Contents

LIST OF TABLES iv
LIST OF FIGURES iv
ABOUT NCDC v
FOREWORD vi
ACKNOWLEDGEMENTS vii
ABBREVIATIONS viii
1. BACKGROUND 1
   1.1 An Overview and Epidemiology of Monkeypox Outbreaks 1
   1.2 Transmission 2
   1.3 Signs and Symptoms 3
   1.4 Diagnosis 5
2. MONKEYPOX OUTBREAK RESPONSE AND CONTROL STRATEGIES 7
   2.1 Response Coordination 7
   2.2 Roles and Responsibilities 8
3. CASE DEFINITIONS AND SURVEILLANCE 11
   3.1 Monkeypox Case and Contact Definitions 11
   3.2 Monkeypox Case Investigation and Outbreak Response 12
   3.3 Alert and Action Thresholds for Monkeypox 14
4. LABORATORY INVESTIGATION AND DIAGNOSIS 15
   4.1 Sample Collection and Packaging Protocol for Suspected Cases of Monkeypox 15
   4.2 Packaging of Specimens for National Transportation 17
5. MONKEYPOX PREVENTION AND CONTROL 19
   5.1 Infection Prevention and Control in Facility Settings 19
   5.2 Infection Prevention and Control in Community Settings 22
   5.3 Transportation of a Monkeypox Patient 24
   5.4 Post Mortem Care/Autopsy 25
   5.5 Vaccination 26
## CONTENTS

6. CASE MANAGEMENT 27
   6.1 Principles of Management 27
   6.2 Clinical Care of Human Monkeypox Patients 27
   6.3 HIV and Monkeypox Infection 32
   6.4 Psychosocial Support 32
   6.5 Management of Cases in Closed Settings 34

7. RISK COMMUNICATION 36
   7.1 Risk Communication Activities 36
   7.2 Coordination of Risk Communication Activities 38
   7.3 Communication Channels 38
   7.4 NCDC Connect Centre 39

8. SURVEILLANCE AND CONTROL OF MONKEYPOX IN ANIMALS 40
   8.1 Overview of Monkeypox in Animals 40
   8.2 Control Strategies in Animals 41
   8.3 Animal Surveillance 41
   8.4 Laboratory Diagnosis in Animal 42
   8.5 Isolation of Animal Cases 43
   8.6 Personal Protective Equipment (PPE) 43
   8.7 Animal Movement Control 44

REFERENCES 45
APPENDICES 47
LIST OF CONTRIBUTORS AND REVIEWERS 58
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Differential Diagnosis of Monkeypox</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Supportive and Symptomatic Treatment of Human Monkeypox</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Psychosocial Distress that May Occur in Patients With Monkeypox</td>
<td>32</td>
</tr>
<tr>
<td>4</td>
<td>Communications Channels</td>
<td>38</td>
</tr>
</tbody>
</table>

List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frequency of Signs and Symptoms Among Nigerian Confirmed Monkeypox</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Cases Between September 2017 and September 2018</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Algorithm for Responding to Suspected Monkeypox Case</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Job Aid for Sample Management for Suspected Monkeypox Case</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>Sites of Clinical Manifestations of Monkeypox Complications</td>
<td>28</td>
</tr>
<tr>
<td>5</td>
<td>Clinical Photos Showing Vesiculopustular Rashes in Monkeypox Patients</td>
<td>29</td>
</tr>
</tbody>
</table>
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.
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.

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DIRECTOR GENERAL, NIGERIA CENTRE FOR DISEASE CONTROL (NCDC)
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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. Olorunimbe 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.

