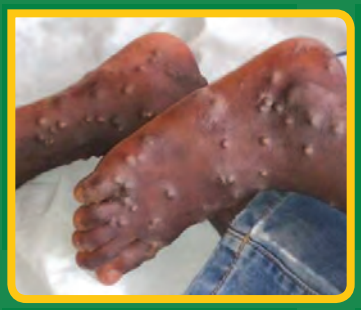
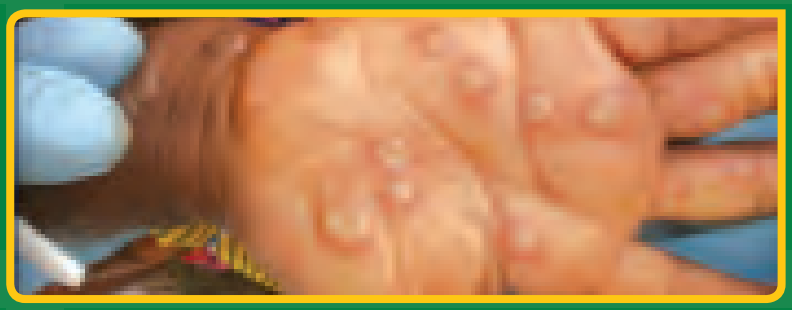
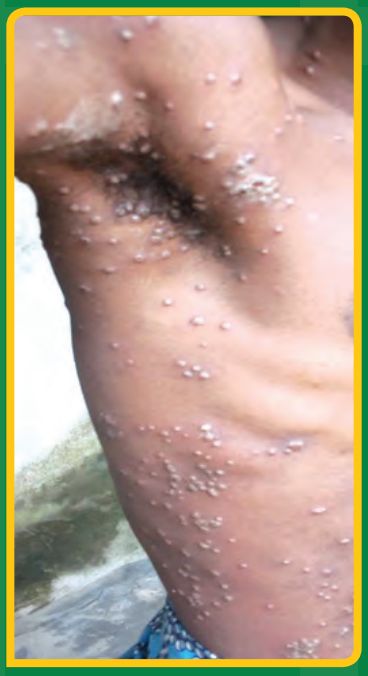
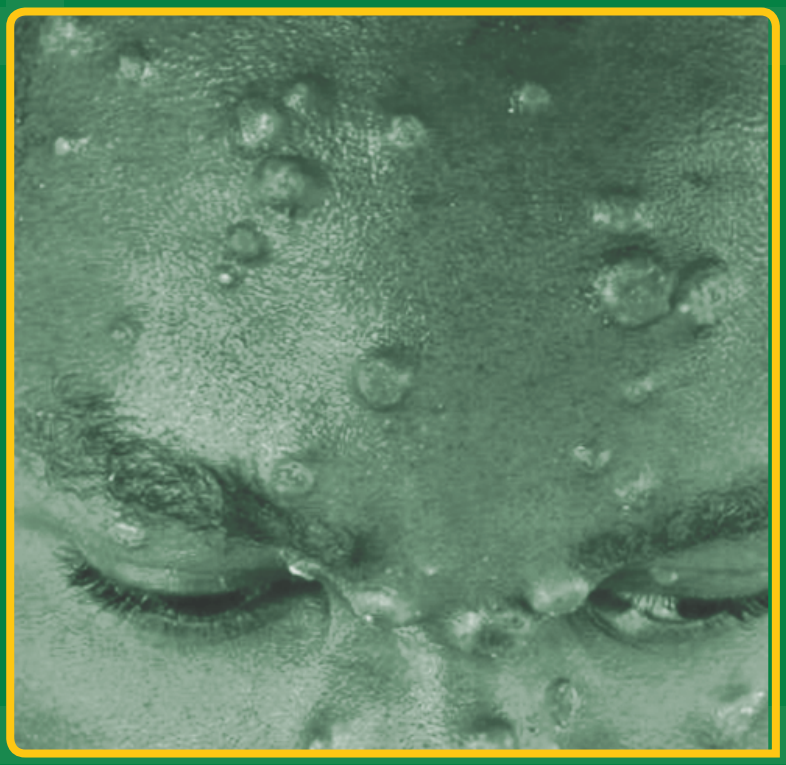
NCDC

NIGERIA CENTRE FOR DISEASE CONTROL









NATIONAL MONKEYPOX

PUBLIC HEALTH RESPONSE GUIDELINES

National Monkeypox Public Health Response Guidelines

Design and Layout by Boboye Onduku/Blo'comms, 2019

NATIONAL
MONKEYPOX
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2019

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About NCDC

Nigeria Centre for Disease Control (NCDC) is Nigeria's national public health institute with the mandate to protect Nigerians from the impact of communicable diseases of public health significance, amongst other responsibilities. It focuses on this through evidence-based prevention, integrated disease surveillance and response activities, using a One Health approach, guided by research and led by a skilled workforce.

NCDC operations and activities are guided by five key goals to:

- Accurately measure the burden of infectious diseases in Nigeria
- Ensure Nigeria is able to meet its international obligations as a member of the World Health Assembly
- Develop a Public Health laboratory service network to support the detection and prevention of, and response to critical infectious diseases
- Reduce the adverse impact of predictable and unpredicted public health emergencies
- Create an efficiently managed and evidence-based organisation with a clear focus of health promotion and disease prevention.

NCDC currently operates through five directorates: Surveillance and Epidemiology, Public Health Laboratory Services, Emergency Preparedness and Response, Prevention and Programmes Coordination and Administration.

Foreword

Since the re-emergence of monkeypox in Nigeria in September 2017, the Nigeria Centre for Disease Control(NCDC) has continued to receive reports and respond to cases of the disease from States across the country.

Between September 2017 when the outbreak started and November 2018, about 300 suspected cases had been reported from 26 out of 36 states and the Federal Capital Territory. The highest number of cases were reported from States in the South-South region of Nigeria.

Monkeypox is a zoonotic orthopox virus, which presents in humans with symptoms such as fever, headache, body pain, malaise, lymphadenopathy (enlargement of glands), sore throat and the typical generalised vesiculopustular rash. Transmission is via direct or indirect contact with infected animals, human, or contaminated materials.

The Nigeria Centre for Disease Control has the legal mandate of protecting Nigerians from the impact of communicable disease of public health importance as well as developing guidelines and standards for public health activities at all levels in the country. Consequently, NCDC developed this national guideline as a result of the growing need for stakeholders to understand the epidemiology and control measures of monkeypox.

This guideline provides technical guidance on the prevention, detection and response to monkeypox outbreaks in Nigeria and beyond including specific measures on early detection of suspected cases and prompt reporting from health facilities to higher levels, strengthening surveillance and laboratory confirmation and the use of such information to institute immediate public health control measures.

This document is an update of the interim national guideline circulated during the 2017 outbreak and therefore, presents updated information and guidance based on current available knowledge and evidence. It is a dynamic document which will continue to be updated as more evidence emerges on the epidemiology and effective preventive and control measures for this re-emerging infection.

Compliance with this guideline will improve the overall response capacity in any subsequent outbreak of monkeypox, and I urge all stakeholders at the frontline of outbreak response efforts to familiarise themselves with its contents.

Therefore, this guideline is presented for use in both public and private health settings as well as in relevant government departments and agencies in Nigeria.

Chikwe Ihekweazu

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Acknowledgements

The Nigeria Centre for Disease Control (NCDC) wishes to thank the leadership of the Federal Ministry of Health, especially the Honourable Minister of Health, Dr. Osagie Ehanire and the Honourable Minister of State for Health, Dr. Olorunnimbe Mamora for the strong leadership they provided in the response to monkeypox re-emergence in Nigeria.

We are grateful to our partners including the World Health Organization (WHO), United States Center for Disease Control and Prevention (US-CDC), Public Health England (PHE), Africa Centres for Disease Control and Prevention (ACDC), Africa Field Epidemiology Network (AFENET) for their invaluable contributions to the development of this guideline.

We also express our gratitude to the team of expert contributors and reviewers who helped with finalising this document. The list of contributors and reviewers is provided at the end of the annex section.

Our sincere appreciation goes to all the healthcare workers who played critical roles during the outbreaks and for their continued commitment to the management of monkeypox patients.

The teamwork of members of the monkeypox Technical Working Group in transforming this document into a final national guideline is well commended.

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Abbreviations

ACDC	Africa Centres for Disease Control and Prevention
CFR	Case Fatality Rate
CIF	Case Investigation Form
CSOs	Civil Society Organisations
DRC	Democratic Republic of Congo
DSNO	Disease Surveillance and Notification Officer
ECOWAS	Economic Community of West African States
EDTA	Ethylene Diamine Tetra Acetic acid
ELISA	Enzyme Linked Immunosorbent Assay
EM	Electron Microscopy
EOC	Emergency Operations Centre
EPR	Emergency Preparedness and Response
FBOs	Faith-based Organisations
FMARD	Federal Ministry of Agriculture and Rural Development
HCW	Health Care Worker
HHT	Human-to-Human Transmission
HIV	Human Immunodeficiency Virus
IDSR	Integrated Disease Surveillance and Response
IEC	Information Education Communication
IgG	Immunoglobulin G
IgM	Immunoglogulin M
IMS	Incident Management System
IPC	Infection Prevention and Control
LGA	Local Government Area
MPX	Monkeypox

MPXV	Monkeypox Virus
NVRI	National Veterinary Research Institute
NCDC	Nigeria Centre for Disease Control
NHP	Non-Human Primates
NPHCDA	National Primary Health Care Development Agency
NG	Nasogastric
NSAID	Non-Steroidal Anti-Inflammatory Drugs
NRL	National Reference Laboratory, Gaduwa, Abuja
OPXV	Orthopoxirus
PCR	Polymerase Chain Reaction
PHE	Public Health England
PHEOC	Public Health Emergency Operations Centre
PPE	Personal Protective Equipment
RCSDC	Regional Centre for Surveillance and Disease Control
RRT	Rapid Response Team
SE	State Epidemiologist
SMS	Short Message Service
SOP	Standard Operating Procedure
TV	Television
UCL	University College London
UK	United Kingdom
UK PHRST	United Kingdom Public Health Rapid Support Team
USA	United States of America
US CDC	United States Centers for Disease Control and Prevention
WHO	World Health Organisation

1.0 Background

1.1 An Overview and Epidemiology of Monkeypox Outbreaks

Monkeypox is a viral zoonotic disease (a virus transmitted to humans from animals) with symptoms in humans similar (but less severe) to those seen in the past in smallpox patients. Although smallpox was declared eradicated by the WHO in 1980, monkeypox however continues to occur sporadically in Central and West Africa.[1,2] The monkeypox virus, was first isolated in 1958 at the State Serum Institute in Copenhagen (Denmark) during an investigation into a pox-like disease among colonies of monkeys kept for research. The virus, being given its name from the species it was initially isolated from.

Monkeypox was first identified in humans in1970 in the Democratic Republic of Congo (then known as Zaire) in a nine-month-old boy within a region where smallpox had been eliminated in 1968. Since then, the majority of cases reported have been in the rural rain forest regions of the Congo Basin and western Africa – particularly in the Democratic Republic of Congo (DRC), where it is considered to be endemic[3,4]. There are two recognised strains of the virus – West African monkeypox virus clade (which is associated with milder disease) and the Central African monkeypox virus clade which is typically associated with more severe illness.[2]

The animal reservoir is not yet known but is highly suspected to be small mammal species such as a rodents.[1]The Orthopoxvirusgenus (to which monkeypox belongs) also includes variola virus (the cause of smallpox), vaccinia virus (used in the smallpox vaccine), and cowpox virus.[2]

Nigeria is one of the West African countries that have reported monkeypox in the past–two recorded human cases in 1971 and one in 1978.[3,4] Other African countries that have reported the disease include: Cote d'voire, Liberia, Sierra Leone, Gabon, Cameroon, Republic of Congo, Central African Republic and South Sudan.[1] The United States of America (USA) reported the first occurrence of the disease outside of the African continent in 2003 where 47 cases were linked to wild animals that were shipped to the USA as part of the pet trade.[3]

The virus which is transmitted from its animal reservoir to a human host, is currently believed to have limited secondary spread through human-to-human transmission (HHT). The case fatality rate (CFR) is reported to vary widely (between1% and 10% for various outbreaks), with the majority of deaths occurring in younger age groups.[1]

There is no specific treatment or vaccine available for human monkeypox infections, however prior smallpox vaccination has been reported to offer a high degree of cross-protection to monkeypox.[5,6]

