Occupation		
Place of Occupation		
Date Of Onset Of First Symptoms		
Fever	Yes <input type="checkbox"/> Onset Date	No <input type="checkbox"/>
Headache	Yes <input type="checkbox"/> Onset Date	No <input type="checkbox"/>
Back pain	Yes <input type="checkbox"/> Onset Date	No <input type="checkbox"/>
Myalgia	Yes <input type="checkbox"/> Onset Date	No <input type="checkbox"/>
Exhaustion	Yes <input type="checkbox"/> Onset Date	No <input type="checkbox"/>
Lymphadenopathy	Yes <input type="checkbox"/> Onset Date	No <input type="checkbox"/>
Rash	Yes <input type="checkbox"/> Onset Date	No <input type="checkbox"/>
Description of rash:	Macular <input type="checkbox"/> Papular <input type="checkbox"/> Vesicular <input type="checkbox"/> Pustular <input type="checkbox"/> Maculopapular <input type="checkbox"/> Vesiculopustular	
Site where rashes first appeared	Face <input type="checkbox"/> Head <input type="checkbox"/> Limbs <input type="checkbox"/> Trunk <input type="checkbox"/> Genital <input type="checkbox"/> Palm / Sole <input type="checkbox"/> Other	
Number of Lesions on The Body		
Whether Hospitalized	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Date Of Hospitalization (Where Relevant)		
Outcome	Recovered <input type="checkbox"/>	Deceased <input type="checkbox"/> Ill <input type="checkbox"/>
Date of Death (if applicable)		
Type of Sample Collection	Naso / Oropharyngeal Swab <input type="checkbox"/> Skin Lesion <input type="checkbox"/>	
Date Of Specimen Collection		
Date Of Lab Confirmation (Where Done)		
Recent Travel History (5-21 Days Before Illness)		
Name of Country / Place		
Exposure To A Probable Or Confirmed Case		
Relationship With Probable Or Confirmed Case		
Extra martial sexual relation in last 21 days		
H/of Other illness	HIV <input type="checkbox"/> DM <input type="checkbox"/> Other _____	
Final Case Classification	Suspected <input type="checkbox"/> Probable <input type="checkbox"/> Confirmed <input type="checkbox"/> Discard <input type="checkbox"/> Loss to follow-up <input type="checkbox"/>	