DR. ADESOLA YINKA-OGUNLEYE
LEAD,
MONKEYPOX TECHNICAL WORKING GROUP
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>ACDC</td>
<td>Africa Centres for Disease Control and Prevention</td>
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<tr>
<td>CFR</td>
<td>Case Fatality Rate</td>
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<td>CIF</td>
<td>Case Investigation Form</td>
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<td>CSOs</td>
<td>Civil Society Organisations</td>
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<td>DRC</td>
<td>Democratic Republic of Congo</td>
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<tr>
<td>DSNO</td>
<td>Disease Surveillance and Notification Officer</td>
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<tr>
<td>ECOWAS</td>
<td>Economic Community of West African States</td>
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<tr>
<td>EDTA</td>
<td>Ethylene Diamine Tetra Acetic acid</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme Linked Immunosorbent Assay</td>
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<tr>
<td>EM</td>
<td>Electron Microscopy</td>
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<tr>
<td>EOC</td>
<td>Emergency Operations Centre</td>
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<tr>
<td>EPR</td>
<td>Emergency Preparedness and Response</td>
</tr>
<tr>
<td>FBOs</td>
<td>Faith-based Organisations</td>
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<tr>
<td>FMARD</td>
<td>Federal Ministry of Agriculture and Rural Development</td>
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<tr>
<td>HCW</td>
<td>Health Care Worker</td>
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<tr>
<td>HHT</td>
<td>Human-to-Human Transmission</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>IDSr</td>
<td>Integrated Disease Surveillance and Response</td>
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<tr>
<td>IEC</td>
<td>Information Education Communication</td>
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<tr>
<td>IgG</td>
<td>Immunoglobulin G</td>
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<tr>
<td>IgM</td>
<td>Immunoglobulin M</td>
</tr>
<tr>
<td>IMS</td>
<td>Incident Management System</td>
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<tr>
<td>IPC</td>
<td>Infection Prevention and Control</td>
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<tr>
<td>LGA</td>
<td>Local Government Area</td>
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<tr>
<td>MPX</td>
<td>Monkeypox</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<td>--------------</td>
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<tr>
<td>MPXV</td>
<td>Monkeypox Virus</td>
</tr>
<tr>
<td>NVRI</td>
<td>National Veterinary Research Institute</td>
</tr>
<tr>
<td>NCDC</td>
<td>Nigeria Centre for Disease Control</td>
</tr>
<tr>
<td>NHP</td>
<td>Non-Human Primates</td>
</tr>
<tr>
<td>NPHCDA</td>
<td>National Primary Health Care Development Agency</td>
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<tr>
<td>NG</td>
<td>Nasogastric</td>
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<tr>
<td>NSAID</td>
<td>Non-Steroidal Anti-Inflammatory Drugs</td>
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<tr>
<td>NRL</td>
<td>National Reference Laboratory, Gaduwa, Abuja</td>
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<tr>
<td>OXPXV</td>
<td>Orthopoxirus</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
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<tr>
<td>PHE</td>
<td>Public Health England</td>
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<td>PHEOC</td>
<td>Public Health Emergency Operations Centre</td>
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<td>PPE</td>
<td>Personal Protective Equipment</td>
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<tr>
<td>RCSDC</td>
<td>Regional Centre for Surveillance and Disease Control</td>
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<tr>
<td>RRT</td>
<td>Rapid Response Team</td>
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<tr>
<td>SE</td>
<td>State Epidemiologist</td>
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<tr>
<td>SMS</td>
<td>Short Message Service</td>
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<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
<tr>
<td>TV</td>
<td>Television</td>
</tr>
<tr>
<td>UCL</td>
<td>University College London</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UK PHRST</td>
<td>United Kingdom Public Health Rapid Support Team</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
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<tr>
<td>US CDC</td>
<td>United States Centers for Disease Control and Prevention</td>
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<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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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 in 1970 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 Orthopoxviruses genus (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 (between 1% 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 underscoring the importance of environmental decontamination. 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.

**Figure 1: 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

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<th>S/N</th>
<th>DISEASE</th>
<th>CLINICAL DESCRIPTION</th>
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| 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 |
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). 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 contacts1 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
- 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
2.0 MONKEYPOX OUTBREAK RESPONSE AND CONTROL STRATEGIES

Information of possible infected persons with Monkeypox reported to health care workers (HCWs)
- Rumours of possible infected persons with Monkeypox captured through media, public discussions or from individuals
- Individuals possibly infected with monkeypox who report to health facilities

State Epidemiologist (SE) and/or LGA DSNO investigates the authenticity of rumour/information and assesses if it meets case definition for Monkeypox

YES, proceed with the following below

- Identify all suspected case(s) – active and retrospective
- Give health talk on risks, infection prevention measures
- Administer Case Investigation Form(s)
- Line-list all possible contacts – in the community and health facility
- Refer all suspected cases to designated health facility
- Ask family/community members to report any subsequent possible infected cases
- Follow up identified contacts
- Give Health Talk and Risk Communication
- Refer all suspected case(s) to health facility

At Health Facility
- Isolate all suspected cases
- Use Personal Protective Equipment (PPE)
- Observe standard safety precautions
- Institute Case Management
- Collect Blood and Lesion Samples according to protocol (See Chapter 4)
- Ensure all lesions are healed (resolved and dried) before discharging patients who are free of all other complications

Discharged Patient
- Provide psychosocial support
- Continue counselling

Continue Surveillance and Active Case Search in the community

Figure 2: Algorithm for Responding to Suspected Monkeypox Case
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 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
4. Collection and transportation of samples as detailed in sample collection protocol *(Refer to chapter 4)*
5. Ensure referral to the nearest designated isolation facility or a secondary health facility for management
6. 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
Laboratory investigation 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
- 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 Gadausa, Abuja.