Two cases of monkeypox are recorded to have been reported in 1971,[2] with one of these being in a four year old with no previous smallpox vaccination.[4] with a third case reported in 1978.[2] After this, there were no other cases reported, until September 2017, when Nigeria witnessed a re-emergence of monkeypox.[7] By December 2018, there were 132 confirmed and probable cases with seven deaths (CFR=5.3%) in Nigeria. In September 2018, the United Kingdom (UK) confirmed two imported cases of monkeypox[5], while Israel confirmed one case in October 2018.[6] and Singapore also confirmed a case in May 2019,[8] all with a travel history linked to Nigeria. An additional case, (nosocomial transmission) was recorded in the UK that was related to the management of one of the ex-Nigeria cases.[5]

1.2 Transmission

The virus can be transmitted from animal-to-human, human-to-human and from a contaminated environment-to-human Index cases are infected by direct contact with the blood, bodily fluids, or cutaneous or mucosal lesions of infected animals,[1]including through their bite or scratch. Human infections through the handling of infected monkeys, Gambian giant rats and squirrels have been documented in Africa, while eating inadequately cooked meat of infected animals has also been identified as a possible risk factor for transmission.[1] Human contact with materials contaminated with the virus can also lead to infection[2].The virus enters the body through broken skin (even if not visible), the respiratory tract, or the mucous membranes (of the eyes, nose, or mouth).[2]

Human-to-human (HHT) or secondary transmissions occur primarily through droplet respiratory particles requiring prolonged face-to-face contact, or by direct or indirect contact with skin lesions or body fluids of an infected person, and by contact with objects recently contaminated by patient fluids or lesion material (such as clothing or linens). There is limited evidence on the persistence of variola-related viruses on materials (that may act as fomites), under controlled environmental conditions, but there is evidence to suggest that vaccinia virus may persist from weeks to

months[9] underscoring the importance of environmental de contamination. During human monkeypox outbreaks, household members of active cases are at greater risk of infection due to their proximity, while hospital associated acquired infections have been noted in Democratic Republic of Congo as well as in the UK.[5,10] There is some suspicion that sexual transmission may be one route of person-to-person transmission, but there is yet to be evidence to support this.[11] Furthermore, transmission may also occur by inoculation or vertically via the placenta (congenital monkey pox).[1] It is advised that affected individuals should avoid close contact with immune compromised persons (including those with HIV infection) until all crusts (see below) are gone.[2]

1.3 Signs and Symptoms

Clinical manifestations of monkeypox usually develop within 5–21 days of infection (incubation period), with infection usually mild-to-moderate in nature and can be divided into two periods.[1]

- Invasion/prodromal period (0-5 days) with clinical manifestations of fever, intense headache, lymphadenopathy (swelling of the lymph node), back pain, myalgia (muscle ache) and an intense asthenia (lack of energy)
- Skin eruption period (within 1-3 days after appearance of fever) where rashes appear in various stages often beginning on the face and then spreading elsewhere on the body. The face (in 95% of cases), and palms of the hands and soles of the feet (in 75% of cases) are most affected. The evolution of the rash which occurs over a period of 10 days, progresses through the following stages:
  - Maculopapular (lesions with a flat base)
  - Vesicles (small fluid filled blisters)
  - Pustules (pus-containing rash)
  - Crust (dried blisters)

The Nigeria outbreak showed that all parts of the body can be affected by monkeypox. However, the parts of the body most affected by rashes were in the following order from most affected to the least affected:[12]

- Face
- Legs
- Trunk
- Arms
- Palms
- Genitalia
- Soles

The oral mucous membranes and the conjunctivae as well as the cornea (eyeball) were also recorded among cases during the outbreak.

The crusts may not completely disappear for three weeks. Individuals are no longer contagious once all crusts have dried into scabs and have fallen off.

Even though the symptoms of monkeypox are known to be milder than smallpox, the disease can be fatal as demonstrated in the Nigeria 2017/2018 outbreak.

Figure 1 shows the frequency of signs and symptoms observed during this outbreak.

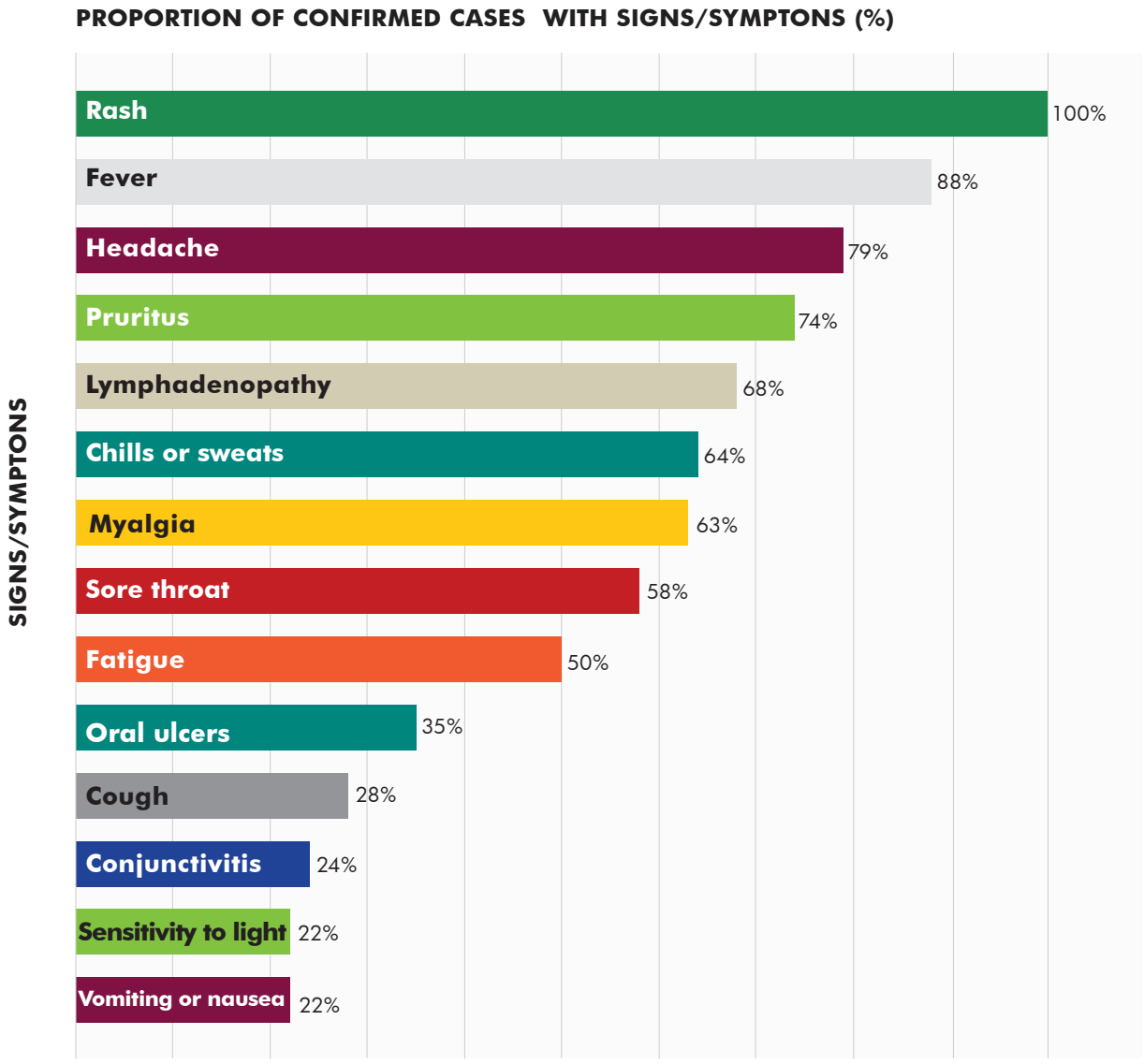

Figure1: Frequency of Signs and Symptoms Among Nigerian Confirmed Monkeypox Cases Between September 2017 and September 2018

1.4 Diagnosis

Though clinical recognition of monkeypox is the first step in diagnosis, the definitive diagnosis can however only be made by laboratory confirmation via a number of accepted diagnostic tests:

- Polymerase Chain Reaction (PCR) assay
- Virus isolation by cell culture
- Enzyme-linked Immune Sorbent Assay (ELISA)
- Antigen detection tests

It is important to note that only PCR and virus isolation by cell culture can indicate the presence of the virus. ELISA and antigen detection tests are immune assays that detect exposure to the virus. The antigen detection methods are not monkeypox-specific given the serological cross-reactivity between OPVs while virus isolation requires further characterisation to differentiate between OPVs. Antibody detection assays are immune assays used to detect exposure to the virus retrospectively. Such serology testing for orthopoxvirus-specific antibodies has been used to evaluate exposure and immunity to OPXV but generally lack a practical capacity to reliably differentiate between orthopoxvirus species. The diagnostic uses of serological tests have therefore been limited to the use of IgM-based serology to determine recent exposure. In vaccinated populations, the use of IgG serology for diagnostic purposes can be problematic due to the longevity of IgG responses and subsequent cross-reactivity with other OPXVs.[13]

The optimal specimens for laboratory diagnosis are however those taken from lesions i.e. vesicular swabs of lesion exudate or crusts.[1,11](*see chapter 4*).

Prior to laboratory confirmation, other conditions/infections resulting in a rash should be included in differential diagnoses – which include chickenpox, bacterial skin infections, scabies, syphilis ,measles and medication-associated allergic skin reactions.[1]

Table 1 describes clinical features that help differentiate monkeypox from other similar rash illnesses.

Table 1: Differential Diagnosis of Monkeypox

S/N	DISEASE	CLINICAL DESCRIPTION
1	Monkeypox	- Illness is usually mild to moderate in severity, but can be fatal. Illness presenting with fever, headache, lymphadenopathy, back pain, myalgia (soreness in muscle) and asthenia (decrease in muscle strength) - Rash which follows fever starts from face, then spreads usually in a centrifugal pattern to other parts of the body especially extremities - Rash progresses from maculopapules to vesicles, pustules (rash with pus) and crusts (dried blisters) - Rashes in a particular area are usually at the same stage of development
2	Chicken pox	- Mild/moderate childhood infection which can also affect adults In whom it tends to be more severe - Fever, tiredness, loss of appetite and headaches - Rash that turns into itchy, fluid-filled blisters that eventually turn into scabs - The rash may first show up on the face, chest, and back then spread to the rest of the body, including inside the mouth, eyelids, or genital area - Rash is usually not pustular - Rashes are usually at different stages of development - Lymphadenopathy is not a common feature
3	Measles	- High fever, cough, watery nose (coryza), and conjunctivitis (red, watery eyes). Tiny white (Koplik) spots may appear inside mouth 2-3 days after symptoms - Flat red (maculo-papular) rashes appear on face around hairline, and spread downward to the neck, trunk, arms, legs, and feet - Small raised bumps may also appear on top of the flat red spots
4	Scabies	- Intense itching, with onset of pimple-like itchy rash - The itching and rash usually affects the wrist, elbow, armpit, webbing between the fingers, nipple, penis, waist, belt-line, and buttocks - Tiny raised lines (burrows) are sometimes seen on the skin which are caused by the female scabies mite tunneling just beneath the surface of the skin - The head, face, neck, palms, and soles may be involved in infants and very young children
5	Syphilis	- Fever, swollen lymph glands, sore throat, patchy hair loss, headaches, weight loss, muscle aches, and fatigue - Painless chancre in primary stage of the disease - Skin rashes and/or mucous membrane lesions (sores in the mouth, vagina, or anus) mark the second stage

2.0 Monkeypox Outbreak Response and Control Strategies

Response to human monkeypox outbreak requires early detection and effective management of cases and their contacts to prevent spread of the disease.

Control measures include:

1. Intensified surveillance and active case finding using established standard case definitions
2. Isolation and care of suspected or confirmed cases
3. Prompt sample collection (lesion specimens for active cases and serum for retrospective cases) for laboratory diagnosis
4. Strict adherence to standard contact precautions, hand hygiene and barrier nursing through use of Personal Protective Equipment (PPE) including: gloves, face mask, gown and goggles
5. Risk Communication and Social Mobilisation of the community on preventive measures

2.1 Response Coordination

Effective response to, and control of monkeypox outbreak will involve the participation of all stakeholders. Members of the community; health care workers (including clinicians and virologists); Local Government, State and Federal Public Health officials (including the DSNOs, Medical Officers of Health, Health Educators, Epidemiologists, the NCDC team, Environmental Health officers, animal surveillance officers); veterinarians, the academia; development partners and the media all have a role to play in the response to, and control of monkeypox.

Development partners support the government of Nigeria at all levels in the response to, and control of diseases. This may involve the activation of existing Epidemic Preparedness and Response (EPR) committees or activation of an Emergency Operations Centre (EOC) as necessary.

The NCDC Incident Activation Plan provides guidance that can be used by NCDC–affiliated Public Health Emergency Operations Centres (PHEOCs).[14]

The use of the Incident Management System (IMS) is recommended for coordinating outbreak response at all levels. IMS is an integrated structure for coordinating multi-agency response to an event of public health importance.

2.2 Roles and Responsibilities

2.2.1 Members of the Public

- Report suspected cases of monkeypox to health care workers, Community Health Officers, DSNOs, State Epidemiologist or call the NCDC toll free call centre **(0800 9700 0010)**
- Take all necessary precautions to prevent the spread of infection from animals and persons suspected to be infected such as avoiding direct contact

2.2.2 Health Care Workers

- Identify suspected cases of monkeypox using the standard case definitions (see chapter 3)
- Practice standard precaution in the management of all patients
- Isolate and manage all suspected and confirmed monkeypox cases away from other patients
- Report all suspected cases to the LGA DSNO and collect appropriate samples for laboratory diagnosis (see chapter 4)
- Complete all required investigation forms in collaboration with DSNOs
- Educate patients and relations on monkeypox infection prevention and management

2.2.3 Local Government Area Public Health Officers

- Investigate all reported monkeypox suspected cases and rumours
- List and follow-up contacts[1] of cases in both community and healthcare settings
- Transport sample to the National Reference Laboratories for diagnostic testing (see details in chapter 4)
- Facilitate movement of cases from the community to health facilities
- Report all cases to the State Epidemiology team
- Create awareness of monkeypox preventive and infection control actions in the community (including during funerals) and in health facilities

[1] *Definition of various categories of contact is detailed in chapter 3*

2.2.4 State Public Health Department

- Support the LGA team in the investigation and follow up of cases
- Report all suspected and confirmed cases to the NCDC
- Ensure and support the isolation and management of all monkeypox cases in appropriate or designated facilities with the capacity for isolation and case management
- Activate Emergency Operations Centre (EOC) during an outbreak[2]
- Carry out epidemiological analysis of cases to identify and inform needed targeted actions
- Coordinate the multi-sectoral response to an outbreak

2.2.5 The NCDC

- Coordinate and support all States in the response to, and control of the outbreak
- Deploy Rapid Response Teams (RRT) where necessary to support outbreak investigation and management
- Perform laboratory diagnostic testing
- Develop guidelines and Standard Operating Procedures (SOPs) for monkeypox response and control
- Coordinate national level control and research activities

[2] *Interim definition of an outbreak is one confirmed case monkeypox*

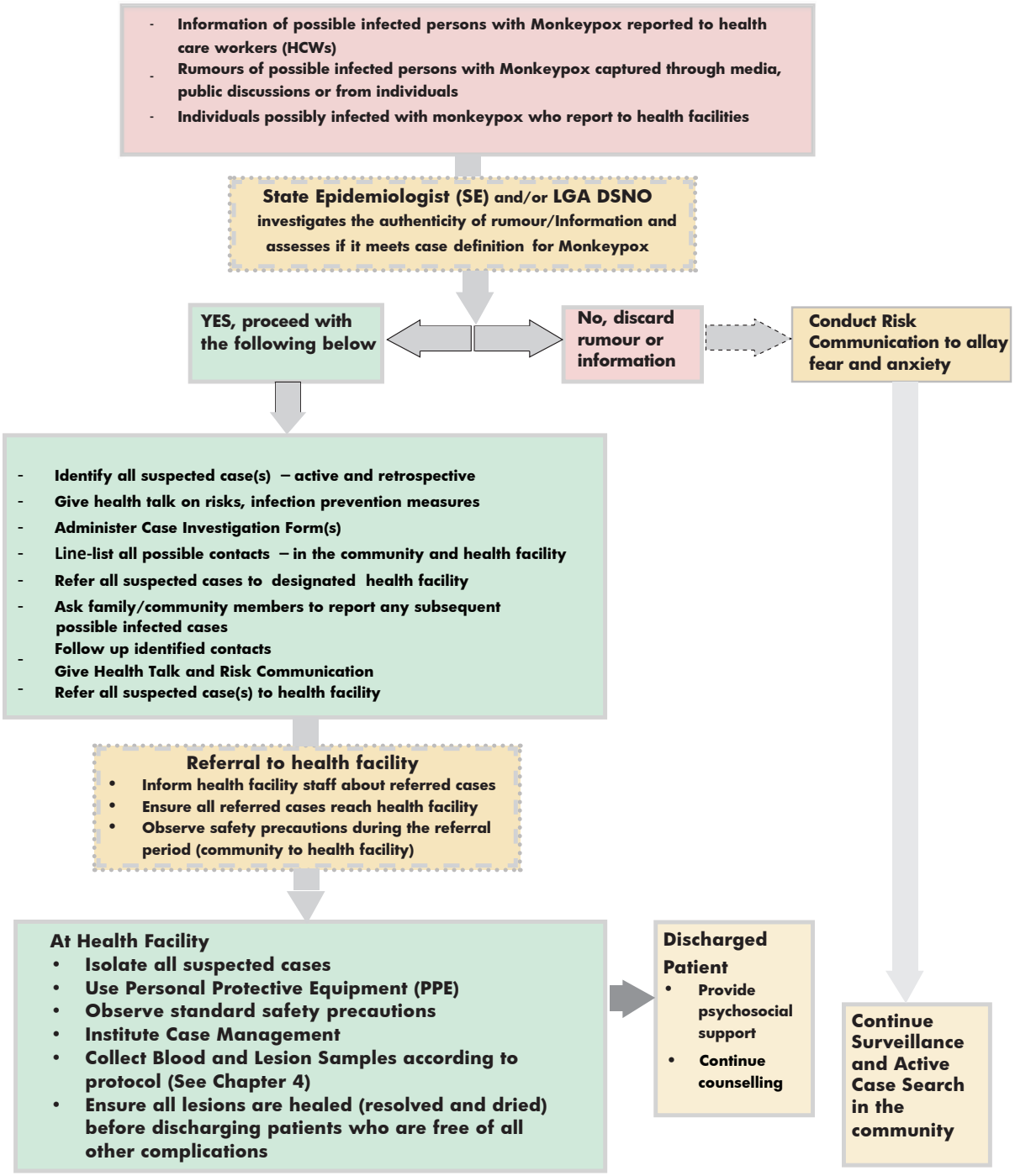

Figure 2: Algorithm for Responding to Suspected Monkeypox Case

3.0 Case Definitions and Surveillance

Robust surveillance for monkeypox (MPX) cases is important to detect and prevent further transmission. It involves case detection, investigation and contact follow-up. MPX is epidemic prone and should be reported immediately. Suspected monkeypox cases may be detected using standard case definitions. Cases of suspected monkeypox should be reported immediately to the LGA Disease Surveillance and Notification Officers (DSNOs) or State Epidemiologist or NCDC. Reporting of suspected cases should follow the IDSR reporting flow (*Appendix 1*).

3.1 Monkeypox Case and Contact Definitions

3.1.1 Suspected case

An acute illness with fever >38.3°C, intense headache, lymphadenopathy, back pain, myalgia, and intense asthenia followed one to three days later by a progressively developing rash often beginning on the face (most dense) then spreading elsewhere on the body, including soles of feet and palms of hand

3.1.2 Probable case

A case that meets the clinical case definition, is not laboratory confirmed, but has an epidemiological link to a confirmed case

3.1.3 Confirmed case

A clinically compatible case that is laboratory confirmed

3.1.4 Contact

Any person who has been in direct or indirect contact with a confirmed case since onset of symptoms i.e. contact with skin lesions, oral secretions, urine, faeces, vomitus, blood, sexual contact, sharing a common space (anyone who has been in close proximity[3] with or without physical contact with a confirmed case)

[3] *For example, living in the same household, sharing room, vehicle, workstation, flight*

The following are the contact categorisation recommended for MPX

a. *Type 1*– Direct contact with skin lesions of a confirmed MPX case - vesicles, pustules, crusts etc. (including sexual contact) OR direct contact with a confirmed animal case
b. *Type 2* – Direct contact with body fluids of confirmed monkeypox case (blood, urine, vomitus, faeces, stool, sputum etc.)
c. *Type 3* – Sharing of common space with case (e.g. vehicle, household, shared room/workstation, flight, etc.)

This categorisation helps to determine the level of risk for each contact. Type 1 has the highest risk, followed by Type 2 and then Type 3.

3.2 Monkeypox Case Investigation and Outbreak Response

3.2.1 Case investigation

Once a suspected case is detected, states are to intensify surveillance and actively engage in case detection. All rumours should be investigated and documented. A Case Investigation Form (CIF) (*Refer to Appendix 2*) should be completed for all suspected cases who should also be entered into a line-list. The following should be carried out for every suspected case:

1. Clinical examination
2. Questioning about possible sources of infection and the presence of apparent disease in the person's community
3. Completion of a case investigation form for everyone who meets the case definition
5. Collection and transportation of samples as detailed in sample collection protocol (*Refer to chapter 4*)
6. Ensure referral to the nearest designated isolation facility or a secondary health facility for management
7. Include all contacts in a line-list.

3.2.2 Contact tracing

1. *Identification of contacts* – all contacts of every suspected case should be identified during case investigation
2. *Contact listing* – all contacts of every suspected case should be included in a line-list and also the contact listing section of the MPX CIF. All listed contacts should also be classified according to the type of contact had with the case as discussed in the introduction session of chapter 3. (NOTE- Follow-up should be commenced immediately for all contacts of every case. If the laboratory result of a suspected case comes back as negative, the contacts are immediately dropped from further follow-up)
3. *Follow-up of contacts of monkeypox confirmed cases* – The contacts of animals or humans confirmed to have monkeypox or contacts of probable cases should be placed under symptom surveillance for 21 days calculated from the last day of exposure. The development of either a fever or skin rash in a contact should be of concern. The designated surveillance officer or health worker should follow-up contacts daily and monitor them for the development of associated symptoms. A digital thermometer should be provided to each contact for daily temperature check. Contacts who develop fever should be placed under rash surveillance for the rest of the follow-up period. If rash develops the LGA/State Public Health team should be notified immediately for appropriate action (as listed above for suspected cases)
4. Healthcare workers who have unprotected contact (i.e. not wearing PPE) with individuals with suspected monkeypox should undergo active surveillance for symptoms, including measurement of temperature at least twice daily for 21 days following the exposure
5. Information about contacts should be documented in the Contact Listing Form (*Appendix 3*) and the Contact Follow-up Form (*Appendix 4*)

3.3 Alert and Action Thresholds for Monkeypox

The following are the defined thresholds for monkeypox outbreaks:

- The Alert Threshold is the point at which a single case is suspected.
- The Action Threshold is the point at which a single case is confirmed.

The actions to be taken for each threshold are as follows:

3.3.1 Alert threshold

- Report case-based information to appropriate levels
- Collect and send specimen (preferably swab of rash) under strict safety conditions to NRL to confirm diagnosis
- Ensure patient is isolated and health personnel attending have been vaccinated with smallpox vaccine
- Implement direct contact and airborne infection prevention control precautions
- Treat and manage the patient with supportive care and symptom-specific management

3.3.2 Action threshold

- Maintain strict infection control measures throughout the duration of the outbreak
- Mobilise the community for early detection and care
- Conduct community education about the confirmed case, how the disease is transmitted and how to implement infection prevention and control in home care settings and during funerals
- Conduct active search for additional cases
- Request additional help from the national/international levels as needed
- Establish isolation ward to handle additional cases that may be admitted to the health facility

4.0 Laboratory Investigation and Diagnosis

Laboratory diagnosis is critical for the rapid identification of monkeypox infection in humans. To facilitate accurate diagnosis, the correct specimens should be collected from suspected cases and transported to the NCDC National Reference Laboratory (NRL) for diagnosis as rapidly as possible with the recommended cold chain. Incorrect specimens, poor cold chain and poor data collection can hamper the interpretation of results or make testing of the sample not possible.

The following are recommended guidance for specimen collection, packaging and transportation to the reference laboratory.

4.1 Sample Collection and Packaging Protocol for Suspected Cases of Monkeypox

Samples should be collected from every suspected case at the earliest available time

4.1.1 For every suspected case collect:

- Vesicular/pustule swabs of lesions and/or crusts from acute cases during rash phase[4]
- Whole blood in EDTA and serum separator tubes for laboratory serology and other investigations
- Whole blood in EDTA and serum separator tubes should also be collected for investigation of retrospective cases who have recovered (i.e. post-rash).