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

Telephone - 07084366813
Email - nigeriaepid@gmail.com

For swab collection:
1. Assemble the recommended equipment for swab specimen collection (alcohol swab, swab, scalpel, needle, PPE).
2. Label swab containers with patient name, sex, date of sample collection, age, EPID number.
3. Perform hand hygiene. Don appropriate PPE.
4. Sanitise lesion with an alcohol wipe, allow to dry.
5. Use a disposable scalpel (or a sterile 26 Gauge needle) to open, and remove, the top of the vesicle or pustule.
6. Remove swab stick from sterile pouch and vigorously swab the bottom of the lesion with the swab.
7. The liquid from lesion must be visible on the swab.
8. Place the swab back into the sterile pouch and close.
9. Discard the scalpel or needle into sharps container.
10. Place swabs in a ziplock bag.

For crust/swab collection:
1. Assemble the recommended equipment for crust specimen collection (alcohol swab, cryovial tube, needle, PPE).
2. Label 2 cryovial vials with patient name, sex, date of sample collection, age, EPID number.
3. Perform hand hygiene. Don appropriate PPE.
4. Sanitise lesion with an alcohol wipe, allow to dry.
5. Use the needle to loosen and lift the crust.
6. Once removed, place crust into a sterile cryovial tube.
7. Select a second crust from a different location on the body and repeat steps 3-5. Place specimen into labelled tube.
8. Discard the scalpel or needle into sharps container.
9. Add the tubes into the ziplock bag.

For blood collection:
1. Assemble the recommended equipment for blood specimen collection (tourniquet, alcohol, vacutainer needle, vacutainer holder, EDTA and serum separator blood tubes, PPE).
2. Label blood tubes with patient name, sex, date of sample collection, age, EPID number.
3. Perform hand hygiene. Don appropriate PPE.
4. Collect 4-5ml of patient blood into the serum separator tube.
5. Collect 4ml of whole blood into EDTA tube. Gently invert the tube to mix the blood with the anticoagulant.
6. Individually wrap tubes into tissue and add into a falcon tube and place into a ziplock bag.

Collect from every patient:
1. Collect 2 lesion specimens per patient. Each specimen should be from a separate lesion
2. Specimens are a swab of vesicular/pustular fluid and/or a crust
3. Collect 10mls of venous blood

1. Place ziplock bags into a vaccine carrier with frozen ice packs
2. Place document into a separate ziplock bag and do not mix with samples during transportation.
3. Remove PPE and discard into biohazard bag
4. Perform hand hygiene
5. Transport to the National Reference Laboratory in Abuja within 24 hours at 4°C using NCDC transport guidelines
6. Cold chain should be maintained during transportation to Abuja

Figure 3: Job Aid for Sample Management for Suspected Monkeypox Case
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, goggles 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\textsuperscript{15}, and was used (off-label) for pre and post-exposure prophylaxis in the management of the two imported monkeypox cases in the UK\textsuperscript{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\textsuperscript{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.\textsuperscript{11}
Human monkeypox is primarily a self-limiting illness, with the majority of cases resolving 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.

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. 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.
| Ocular lesions | Figure 4: Sites of Clinical Manifestations of Monkeypox Complications |
| 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

| 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. |  |  |
| 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 |  |  |
| High grade fever | Tepid sponging  
Antipyretics such as Paracetamol | Chills and rigors 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 1-5 years, give chlorpheniramine syrup 1 mg twice daily |  |  |
### 6.0 CASE MANAGEMENT

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

<table>
<thead>
<tr>
<th>PSYCHOLOGICAL DISTRESS</th>
<th>EMOTIONAL DISTRESS</th>
<th>SOCIAL DISTRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor sleep</td>
<td>Anxiety</td>
<td>Social withdrawal</td>
</tr>
<tr>
<td>Loss of confidence</td>
<td>Apathy</td>
<td>Social isolation</td>
</tr>
<tr>
<td>Low self-esteem</td>
<td>Depression</td>
<td>Stigma</td>
</tr>
<tr>
<td>Ideas of worthlessness</td>
<td>Thanatophobia (fear of death)</td>
<td>Loss of social function:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• relationship</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• job</td>
</tr>
<tr>
<td>Poor attention and concentration</td>
<td>Acute stress reaction</td>
<td></td>
</tr>
<tr>
<td>Hallucination and illusion</td>
<td>Adjustment disorder</td>
<td></td>
</tr>
<tr>
<td>Paranoid ideas and delusion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following are recommended steps that can help ensure the psychological wellbeing of patients:

6.0 CASE MANAGEMENT

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). 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 patient’s 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 visit 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:

6.0 CASE MANAGEMENT

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.
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 require the engagement of communities and healthcare professionals alike and will focus on specific 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>
<thead>
<tr>
<th>DIRECT PLATFORM</th>
<th>INDIRECT PLATFORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>House to house</td>
<td>Print and electronic media</td>
</tr>
<tr>
<td>Church/Mosque</td>
<td>Information, communication and technology (ICT) tools</td>
</tr>
<tr>
<td>Peoples forum: Group Meetings (Compound, Town hall)</td>
<td>Social media tools (WhatsApp, Facebook, Twitter, Instagram, blogs, uReport, YouTube and others)</td>
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<tr>
<td>Community dialogue</td>
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</tr>
<tr>
<td>Focus Group Discussion</td>
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</table>
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.
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. 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.
8.0 Surveillance and control of Monkeypox in animals

- 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 solutions 1% 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:
  o Use of disposable gown and gloves for patient contacts
  o 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.
References


Appendices

Appendix 1: IDSR Reporting Flow

- **PARTNERS**: Coordinate surveillance activities, investigate, analyse, and respond.
- **NATIONAL NCDC**: Carry out advance analysis and share results.
- **STATE EPIDEMIOLOGIST**: Determine sample condition, process sample, share results.
- **LGA DSNO**: Detect and manage cases. Collect specimens.
- **HEALTH FACILITY**: Assign ID Number, collect specimens, investigate, analyse and respond.
- **REFERENCE LABORATORY**: Report results.
- **LABORATORY**: Report results.
- **COMMUNITY**: Feedback.
# Appendix 2: Nigeria Monkeypox Case Investigation Form

<table>
<thead>
<tr>
<th>Section 1: Patient Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Last Name ___________________ First Name ___________________</td>
</tr>
<tr>
<td>2. For children, father’s name _____________________________________________</td>
</tr>
<tr>
<td>3. Date of birth <em><strong>/</strong></em>/___</td>
</tr>
<tr>
<td>4. Age in days (neonate) ________Age in months (Infant) ________Age in years (others) _____</td>
</tr>
<tr>
<td>5. Gender □ M □ F</td>
</tr>
<tr>
<td>6. Village/settlement/street of residence during the last 3 weeks __________________________</td>
</tr>
<tr>
<td>7. State __________________________________ LGA ________________ WARD________________</td>
</tr>
<tr>
<td>8. Nationality ____________________________ Ethnicity / Tribe_________________________</td>
</tr>
<tr>
<td>9. Occupation of the patient ____________________________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 2: Patient status</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Status of the patient: □ Alive □ Dead</td>
</tr>
<tr>
<td>11. If dead, date of death <em><strong>/</strong></em>/___ Place of death: _________________________</td>
</tr>
<tr>
<td>12. Place of the funeral, name village: ___________________ LGA________________ State ____________</td>
</tr>
<tr>
<td>13. Is a Smallpox vaccination scar present? □ Yes □ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 3: Clinical History / Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Date of onset of symptoms: <em><strong>/</strong></em>/___</td>
</tr>
<tr>
<td>15. Name of the village / LGA/State where the patient got ill__________________________</td>
</tr>
<tr>
<td>Country__________</td>
</tr>
<tr>
<td>16. a. Did the patient travel anytime in the three weeks before becoming ill?: □ Yes □ No</td>
</tr>
</tbody>
</table>
| 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 feet □ 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)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting/nausea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymphadenopathy, inguinal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymphadenopathy, axillary</td>
<td></td>
<td></td>
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<tr>
<td>Lymphadenopathy, cervical</td>
<td></td>
<td></td>
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<tr>
<td>Chills or sweats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sore throat when swallowing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral ulcers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesions that itch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscle pain (myalgia)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity to light</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the patient bedridden?</td>
<td></td>
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</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Animal</th>
<th>others: ____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Rodents alive in the house</td>
<td>[ ] Dead animal found in the forest</td>
</tr>
<tr>
<td>[ ] Alive animal living in the forest</td>
<td>[ ] Animal bought for meat</td>
</tr>
</tbody>
</table>