The following information should be provided with the specimen(s) in order to facilitate the interpretation of the laboratory test results:

- Date of onset of fever
- Date of onset of rash
- Date of specimen collection
- Age and sex
- EPID number

4 *' More than one lesion should ideally be sampled, preferably, from different locations on the body and /or from different looking lesions'*

4.1.2 Equipment needed in the field

- Sterile swab stick
- Needle or scalpel blade if available
- Alcohol swabs
- Gloves
- Gown
- Disposable syringes
- Tourniquet
- Face mask
- Hand sanitiser
- EDTA tube
- Yellow top serum separator tube / Plain bottle is recommended
- Falcon tube
- Cryovial/dry (universal) sterile(bottle) tube for crust collection
- Biohazard bag to discard waste
- Sharps container

4.1.3 Protocol for sample collection

1. Observe standard contact precautions/Infection Prevention Control (IPC)
   - Hand washing with soap and water before and after sample collection
2. *Use recommended PPE*: gloves, face masks, gowns, goggles

4.1.4 Lesion specimen collection

1. Lesion specimens are a swab of vesicular/pustular fluid and/or a scab/crust:

a. Swabs

i. Ensure vesicular/pustular sample is collected on the tip of the sterile swab, the exudate should be visible on the swab itself

ii. Collect 2 x specimens, one each from a separate lesion using separate swabs

iii. Vigorously rub the bottom of each lesion with the swab to ensure cellular material from its base is included. It may be necessary to unroof the lesion

iv. Place the swab back into its sterile tube, which should not contain any viral transport media

b. Scab/Crust

i. Carefully and aseptically unroof the scab/crust

ii. Place the scab/crust in a dry sterile bottle/cryovial, which should not contain any viral transport media

2. Label the tubes (name, date, age, sex and EPID Number)
3. Store lesion specimens (swabs and scab/crust) in a freezer (at -20 to -70°C)
4. Transport lesion specimens (swabs and scab/crust) to NRL within 6 hours at 4°C

4.1.5 Blood specimen collection:

1. Collect 10mls of venous blood: 5mls in an EDTA tube and 5mls in a serum separator tube
2. Invert the EDTA tube a few times to mix the sample with the anticoagulant
3. Label both tubes with patient's name, date, age, sex and EPID Number

4.2 Packaging of Specimens for National Transportation

1. Put the collected sample/swab in to the secondary container (zip-lock) and place it in the tertiary container
2. Line the inside of your specimen transport container with a frozen ice pack
3. Wrap blood tubes with absorbent material and then place into Falcon tube (secondary container)
4. Place Falcon Tube into a ziplock bag. Do not place the blood samples directly into contact with the frozen ice packs in order to avoid haemolysis
5. The tubes containing swabs/scabs/crust should be placed into a ziplock bag before being placed into the specimen container
6. A copy of the laboratory form (Appendix 5) should be placed outside

in another ziplock bag and NOT inside the specimen transport container to avoid contamination with the samples

The specimens should be sent to the **National Reference Laboratory (NRL) in Gaduwa, Abuja.**

Inform the NCDC Surveillance Department of the shipment of specimens to the NRL by phone and email:

Telephone - **07084366813**

Email - **nigeriaepid@gmail.com**

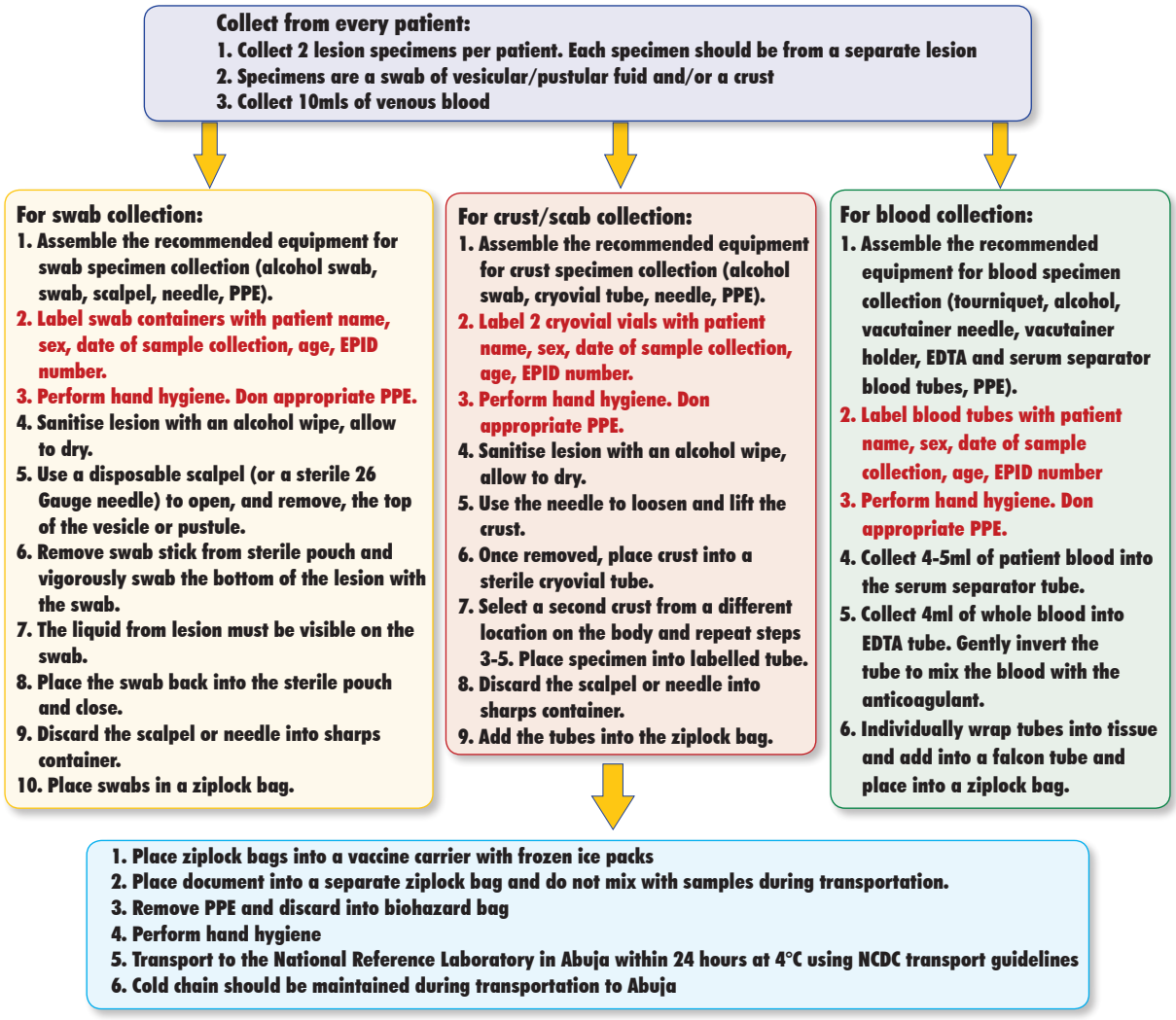

Figure 3: Job Aid for Sample Management for Suspected Monkeypox Case

5.0 Monkeypox Prevention and Control

The prevention of MPXV infection remains a challenge due to remaining questions regarding the virus' mode of transmission as well as a lack of clarity regarding which animal acts as the reservoir for the virus in Nigeria. Control involves the prevention of primary transmission from animals by avoiding contact with rodents and primates as well as limiting direct exposure to their blood and other body fluid and inadequately cooked meat (e.g. bush meat preparation and or consumption).

Control of rodents is an important measure to prevent the spread of diseases. This can be ensured through good hygiene among household members or inmates/residents of closed settings, regular removal of refuse and breeding grounds, screens on windows and doors as well as fumigation.

Infection control measures are vital to the prevention of human-to-human transmission in the community and in health care settings with standard precautions as the standard of care for all patients. Improved use of PPE (e.g. gloves, protective clothing, surgical masks), isolation practices and proper waste management through continuous education as well as adequate facilities and staffing are also essential for prevention of human-to-human transmission.

Robust health education campaigns are needed to increase general awareness of the public of the dangers posed by the monkeypox virus and to advise on proper handling of potential animal reservoir species as well as avoiding close contact with infected persons.

5.1 Infection Prevention and Control in Health Facility Settings

Standard precautions should always be in place and be followed during the care of all patients regardless of diagnosis.

Specifically, for suspected monkeypox patients in addition to standard precautions, airborne, droplet and contact precautions should be in place until smallpox is ruled out. Once smallpox is ruled out, then contact and droplet precautions should be in place until the crusts heal.

5.1.1 Standard precautions

Health Care Workers (HCWs) working in facilities where suspected cases are handled should ensure they:

a. Use contact precautions when in direct contact with patients and to help prevent indirect contact with blood or other bodily fluids and contaminated environment
b. Wear gloves to prevent contact with blood, infectious materials or other potentially contaminated surfaces and items
c. Always wear face protection (face mask/or N95, googles or face shield) against droplets
d. Observe hand hygiene following the five moments for hand hygiene and wash hands thoroughly under running water before and after a procedure.
e. Do not recap needles and handle all sharps with caution
f. Safely dispose of all sharps in labelled, puncture-proof boxes
g. Report to a supervisor immediately should there be a puncture wound or exposure to infectious substances in the facility
h. Correctly contain and dispose of contaminated waste (e.g. dressings) in appropriate color coded bags. All waste from patients with suspected/confirmed monkeypox infection is classified as highly infectious waste. This includes PPE worn in the isolation wards and should be disposed of in red bags.
i. Take appropriate care when handling soiled laundry and other equipment (e.g. bedding, towels, personal clothing) to avoid contact with lesion material, as some orthopox viruses are known to persist in the environment
j. Do not shake or handle soiled laundry materials or linen in a manner that may disperse infectious particles
k. Clean and decontaminate all used equipment appropriately (e.g. As much as possible, single use devices should be used in care of monkeypox patients
l. Critical and semi critical equipment should be sterilised and disinfected as appropriate
m. Other non-critical patient care equipment should be cleaned with

detergent, warm water and disinfected with 1.0% chlorine solution prior to disposal or re-use

5.1.2 Isolation of patients

- Suspected or confirmed monkeypox cases with lesions should be isolated in a room separate from other patients. Confirmed cases should be segregated from suspected cases.
- The isolation room should have a signage posted at the door indicating that patient is under contact and droplet precautions.
- Precautions should be taken by HCWs to minimise exposure to surrounding persons by restricting access to the isolation room except when absolutely necessary.
- Isolated patients with extensive lesions and exudates should be covered gently with a sheet or light gowns
- Affected individuals should avoid close contact with immunocompromised persons (e.g. HIV/AIDS patients, cancer patients, Diabetics etc.) until all crusts have fallen off.
- Isolation should be continued until all of the lesions have resolved
- Following the discontinuation of isolation precautions, the isolation room should undergo terminal cleaning and disinfection using appropriate decontaminating solution (1% choline solution)

5.1.3 Personal Protective Equipment (PPE)

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

Recommended PPE measures include:

- Use of disposable gown and gloves for patient contact
- Use of N95 (or comparable) filtering disposable respirator especially for extended contact in the inpatient setting. Where not available, a face mask (e.g. 3M) should be worn when accessing the isolation room

- 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
- All PPE should be removed carefully and disposed of prior to leaving the isolation room where the patient is admitted. Following which, HCWs should either wash their hands with soap and water or use an alcohol- based hand rub

5.2 Infection Prevention and Control in Community Settings

Patients who do not require hospitalisation or do not have access to an isolation facility may be isolated at home using protective measures before they are moved to a health care facility. The ability to implement isolation and infection control measures in a home setting is likely to vary depending on the following factors:

- The age of the patient (i.e. a child or adult)
- The presence of additional infected or uninfected persons or pets in the home
- The nature and extent of lesions in each case
- The immune status of household members

The following principles should be considered and adopted in the home setting:

- Persons with suspected/confirmed monkeypox should not leave the home except as required for follow-up medical care. They should avoid contact with wild or domestic animals if possible
- Hand washing with soap and water should be performed by infected persons and contacts after touching lesion material, clothing, linens, or environmental surfaces that may have had contact with lesion material
- Persons with extensive lesions that cannot be easily covered (excluding facial lesions), draining/weeping lesions, or respiratory symptoms (e.g. cough, sore throat, and runny nose) should be isolated in a room from other family members where possible
- Visitors should be avoided during the period of isolation

- Asymptomatic household members should limit contact with the person with monkeypox. Only one dedicated care giver is recommended
- Pets should be excluded from the ill person's environment

5.2.1 Use of PPE in home settings

- 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
- Disposable gloves should be worn for direct contact with lesions and disposed of after each use
- Skin lesions should be covered to the best extent possible (e.g. long sleeves, trousers/long pants) to minimise risk of contact with others
- Contain and dispose of contaminated waste (such as dressings and bandages) after consultation with State or local public health officials. Do not dispose of waste in landfills or dumps

5.2.2 Cleaning procedures for contaminated materials

- Care should be taken when handling soiled laundry to avoid direct contact with contaminated material
- Soiled laundry should not be shaken or otherwise handled in a manner that may disperse infectious particles
- Laundry (e.g. linen and clothing) may be washed with hot water, detergent and disinfectant (0.5% sodium hypochlorite solution)
- Dishes and eating utensils that the patient uses may be reused by others after washing with soap and hot water
- All contaminated surfaces should be cleaned and disinfected. Standard household cleaning/disinfectants (freshly prepared 0.5% sodium hypochlorite) can be used.

5.3 Transportation of a Monkeypox Patient

Unless medically necessary, transportation and movement of monkeypox patients should be limited.

5.3.1 Before transport

- The patient must wear a surgical facemask, and instructed to follow respiratory hygiene and cough etiquette (i.e. covering the mouth/nose with a tissue when coughing and prompt disposal of used tissues and performing hand hygiene). Ensure that the staff assisting with the transfer wear appropriate PPE (i.e. gloves, coverall or gown, boots and face-shield)
- Avoid moving patient through high patient flow or public access areas
- Prior to the patient being transported to the treatment centre, the attending physician/State Epidemiologist and/or LGA DSNO should inform the receiving physician. The patient should be transported to a treatment centre in an ambulance. The use of public transportation should be strongly avoided. If public transportation is the only means available, only the patient should be transported in the vehicle and the vehicle must be thoroughly disinfected afterward

5.3.2 During transport

- The driver should avoid contact with the patient. Accompanying ambulance crew members should maintain at least a one to two metres distance from the patient. Preferably, the accompanying staff or relative should ride in a separate cabin unless the patient is very ill and will require attention during transportation.
- Patients should be brought by a wheelchair, wheeled bed, or hospital trolley to the ward entrance if unable to walk, to minimise further contamination of the hospital
- Passages should be kept clear during transit of the patient. The patient should be taken by the shortest route (however avoiding high

patient flow or public access areas) to the appropriate ward
- Passages are to be kept clear during the transit of the patient

5.3.3 After transport

- Use detergent, water and a cleaning cloth to clean all surfaces of the ambulance especially the roof, floor, walls, and stretcher and inside of the door
- Carefully rinse the inside of the ambulance with clean water (avoid splashes)
- Close the door of the ambulance and wash the entire outside surface of the ambulance with detergent solution then spray the entire surface of the outside of the ambulance with 0.5% chlorine solution and allow a contact time of at least 10 minutes
- Carefully rinse the backside of the ambulance with clean water and request the driver to drive out of the decontamination area

5.4 Post Mortem Care/Autopsy

Personnel who care for dead patients should wear PPE recommended for Standard, Contact and Airborne Precautions as detailed above. Body remains preparation should follow routine relevant healthcare facility procedures for cleaning and containing body fluids and the body then bagged in a body bag. The bagged body should be placed on a mortuary stretcher and for transportation to the mortuary. Persons transporting prepared and covered human remains should wear gloves but other PPE is not required.

Persons who transfer remains from a mortuary stretcher onto the autopsy table should wear a gown and heavy-duty gloves. Personnel who perform or assist with an autopsy should wear PPE required for Standard, Contact and Airborne Precautions. Protective outer garments must be removed when leaving the immediate autopsy area and discarded in appropriate laundry or waste receptacles, either in an antechamber to the autopsy suite or immediately inside the entrance if an antechamber is not available. Hands should be washed upon glove removal.

5.5 Vaccination

Smallpox vaccine has demonstrated cross protection (approximately 85%) against monkeypox virus infection. The vaccine has however been known to cause both local and systemic complications including eczema vaccinatum progressive vaccinia (uncontrolled vaccinia virus replication commonly resulting in death), contact transmission of vaccine virus, and foetal vaccinia. Advances in vaccine technology has led to the development of second-generation smallpox vaccines (e.g. ACAM2000 which is currently licensed for use in the United States) which though improved still carry some risk. ACAM2000 is used for select laboratory and healthcare workers in the United States.

A third-generation vaccine (Imvamune/Imvanex) developed from attenuated vaccinia viruses and which has favourable safety profiles has been granted marketing authorisation in the European Union under exceptional circumstances for immunisation against smallpox[15], and was used (off-label) for pre and post-exposure prophylaxis in the management of the two imported monkeypox cases in the UK[5].

A prospective vaccination study is ongoing in the DRC with Imvamune administered to HCWs, including laboratory workers, aged 18 years and older with the primary objectives of determining the number of suspected and confirmed cases of MPX and the number of MPXV exposures among vaccinated HCWs over a period of observation of two year[15].

WHO recommends that healthcare workers and those treating or exposed to patients with monkeypox or their samples should consider being immunised against smallpox through their national health authorities.[11]

6.0 Case Management

Human monkeypox is primarily a self-limiting illness, with the majority of cases resolving[13] completely (even in the absence of specific treatment) in 3 to 4 weeks. However, patients with monkeypox may require supportive or symptomatic care to prevent and/or manage severe and distressful disease and complications. The presence of co-morbidities such as immunosuppression (e.g. HIV infection) and other underlying systemic disease(s) may contribute to severe disease, clinical sequelae and increased risk of mortality, as shown by six of the seven deaths reported in 2017/18 outbreak being associated with either HIV infection or sepsis from secondary bacterial infection.[12]

6.1 Principles of Management

The major principles of case management of human monkeypox includes:

a. Protection of compromised skin and/or mucous membranes
b. Rehydration therapy
c. Alleviation of distressful symptoms
d. Provision of nutritional support
e. Treatment of complications
f. Psychosocial support
g. Treatment of comorbidities

6.2 Clinical Care of Human Monkeypox Patients

Human monkeypox may be characterised by a range of general and systemic manifestations that require supportive or symptomatic treatment. Fever and skin rash are the most common features of human monkeypox. Patients presenting with high grade fever (>39°C) may require antipyretics. Skin lesions may result in loss of skin integrity, pain, ulceration and secondary bacterial infection. Complications and sequelae often follow viral activity or secondary bacterial infection[16]. Extensive damage to the skin and gastrointestinal symptoms can cause fluid imbalance and contribute to dehydration. Other complications could include bronchopneumonia, keratitis and corneal ulceration, sepsis, encephalitis and death[16].

Ocular lesions
Severe skin compromise
Mucosal lesions
Bronchopneumonia
Sepsis
Secondary infections