Section 5: Laboratory

36. Was a specimen collected [ ] Yes [ ] No

37. Type: [ ] Crust [ ] Swab [ ] Blood

[ ] If Yes, date ___/___/___

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___/___/___

Section 7: Additional contacts of the patient (Question 28)

<table>
<thead>
<tr>
<th>Full Name</th>
<th>Location/Address</th>
<th>Date of contact</th>
<th>Sex</th>
<th>Relationship</th>
<th>Type of contact e.g. touch, breastfeeding, sexual</th>
</tr>
</thead>
<tbody>
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</table>

Appendix 3: Contact Listing Form

<table>
<thead>
<tr>
<th>s/ no</th>
<th>Surname</th>
<th>Other names</th>
<th>Sex (M/F)</th>
<th>Age (yrs)</th>
<th>Relation to case</th>
<th>Date of last contact with case</th>
<th>Type of contact (1, 2 or 3)</th>
<th>Head of household</th>
<th>Address</th>
<th>Town</th>
<th>LGA</th>
<th>Phone number</th>
<th>Occupation</th>
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NATIONAL MONKEYPOX PUBLIC HEALTH RESPONSE GUIDELINES
## 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.

<table>
<thead>
<tr>
<th>Patient’s First name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient’s Surname:</td>
</tr>
<tr>
<td>Patient’s Residential Address:</td>
</tr>
<tr>
<td>Age:</td>
</tr>
<tr>
<td>Sex:</td>
</tr>
<tr>
<td>Date of specimen collection:</td>
</tr>
<tr>
<td>Type of specimen:</td>
</tr>
<tr>
<td>Blood</td>
</tr>
<tr>
<td>Specimen Condition:</td>
</tr>
<tr>
<td>Adequate</td>
</tr>
<tr>
<td>Date of onset of Fever:</td>
</tr>
<tr>
<td>Date of onset of Rash:</td>
</tr>
<tr>
<td>Date specimen sent to Lab:</td>
</tr>
</tbody>
</table>

**Epid. Number:**

**Test Required:**

**For the Laboratory:**
Complete this section and return the form to LGA/health facility or clinician

<table>
<thead>
<tr>
<th>Date laboratory received specimen:</th>
</tr>
</thead>
</table>

**RESULT:** Indicate Positive, Negative or Inconclusive*

<table>
<thead>
<tr>
<th>Viral Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monkeypox (RT-PCR)</td>
</tr>
<tr>
<td>Monkeypox (IgM)</td>
</tr>
<tr>
<td>Monkeypox (IgG)</td>
</tr>
<tr>
<td>Monkeypox (Cell Culture)</td>
</tr>
</tbody>
</table>

**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.)
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**

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

<table>
<thead>
<tr>
<th>LOCATION / SURVEILLANCE AGENT INFORMATION</th>
<th>CLINICAL SIGN OBSERVED (Tick)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of State</td>
<td>Name of Location</td>
</tr>
<tr>
<td>LGA</td>
<td></td>
</tr>
<tr>
<td>Name of Surv.Agent</td>
<td>Code No. of Agent</td>
</tr>
<tr>
<td>Code No. of Agent</td>
<td>GPS Location</td>
</tr>
<tr>
<td>Email Address</td>
<td>Telephone Number</td>
</tr>
<tr>
<td>Date of Observation</td>
<td>Date Reported to AVO</td>
</tr>
<tr>
<td></td>
<td>Date Investigated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOURCE OF INFORMATION AND THE LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park Ranger</td>
</tr>
<tr>
<td>Marketeer</td>
</tr>
<tr>
<td>Fever</td>
</tr>
<tr>
<td>Discharge from mouth, nose</td>
</tr>
<tr>
<td>Local Hunter</td>
</tr>
<tr>
<td>National Park</td>
</tr>
<tr>
<td>Cutaneous Papules</td>
</tr>
<tr>
<td>Tears/discharge from eyes</td>
</tr>
<tr>
<td>Wetland Guard</td>
</tr>
<tr>
<td>Wetland Guard</td>
</tr>
<tr>
<td>Pox like lesion(Pock)</td>
</tr>
<tr>
<td>Diarrhea</td>
</tr>
<tr>
<td>Local Farmer</td>
</tr>
<tr>
<td>Wild animal market</td>
</tr>
<tr>
<td>Coughing</td>
</tr>
<tr>
<td>Dead</td>
</tr>
<tr>
<td>Villager</td>
</tr>
<tr>
<td>Zoo</td>
</tr>
<tr>
<td>Nasal Discharge</td>
</tr>
<tr>
<td>Hemorrhage</td>
</tr>
<tr>
<td>Visitor</td>
</tr>
<tr>
<td>Road Side</td>
</tr>
<tr>
<td>Facial edema</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
</tr>
<tr>
<td>Veterinarian</td>
</tr>
<tr>
<td>Farm land</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>SurvAgent</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANIMAL OWNER INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Owner</td>
</tr>
<tr>
<td>Phone No.</td>
</tr>
<tr>
<td>Occupation</td>
</tr>
<tr>
<td>Street Address</td>
</tr>
</tbody>
</table>