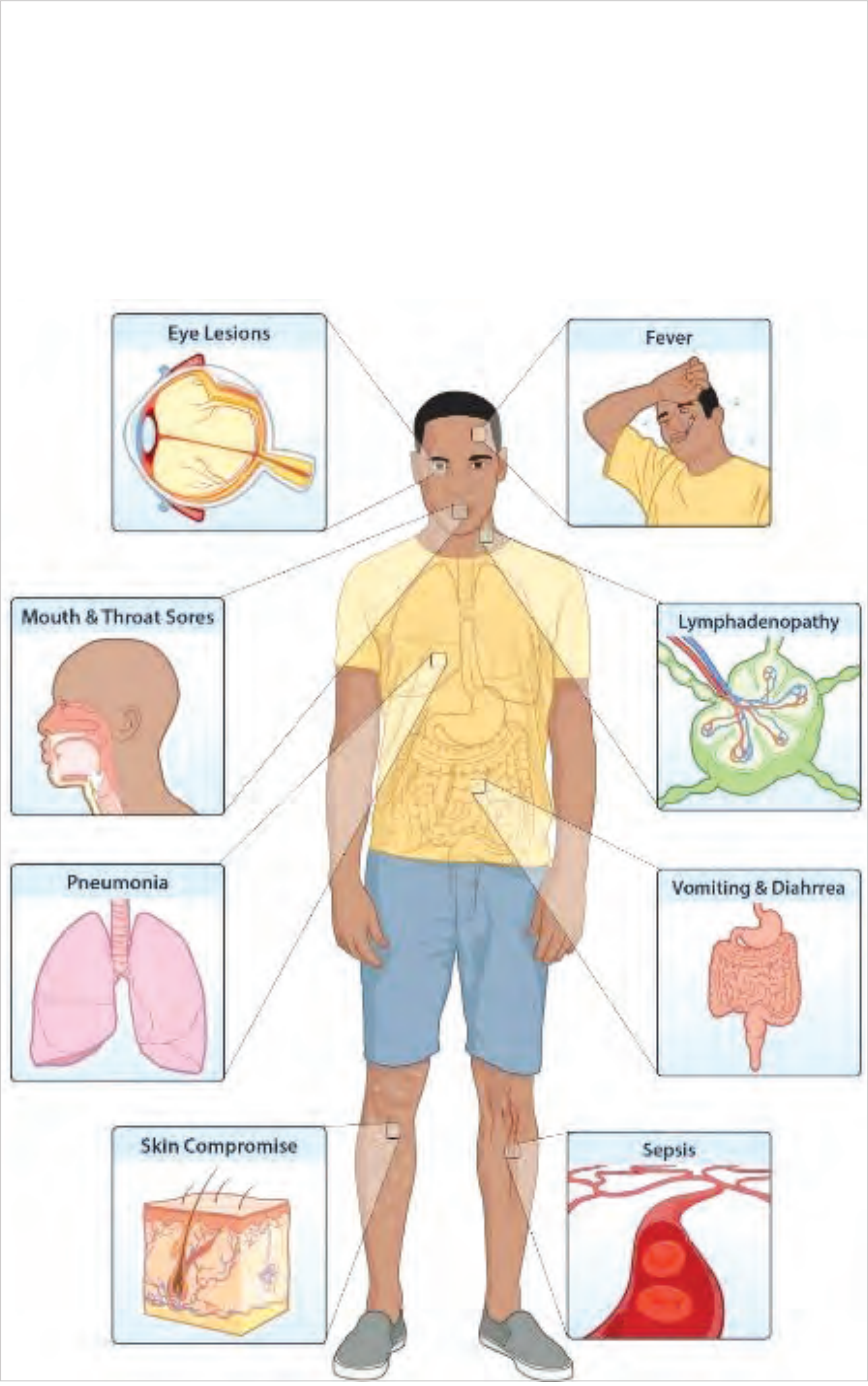

Figure 4: Sites of Clinical Manifestations of Monkeypox Complications

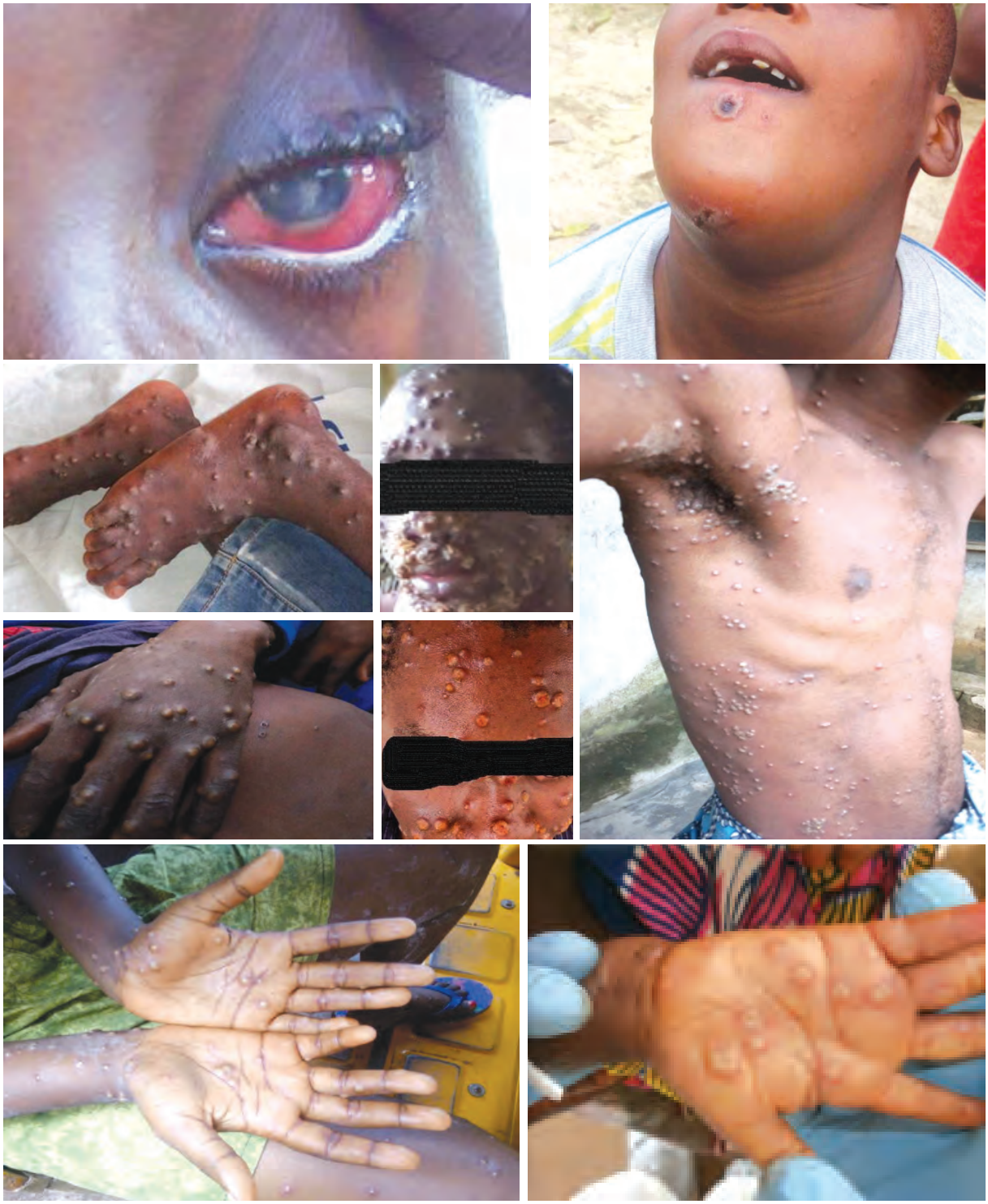

Figure 5: Clinical Photos Showing Vesiculopustular Rashes in Monkeypox Patients

Table 2: Supportive and Symptomatic Treatment of Human Monkeypox

N	SYMPTOMS/SIGNS	MANAGEMENT	REMARKS
Protection of compromised skin and mucous membranes	Skin rash	I. Keep clean with simple antiseptic II. Cover with light dressing if extensive III. Patients are encouraged to not touch and scratch the lesions	
	Skin and genital ulcers	I. Antiseptic cleaning II. Warm saline sitz bath (for vulvo-vagina ulcers) III. Light Sofra-Tulle dressing	
	Oral sores	I. Warm saline gurgle II. Vitamin C and other multivitamins	
	Conjunctivitis	Most cases are self-limiting. Consult Ophthalmologist if severe or symptoms persist.	
Rehydration therapy	Dehydration can follow poor appetite, nausea, vomiting and diarrhea. Loss of skin integrity and exudation from extensive skin lesions may also result in dehydration	Give ORS in mild cases, especially in children Give intravenous fluids (normal saline or dextrose saline as necessary) Ensure cleaning and appropriate dressing/covering of skin lesions	
Alleviation of distressful symptoms	High grade fever	Tepid sponging Antipyretics such as Paracetamol	Chills and rigors were especially common in hospitalised Nigerian patients
	Itching/Pruritus	Warm bath/warm clothing Calamine lotion Antihistamines- (e.g. Loratadine)	This symptom was self-limiting in most Nigerian cases
	Pain	Paracetamol or non-steroidal anti-inflammatory drugs (NSAID)	Most cases improved on Paracetamol alone
	Nausea and persistent vomiting	Consider anti-emetics such as metoclopramide 10 mg IV/ orally every 8 hours until vomiting stops. For children aged 1-5years, give chlorpheniramine syrup 1mg twice daily	

N	SYMPTOMS/SIGNS	MANAGEMENT	REMARKS
	Headache	Consider Paracetamol if distressful	
	Malaise	Ensure adequate hydration, nutrition and treatment of secondary infection	
Provision of nutritional support	Poor appetite (inadequate feeding)	Ensure adequate feeding with diet containing carbohydrates, proteins and vitamins/minerals.	
Psychosocial support	See section on psychosocial support	See section on psychosocial support	
Treatment of complications	Secondary bacterial infection (boils, abscesses, skin dermatitis)	Antiseptic cleaning Empirical treatment with oral/parenteral cephalosporins (Cefuroxime 500mg bd for 5days or Ceftriaxone IV 1g daily for 5 days) OR B-lactam antibiotics (Amoxyl/Clavulanic acid-625mg twice daily for at least 5days)	Moist occlusive dressings are recommended to cover areas of the skin that have experienced epidermal loss.
	Bronchopneumonia	Give empiric antibiotics (Consider B lactams or Macrolides)	
	Sepsis	Full septic work-up Consider intravenous broad-spectrum antibiotic pending culture results	Culture may only be possible in biosafety level 2 laboratory
	Encephalitis	Pay attention to nutrition and hydration if unconscious Consider nasogastric (NG) tube feeding Control seizures with anticonvulsants Consider empirical broad spectrum antibiotics	
	Keratitis/corneal ulceration	Patients who wear contact lenses should abstain from wearing their contact lenses while ill, to prevent contact with the eyes Consult Ophthalmologist	Ocular infections with monkeypox virus can cause permanent corneal scarring and loss of vision
Treatment of comorbidities	Dependent on associated infections/conditions	Manage based on clinical findings and established treatment/management guidelines	

6.3 HIV and Monkeypox Infection

During the 2017/2018 Nigerian human monkeypox outbreak, some cases had concomitant HIV co-infection. The associations between human monkeypox and HIV is currently under study in Nigeria. While the outcomes of these studies are pending, clinicians are advised to manage HIV infection according to previously established guidelines.

6.4 Psychosocial Support

Monkeypox has the propensity to evoke fear and panic in the community primarily due to its highly visible manifestations (i.e. vesiculopustular rash). This may often lead to stigmatisation and social exclusion of the patient, survivors and their relations. Psychological effects can complicate not only the clinical management of patients but also other public health response activities. Patients in isolation wards are prone to loneliness and depression, and may experience feelings associated with stigmatisation. Patients in isolation are not able to have physical contact with family and familiar objects, and their normal routines are disrupted. This may evoke fear, anxiety, depression, and rapid mood changes among patients. All health workers managing patients should be prepared to take actions to prevent, detect and respond to psychological distress in their patients.

Table 3: Psychosocial Distress that May Occur in Patients With Monkeypox

PSYCHOLOGICAL DISTRESS	EMOTIONAL DISTRESS	SOCIAL DISTRESS
Poor sleep	Anxiety	Social withdrawal
Loss of confidence	Apathy	Social isolation
Low self-esteem	Depression	Stigma
Ideas of worthlessness	Thanatophobia (fear of death)	Loss of social function: • relationship • job
Poor attention and concentration	Acute stress reaction	
Hallucination and illusion	Adjustment disorder	
Paranoid ideas and delusion		

The following are recommended steps that can help ensure the psychological wellbeing of patients:

6.4.1 Pre-admission

- Provide information for the patient on why isolation is necessary (e.g. isolation is helping to protect their families, friends and community from exposure to the virus) emphasising that every step will be taken to ensure they are not kept in isolation longer than necessary
- Provide information on the illness, its treatment, as well as the procedures of the isolation unit (for example, it should be made clear whether the patient can leave the room, who has permission to enter, etc.)
- The information should be made available in the patient's primary language and/or dialect if possible.

6.4.2 On-admission

- Assess the psychological/ emotional status of patients upon initiation of isolation precautions using a standardised protocol or instrument (*see appendix 6A and 6B*)[17]. This may be performed by nursing staff or the attending physician. Where possible, assessment information should be sent to a consulting psychiatrist/psychologist/licensed mental health practitioner for review and advice as necessary. Assessments should be repeated on a regular basis as patients may develop symptoms overtime, depending on the severity of their condition and the length of isolation
- Maintain the patient's orientation as much as possible making use of simple things like a calendar, a diary, and making the isolation ward patient-friendly
- Encourage patients to express any negative feelings they may have which are associated with being in isolation so that prompt remedies can be identified and implemented
- Engage the patient routinely in conversation and to answer any questions they may have
- Make efforts to relieve patient's boredom through the provision of newspapers and magazines, as well as, providing access to radios, mobile phone and supervised visits

- Provide a referral to a psychiatrist or licensed mental health practitioner when symptoms interfere with the patients frame of mind/ behaviour. This is especially critical if a pre-existing condition is identified, or the patient expresses suicidal or homicidal thoughts. If possible, include a psychiatrist or licensed mental health practitioner as a member of the treatment team to assess or screen isolated patients on a routine basis
- If warranted, consider implementation of suicide precautions protocol (consult a certified mental health worker for advice)

6.4.3 Post-admission

- Assess patient's psychological/emotional status before discharge and, if cause for concern is found, link the patient with mental health care services
- Replace any patient item that may have been destroyed as a result of isolation/decontamination procedures
- Provide follow-up services such as continuous counseling on each scheduled visits and a mental status assessment
- Provide relevant psychological support services to patient's relations as needed

6.5 Management of Cases in Closed Settings

Monkeypox may occur in settings where standard isolation practices and facilities (e.g. those found at an infectious disease hospital) are not possible. In these settings, the patient needs to be managed effectively so that the risk(s) of transmitting the virus are balanced against the need to provide the patient with adequate and appropriate treatment. Such atypical settings may include enclosed environments such as those found in prisons, military barracks, student dormitories and marine vessels, etc.

In such settings, the risk of monkeypox virus transmission (like other infectious diseases in closed settings) is increased. This increased risk is due to heightened incidents of direct skin-to-skin contact with an infected person or with items such as clothing or beddings. Factors such as overcrowding, compromised immune status of patients, vectors and pest's infestation (such as rodents) are risks factors for infection in the closed settings environment.

The standard management of monkeypox cases as discussed in previous chapters

holds for management of cases in closed settings. However, the following principles should be considered:

6.5.1 Principles of management in closed settings

- Isolate the suspected case immediately to prevent further contact with other persons
- Transfer the case(s) to designated treatment facility for management. However, where this is difficult or impossible then an isolation area must be created to prevent contact between the case(s) and the rest of the population. Regardless of the form of isolation employed, it must be ensured that appropriate medical care can still be provided to the patient
- It is recommended that every "closed facility" should consider the need (and take steps to ensure the provision) of a makeshift isolation facility or holding area that can be employed at short notice to isolate persons with suspected/confirmed infectious diseases
- Case contacts should be listed and monitored for the development of fever and rash symptoms - monitored for 21 days from the date of last contact with the case
- Highest standards of infection prevention and control (IPC) must be observed when attending to cases in this setting
- In a prison setting, inmates must be informed of, sensitised and encouraged to practice IPC practices and to be on the look-out for signs and symptoms of monkeypox among the prison population
- Biosafety measures should be instituted between the enclosed space and the public during visitations and the movement in and out of the closed setting should be reviewed and minimised
- The recommended treatment procedure in the previous chapter on case management should be followed in the management of any case(s) in the closed setting environment
- The case should be transferred to recommended facility as soon as circumstances permit
- Any enclosed space(s) occupied by a case should be decontaminated once the case is evacuated

7.0
Risk Communication

The main objective of risk communication is to enhance public awareness of the risks the monkeypox virus poses to the individual and the wider community and to effect positive behavioural change for the prevention and control of monkeypox. This process will requirethe engagement of communities and healthcare professionals alike and will focus onspecific at-risk/target groups. This guideline hopes to provide a unified national approach to responding to cases of monkeypox. As the coordination of response activities can have a strong positive effect on the overall outcome of an outbreak, the national communications team on monkeypox recommends that all states should implement their communications response in three phases following the outline below:

7.1 Risk Communication Activities

7.1.1 Preparedness (Pre-Outbreak)

Activities under this phase should be carried out before an outbreak occurs:

- *Organisation:* This team should be led by the State Health Educator or a health communications specialist where there is no health educator in post
- Establish a relationship with relevant stakeholders including the media, CSOs, Faith-based Organisations (FBOs), and development partners, etc.
- Maintain a database (including key contact information) of all relevant stakeholders including the media, CSOs, FBOs, and Development Partners, etc.
- Develop a communication plan with input from all the relevant stakeholders in the state
- Develop communication tools (e.g. IEC materials, jingles, TV commercials, advocacy kits, etc.)
- Monitor and track activities/discussions in the media and in communities (communication surveillance)
- Disseminate preventive monkeypox messages

7.1.2 Response (During Outbreak)

- *Surge preparation* - Intensify communication activities including review of communications plans, tools, and messages, identify gaps and mobilise needed resources
- The communications plan should be implemented as documented and where modifications were made, they should be noted for outcome review
- Where there are inadequate resources, the team should implement a lean protocol where they utilise existing state assets for the key components of the plan
- To close the communication loop, states should create a feedback and inquiry desk which can be reached by mobile phone, SMS (toll free line) or through social media. States with emergency lines should attempt to receive calls through these call centres. Their contact information MUST be part of all communication materials developed
- Identify and utilise appropriate communication channels and platforms to create awareness, and educate the populations at risk
- Conduct community engagement activities to ensure community participation and ownership in identifying and proffering solutions to socio-cultural practices and other factors that promote/contribute to the outbreak
- Address misinformation, rumours, and stigmatisation in a timely manner
- States should avoid using jargon or ambiguous words while engaging the media to prevent misinformation
- The state-owned media representatives in the UNIT should help distribute state media releases
- Disseminate messages continuously
- Monitor, track and improve communications interventions and document response activities

7.1.3 After-action (Post-Outbreak)

- Evaluate communication response activities to assess outcome of interventions

- Conduct an After Action Review (AAR) meeting (Identify challenges and document best practices)
- Review Communication Plan
- Prepare for the next outbreak

7.2 Coordination of Risk Communication Activities

- To minimise misinformation, States are encouraged to coordinate all information going out from their respective government agencies. The Commissioners for Health or appropriate designated persons should speak to the public AFTER updates have been shared with the NCDC to ensure the whole system is in harmony
- The State Ministry of Health should take the leadership and ensure all Ministries, Departments, and Agencies (multi-sectoral approach) are well organised and coordinated to achieve an effective response
- *Outcome/Impact Review:* Team should review outcomes of communication interventions using appropriate tools. For further Information, States can reach out to NCDC National Communication Lead through the Emergency Operations Centre (EOC)

7.3. Communication Channels

Communications channels can be direct or indirect as detailed in the table below

Table 4: Communications Channels

DIRECT PLATFORM	INDIRECT PLATFORM
House to house	Print and electronic media
Church/Mosque	Information, communication and technology (ICT) tools
Peoples forum: Group Meetings (Compound, Town hall)	Social media tools (*WhatsApp, Facebook, Twitter, Instagram*, blogs, *uReport, YouTube* and others)
Community dialogue	
Focus Group Discussion	

7.4 NCDC Connect Centre

1. Details of NCDC Connect Centre should always be included and emphasised in all talking points to be developed and all media appearances that NCDC may have the opportunity to share
2. The *WhatsApp* number **(+234 (0) 708 711 0839)** should be emphasised as it is much more accessible and confidential
3. NCDC's toll-free (free of charge) line can be called on **0800 9700 0010.** Alternatively:
   a. Send NCDC a *WhatsApp* message on: **+234 (0) 708 711 0839**
   b. Send an *SMS* to NCDC on **+234 (0) 809 955 5577**
   c. Please see NCDC website, ***www.ncdc.gov.ng*** for more information

8.0

Surveillance and Control of Monkeypox in Animals

The Department of Veterinary and Pest Control Services (DVPCS) has a branch for the control of zoonoses (within the Veterinary Public Health Division) to ensure zoonotic diseases, such as monkeypox, are controlled in animals consequently, preventing the spread in human populations.

The Federal Ministry of Agriculture and Rural Development (FMARD), the National Veterinary Research Institute (NVRI) and the Federal Ministry of Environment with the Federal Ministry of Health through the Nigeria Centre for Disease Control (NCDC) under the One Health platform, work in collaboration to contain the threat of zoonotic disease outbreaks in human and animal populations. The following guidance will benefit animal health workers (handlers, veterinarians, wildlife conservation officers, park rangers, zoo attendants etc.).

8.1 Overview of Monkeypox in Animals

Monkeypox virus is endemic in Western and Central Africa, where it circulates in an unknown animal reservoir and emerges periodically to affect humans. The virus causes illness in non-human primates, and outbreaks have been reported in primate facilities, across the globe.

Animal-to-human transmission can occur through bites from animals, in aerosols during close contact, or by direct contact with lesions, blood or body fluids. In Africa, human outbreaks have often been linked to the handling, preparation of and consumption of wild animal meat. The prevalence of monkeypox infection in wild primates is unknown but some studies have shown that 8% of non-human primates in West Africa were seropositive.[18] In general, the morbidity rate is usually high and the mortality rate low as most adult animals recover.

As in humans, a more severe disease presentation can occur in younger animals, with some cases resulting in death. Although fatal infections have been reported in some animal species including monkeys, other species are known to be asymptomatic carriers of the virus. The incubation period typically lasts between 4 to 13 days depending on route of transmission.

In non-human primates, clinical presentation often takes the form of a self–limiting rash syndrome. There is no known definitive treatment for monkeypox in animals. However, supportive treatment has been advocated.

Monkeypox is of great public health importance in Nigeria because it is a re-emerging zoonotic disease, being first reported in the country in 1971. Recently, the virus has been documented among wildlife in neighboring countries such as Ghana and Cameroon and can therefore spread easily across the borders infecting our wildlife populations and posing a constant risk to the human population.
Swift and integrated active case finding of monkeypox infections by both human and animal health workers is needed to identify the animal sources of the infection and to help prevent further spread of the virus within the affected states.

8.2 Control Strategies in Animals

1. Animal surveillance and active case search
2. Early laboratory diagnosis and confirmation of cases
3. Isolation and quarantine of suspected and confirmed cases
4. Movement restriction of suspected infected animals (ban import/export of susceptible species of wild animals and their products)
5. Ensure implementation and adherence to biosafety and biosecurity principles in animal holding facilities
6. Risk communication (sensitisation and public awareness)

8.3 Animal Surveillance

8.3.1 Case definition

Research has demonstrated that in some animals the monkeypox virus can result in asymptomatic infections while in other animals, such as non-human primates and apes (e.g. monkey, chimpanzee, gorilla), clinical signs may be evident. Therefore, these case definitions are as follows;

8.3.1.1 Suspected case

Any non-human primate or apes (or other animal species) that exhibit a clinical sign of pox-like lesion on the body (face, head, limb, tail)

8.3.1.2 Probable Case

Any non-human primate or apes (or other animal) that demonstrates antibodies against the monkeypox virus

8.3.1.3 Confirmed cases

Any non-human primate or apes (or other animal) that is PCR positive for the monkeypox virus

8.3.2 Animal capture, sample collection and sample storage

- Animal capture, sample collection, and sample storage should be carried out following standard animal handling protocols
- Hunters should be involved in the capture of Non-Human Primates (NHPs) and larger animals after due training
- A mixture of live and kill traps (including Sherman live traps, Victor snap traps, pitfall traps, and Tomahawk traps) should be used to collect smaller mammals
- Captured animals should be transported to a central processing area where the samples should be collected
- Each animal should be closely examined for the presence of pox-like lesions or other illnesses
    - If any lesions are observed, a sample should be collected from the lesion site
- Oral and anal swabs should be collected from these animals and a variety of internal organs will be collected including: lung, heart, liver, kidney, spleen etc.
- Surveillance agents should be trained with the appropriate PPE while handling animals and collecting samples

8.4 Laboratory Diagnosis in Animal

Samples should be transported to the animal reference laboratory (National Veterinary Research Institute, Vom, Plateau State) in appropriate media (and containment) for analysis for serology and virus isolation and characterisation.

8.4.1 Biosafety and biosecurity measures

Animal Health Care Workers (AHCWs) working in the facilities where suspected cases are handled should ensure the following:

- Use barrier protection to prevent skin and mucous membrane contact with blood or other bodily fluids.

- Wear gloves to prevent contact with blood, infectious materials or other potentially contaminated surface and items
- Wear face protection if blood or bodily fluid droplets may be generated or splash during a procedure
- Wash hands and skin thoroughly under running water before and after a procedure
- Do not recap needles and handle all sharp objects with caution.
- Place all sharp objects in a dedicated labeled, puncture proof box
- Should report to a physician immediately if there is a puncture wound or exposure to infectious substances in the facility
- Correct containment and disposal of contaminated waste in accordance with facility-specific guidelines for infectious waste or local regulations pertaining to household waste
- Care when handling equipment (e.g., examination table, clothing) to avoid contact with infected material
    i. Do not shake or handle soiled materials in a manner that may disperse infectious particles
    ii. Clean, decontaminate and reprocess all used equipment appropriately.
- Proper decontamination and disposal of all carcasses.

8.5 Isolation of Animal Cases

- Suspected or confirmed animal cases with clinical signs of monkeypox should be isolated and quarantined in a separate area from other animals.
- Precautions should be taken to minimize exposure to the animal's surrounding by restricting access to the isolation site except when absolutely necessary by AHCWs.
- The isolation room should be fully disinfected using appropriate decontaminating solutions1% Virkon and hypochlorite.

8.6 Personal Protective Equipment (PPE)

- Personal protective equipment should be used for suspected animal and for all animal contact
- All PPE should be carefully removed and disposed of prior to leaving the examination sites where suspected cases are seen or examined

- Optimal personal protective measures include:
  - Use of disposable gown and gloves for patient contacts
  - Use of N95 (or comparable) filtering disposable respirator where not available, a face mask should be worn before examining the suspected animal
- 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

8.7 Animal Movement Control

There is a continuous rainforest belt on the southern part of Nigeria (where the outbreaks seem to be concentrated) which runs from Central Africa to West Africa allowing the free movement of wildlife across international borders. There are also thriving wildlife (bush meat) markets along various Nigerian borders. Institute restrictions on wildlife trade and movement across the borders where possible during outbreaks of zoonoses.

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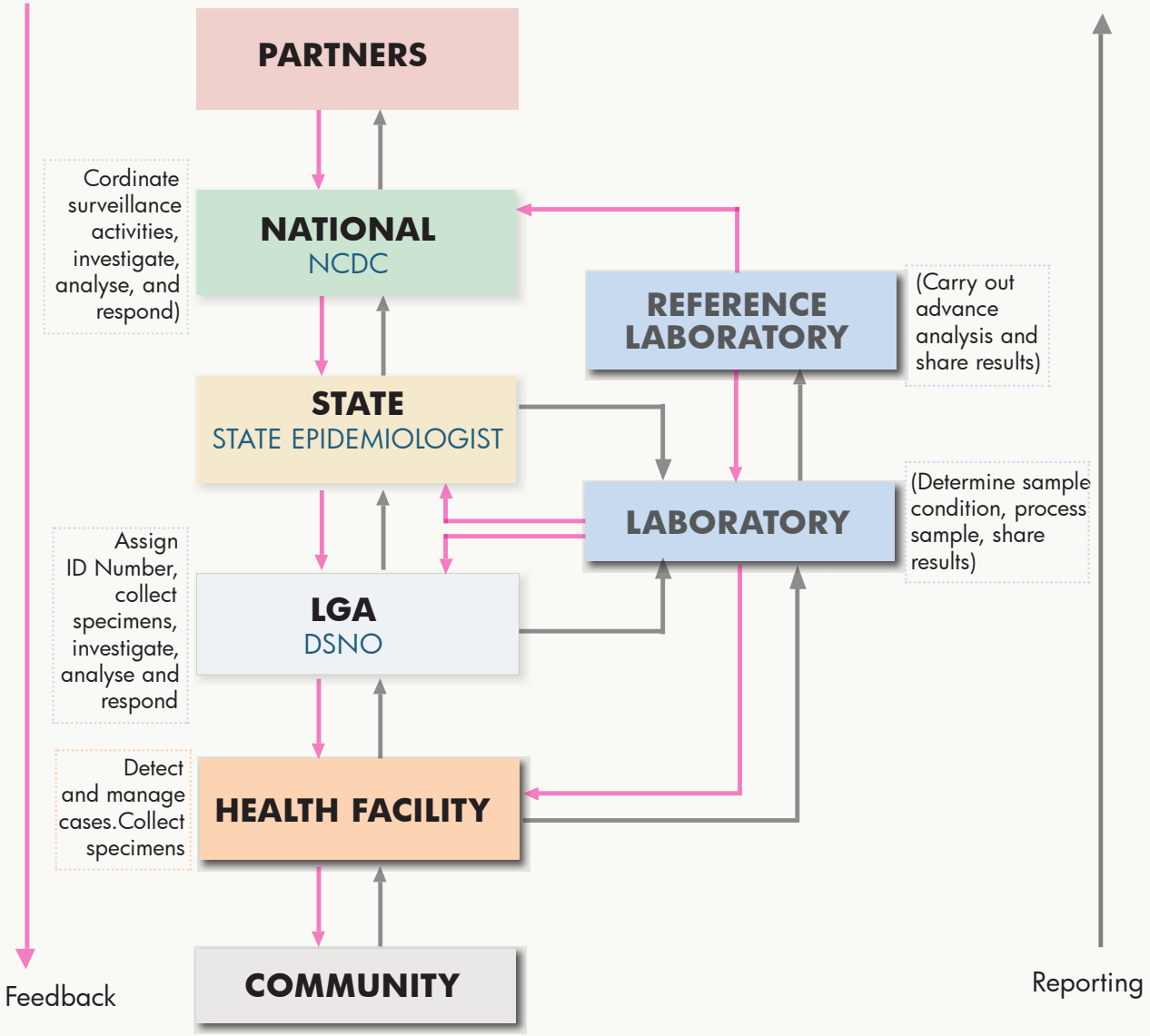
Appendices