NATIONAL MONKEYPOX PUBLIC HEALTH RESPONSE GUIDELINES
### Appendix 7: Animal Disease Reporting Form

<table>
<thead>
<tr>
<th>LABORATORY</th>
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<tbody>
<tr>
<td>Date sample collected</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Date sample received at the Lab</td>
</tr>
<tr>
<td>SPECIES OF ANIMAL SEEN (Tick)</td>
</tr>
<tr>
<td>Monkey</td>
</tr>
<tr>
<td>Rodent</td>
</tr>
<tr>
<td>Squirrel</td>
</tr>
<tr>
<td>Others</td>
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</table>
# List of Contributors and Reviewers

<table>
<thead>
<tr>
<th>NAME</th>
<th>ORGANISATION</th>
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<tbody>
<tr>
<td>1. Chikwe Ihekweazu</td>
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<tr>
<td>2. Adesola Yinka-Ogunleye</td>
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<tr>
<td>3. Olusola Aruna</td>
<td>PHE</td>
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<tr>
<td>4. Dimie Ogoina</td>
<td>NDUTH</td>
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<tr>
<td>5. Olubunmi Ojo</td>
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<tr>
<td>6. Nwando Mba</td>
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<tr>
<td>7. Elsie Ilori</td>
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<td>8. Ayoola Olufemi</td>
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<td>9. Muhammad Saleh</td>
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<td>10. Mohammed Abdulaziz</td>
<td>Africa CDC</td>
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<td>11. Dan Duvall</td>
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<td>12. Ipadeola Oladipupo</td>
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<tr>
<td>13. Andrea McCollum</td>
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<td>15. Mary Reynolds</td>
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<tr>
<td>17. Anna Mandra</td>
<td>US-CDC</td>
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<tr>
<td>18. Dhamari Naidoo</td>
<td>WHO</td>
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<tr>
<td>19. Ibrahim Mamadu</td>
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<tr>
<td>20. Olanrewaju Badaru</td>
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<td>21. Adama Ahmad</td>
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<td>23. Yahya Disu</td>
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<td>24. Tochi Okwor</td>
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<tr>
<td>25. Mahmood Dalhat</td>
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<td>26. Chibuzor Eneh</td>
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<td>27. Gbenga Joseph</td>
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<td>28. Jeremiah Agenyi</td>
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<td>31. Amina Mohammed</td>
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<td>33. Womi Eteng-Obong</td>
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<tr>
<td>34. Neni Aworhabi</td>
<td>SMoH, Bayelsa state</td>
</tr>
<tr>
<td>35. Ihekerenma Okoli</td>
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<td>36. Olaniran Alabi</td>
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<td>37. Timothy Ajani</td>
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<tr>
<td>38. Olawunmi Adeoye</td>
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<tr>
<td>39. Oladipo Ogunbode</td>
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<tr>
<td>40. Ndubuisi Akpuh</td>
<td>NCDC</td>
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<tr>
<td>41. Sklenosvska Nikola</td>
<td>WHO</td>
</tr>
<tr>
<td>42. Paul Wakama</td>
<td>Nigerian Correctional Service</td>
</tr>
<tr>
<td>43. Onyebuchi Okoro</td>
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<tr>
<td>44. Amina Markafi</td>
<td>AFENET</td>
</tr>
<tr>
<td>45. Jonathan Ashcroft</td>
<td>UK PHRST</td>
</tr>
<tr>
<td>46. Nigel Field</td>
<td>UCL</td>
</tr>
<tr>
<td>47. Nigerian Association of Dermatologists (NAD)</td>
<td></td>
</tr>
<tr>
<td>48. Nigerian Infectious Diseases Society (NIDS)</td>
<td></td>
</tr>
</tbody>
</table>
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.