Appendix 1: IDSR Reporting Flow



Appendix 2: Nigeria Monkeypox Case Investigation Form

Epid number**:**

Date of investigation: ____/___/___

Case reported by *name* _____ *title*_____ *phone no.*_____

Section 1: Patient Identity

1. Last Name_____ First Name _____
2. For children, father's name _____
3. Date of birth ___/___/___
4. Age in days (neonate) _____Age in months (Infant) _____Age in years (others) _____
5. Gender □ M □ F
6. Village/settlement/street of residence during the last 3 weeks_____
7. State _____ LGA _____ WARD_____
8. Nationality _____ Ethnicity / Tribe_____
9. Occupation of the patient_____

Section 2: Patient status

10. Status of the patient: □ Alive □ Dead
11. If dead, date of death ___/___/___ Place of death: _____
12. Place of the funeral, name village: _____ LGA_____ State _____
13. Is a Smallpox vaccination scar present? □ Yes □ No

Section 3 : Clinical History / Presentation

14. Date of onset of symptoms**:** __/___/___
15. Name of the village / LGA/State where the patient got ill_____/_____/_____
    *Country*_____
16. a. Did the patient travel anytime in the three weeks before becoming ill?: □ Yes □ No
    b. If yes, indicate the places __ (1) _____ (2) _____ (3) _____
    Others: _____
17. a. Did the patient travel during illness?: □ Yes □ No
    b. If Yes, indicate the places __ (1) _____ (2)_____(3)_____
    Others: _____
18. Does the patient have a cutaneous eruption/rash? □Yes □ No
19. If yes, date of onset for the rash: ___/___/___
20. Did the patient have fever? □ Yes □ No . If yes, date of onset for the fever: ___/___/___
21. If there is active disease,
    a. Are the lesions in the same state of development on the body? □ Yes □ No
    b. Are all of the lesions the same size? □Yes □ No
    c. Are the lesions deep and profound? □Yes □ No
22. Localisation of the lesions □Face □Legs □Soles of the fee □ Palms of the hands
    □ Thorax □ Arms □ Genitals □All over the body
    List other areas : _____
23. Did the patient develop ulcers ? □Yes □ No

Appendix 2: Nigeria Monkeypox Case Investigation Form

24. Does or did the patient have any of the following symptoms (check all that apply)

Vomiting/nausea	□ Yes	□ No	Headache	□ Yes	□ No
Cough	□ Yes	□ No	Lesions that itch	□ Yes	□ No
Lymphadenopathy, inguinal	□ Yes	□ No	Muscle pain (myalgia)	□ Yes	□ No
Lymphadenopathy, axillary	□ Yes	□ No	Fatigue	□ Yes	□ No
Lymphadenopathy, cervical	□ Yes	□ No	Conjunctivitis	□ Yes	□ No
Chills or sweats	□ Yes	□ No	Sensitivity to light	□ Yes	□ No
Sore throat when swallowing	□ Yes	□ No	Is the patient bedridden?	□ Yes	□ No
Oral ulcers	□ Yes	□ No			

25. If female, Pregnancy status: □ Pregnant □ Not pregnant
26. HIV status: □ Negative □ Positive □ Unknown
27. Any other known medical condition (Please state)

.....
.....
.....

Section 4 : Exposure

28. During the three weeks preceding the onset of symptoms, did the patient have contact with one or more persons who had similar symptoms? □Yes □ No

If yes, respond to the following questions concerning these additional ill people (indicate all of the ill people). There is additional space for multiple contacts at the end of this form.

29. Last name _____ First name _____
30. Relationship with the patient _____
31. First date of contact with the ill person ___/___/___
32. Did the patient touch a domestic or wild animal during the three weeks preceding symptom onset?
□ Yes □ No
33. If Yes, what kind of animal_____
34. Date of contact ___/___/___
35. Type of contact (*check all that apply)*

□ Rodents alive in the house
□ Dead animal found in the forest
□ Alive animal living in the forest
□ Animal bought for meat
Others:_____

Section 5: Laboratory

36. Was a specimen collected? □ Yes □ No 35. If Yes, date ___/___/___
37. Type: □ Crust □ Swab □ Blood

Collect at least two types of specimens from each patient. For each specimen: place a label on this form and a label on the specimen tube. Ensure that the two labels have the same name/number of the specimen.

Appendix 2: Nigeria Monkeypox Case Investigation Form

Section 6: Update on the Hospital information

38. Was the patient sent to a hospital? ☐ Yes ☐ No

39. Was the patient admitted in the isolation ward? ☐ Yes ☐ No

40. If Yes, name of hospital_____ Hospitalization date ___/___/__

41. Date of discharge___/___/___OR Date of death___/___/__

Section7: Additional contacts of the patient (Question 28)

Full Name	Location/Address	Date of contact	Sex	Relationship	Type of contact e.g. touch, breastfeeding, sexual

Appendix 3: Contact Listing Form

s/no	Surname	Other names	Sex (M/F)	Age (yrs)	Relation to case	Date of last contact with case	Type of contact (1,2 or 3)	Head of household	Address	Town	LGA	Phone number	Occupation

Appendix 4: Contact Follow-up Form

MONKEYPOX CONTACT FOLLOW-UP FORM

Name of source case..... **Name of contact.....** **Type of contact.....**

Age in years..... **Sex.....** **Address .....**

State ..... **LGA.....Town.....** **Serial number of contact on MPX CIF (from contact listing section) .....**

DATE OF LAST CONTACT		**Day of Follow-up**																			
DATE OF FOLLOW UP COMPLETION		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
SYMPTOMS	**FEVER**																					
	RASH																					
REMARKS (Document on action taken if contact develops RASH or other remarks necessary)																						

Write "X" if the contact has not developed fever or Rash. Mark "√ " if the contact has developed Rash or Fever

Types of contact:

Type 1*-Direct Contact with Skin lesions- vesicles, pustules, Crusts etc. (including sexual contact)*

Type 2*- Contact with body fluids (Blood, Urine, Vomitus, Faces, Stool, sputum etc.)*

Type 3*- Shared common space with case patient (close proximity e.g. shared vehicle, workstation, flight, etc.)*

Appendix 5: Laboratory Investigation Form

For Health Facility: If laboratory specimen is collected, complete the following information and send a copy of this form to the laboratory with the specimen.								
Patient's First name:								
Patient's Surname:								
Patient's Residential Address:								
Age:					Sex:			
Date of specimen collection:_____/_____/_____								
Type of specimen:		Blood		Swab		Crust		Other/specify
Specimen Condition			Adequate			Inadequate		
Date of onset of Fever: _____/_____/____					Date of onset of Rash: _____/_____/____			
					Date specimen sent to Lab:_____/_____/____			
Epid. Number:								
Test Required:								
For the Laboratory: Complete this section and return the form to LGA/health facility or clinician								
Date laboratory received specimen: /__/_____								
				RESULT: Indicate Positive, Negative or Inconclusive*				
Viral Detection			**Monkeypox (RT-PCR)**					
			Monkeypox (IgM)					
			Monkeypox (IgG)					
			Monkeypox (Cell Culture)					
Differential Diagnosis/Comorbidities			**VZV**					
			HIV					
			Syphilis					
Other laboratory test(s) (specify)								

Appendix 6A: Screening tool for psychological distress among patients in the isolation wards

SCREENING RESOURCES FOR PSYCHOLOGICAL DISTRESS AMONG PATIENTS IN THE ISOLATION WARDS

(Adapted from guideline provided by State of Nebraska Department of Health and Human Services, under Federal Cooperative Agreements from the Centers for Disease Control and Prevention Public Health Emergency Preparedness)

The following can be used by hospital personnel for screening of patients in medical isolation

Emotional health

In general, nursing protocol should include routine conversation with, and observation of the patient in relation to their emotional health and well-being while under isolation precautions. The following questions can be used to ask about emotional or psychological health.

1. **How are you feeling right now?**

   Fine….. Angry…….Anxious…….. Sad…….

   Pushing people to respond to this question may not always be advisable. Moving to the next question may help the person identify how they have coped successfully with stressful situations in the past.

2. **Tell me about a time when you were in an unfamiliar or stressful situation and how you got through it**.
   (Listen for ways the patient has coped successfully in the past that can be applied to this situation)

3. **What mood would you say you are in most of the time?**

   Happy…….. Angry……..Sad…….. Worried…….

   (Listen for their description and notice if it matches their behaviour)

4. **Have you been feeling down or sad most of the day?**
   (If yes, continue to question a)

   Yes……..No……..

   a. How long have you felt this way?
   (It is not uncommon for people in isolation to feel sad. It is potentially concerning if this feeling of sadness is pervasive and unrelenting. Notice if the feelings of sadness preceded isolation precautions. Ask the patient or family about how they successfully dealt with these emotions in the past.)

Appendix 6A: Screening tool for psychological distress among patients in the isolation wards

5. Have you found yourself wishing you were dead or thinking everyone would be better off if you were dead?

Yes…….No……

(It would not be unusual for a person in medical isolation to think about death. Allow the patient to talk about their feelings. Just because they may wish they were dead does not necessarily mean they are actively trying to end their life. Follow up with the next question about suicide.)

6. Have you been thinking about hurting yourself in any way?

(If yes, continue to ask questions a – d)

Yes……. No ……

(Asking about thoughts of suicide does not cause someone to be suicidal. Most experts believe that asking directly about these thoughts gives the person permission to talk about them and may actually be beneficial. Consider the use of suicide precautions if clinically indicated.)

a. What has kept you from killing yourself?

b. Who are the people who you feel closest to?

c. What have you thought about doing?

d. What helps you when you feel this way?

7. Do you ever hear or see things other people say they don't hear or see?

(The goal of asking this question is to see if the person is experiencing any type of hallucinations. The cause of any hallucinations may be related to the physical condition of the patient and not indicative of a psychological problem. It is important to help the person understand that regardless of the cause of these symptoms, there is hope for their resolution.)

Appendix 6B: The 12-Item General Health Questionnaire

	PSYCHOLOGICAL DISTRESS				
	Have you recently..	**Better than usual**	**Same as usual**	**Worse than usual**	**Much worse than usual**
		0	**0**	**1**	**1**
1	**Been able to concentrate on what you are doing?**				
2	**Lost much sleep over worry?**				
3	**Felt you were playing useful part in things?**				
4	**Felt capable of making decisions about things?**				
5	**Felt constantly under strain?**				
6	**Felt you could not overcome your difficulties?**				
7	**Been able to enjoy your normal day to day activities?**				
8	**Been able to face up to your problems?**				
9	**Been feeling unhappy or depressed?**				
10	**Been losing confidence in yourself?**				
11	**Been thinking of yourself as a worthless person?**				
12	**Been feeling reasonably happy, all things considered?**				

Appendix 7: Animal Disease Reporting Form

NATIONAL ANIMAL DISEASES INFORMATION AND SURVEILLANCE (NADIS)
EPIDEMIOLOGY UNIT
FEDERAL MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
DEPARTMENT OF VETERINARY AND PEST CONTROL SERVICES

WILDLIFE DISEASES REPORTING FORMAT

LOCATION / SURVEILLANCE AGENT INFORMATION			
Name of State		LGA	Name of Location
Name of Surv.Agent		Code No. of Agent	GPS Location
Email Address		Telephone Number	
Date of Observation		Date Reported to AVO	Date Investigated
SOURCE OF INFORMATION AND THE LOCATION		**CLINICAL SIGN OBSERVED (Tick)**	
Park Ranger	Marketer	Fever	Discharge from mouth, nose
Local Hunter	National Park	Cutaneous Papules	Tears/discharge from eyes
Wetland Guard	Wetland Guard	Pox like lesion(Pock)	Diarrhea
Local Farmer	Wild animal market	Coughing	Dead
Villager	Zoo	Nasal Discharge	Hemorrhage
Visitor	Road Side	Facial edema	Lymphadenopathy
Veterinarian	Farm land	Other	
SurvAgent	Others		
ANIMAL OWNER INFORMATION			
Name of Owner		Phone No.	Occupation
Street Address			

Appendix 7: Animal Disease Reporting Form

LABORATORY			
Date sample collected	Date sample sent	Sample collected (tick)	
		Whole Carcass	Swabs
		Whole Blood	Other
Date sample received at the Lab	Name of Lab/ Received by	Serum	
		Faecal	
SPECIES OF ANIMAL SEEN (Tick)	**No. of Animal/Bird seen at Location**		
Monkey	No. of Susceptible	No. Sick	No.Dead
Rodent			
Squirrel			
Others			

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NIGERIA CENTRE FOR DISEASE CONTROL - FEDERAL MINISTRY OF HEALTH

NATIONAL MONKEYPOX PUBLIC HEALTH RESPONSE GUIDELINES

The National Monkeypox Public Health Response guidelines have been developed to guide preventive measures against, and effective response to monkeypox cases, through a One Health approach.

These guidelines highlight areas of action for health workers and health authorities across the three tiers of Government, towards the control of monkeypox in Nigeria

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