



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**

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Division of Public Health

To: All North Carolina Clinicians and Laboratories
From: Zack Moore, MD, MPH, State Epidemiologist
Scott Shone, PhD, HCLD (ABB), Public Health Laboratory Director
Re: Person-to-Person Monkeypox Transmission in Multiple Countries
Date: May 20, 2022

This memo is intended to provide guidance to North Carolina clinicians for evaluation and response to possible cases of monkeypox.

Background and Clinical Features:

Over the past month, monkeypox has been identified in multiple countries, including the US, in persons who had not traveled to endemic regions. Person-to-person transmission has been identified, including among close household and sexual contacts. Recent cases in the UK have been identified predominantly in gay, bisexual or other men who have sex with men (MSM).

Monkeypox is a rare disease caused by an orthopox virus typically found in West and Central Africa. The disease typically begins with a prodrome of fever, malaise, headache, and sometimes sore throat and cough. Shortly after the prodrome, a rash appears. In some of the recent cases, a prodrome was not noted before rash appearance. Lesions typically begin to develop simultaneously and evolve together on any given part of the body. Lesions may be disseminated or located on the genital or perianal area alone. The evolution of lesions progresses through four stages—macular, to papular, to vesicular, to pustular—before scabbing over and resolving. This process happens over a period of 2-3 weeks. Lymph node swelling typically occurs with fever onset, 1–2 days before rash onset, or rarely with rash onset. Lymph nodes may swell in the neck (submandibular & cervical), armpits (axillary), or groin (inguinal) and can occur on both sides of the body or just one.

Monkeypox virus can be spread person-to-person through infected body fluids (including saliva and lesion fluid), items that have been in contact with infected fluids or lesions (fomites), and respiratory droplets. People can also become infected via exposure to infected animals, most commonly rodents. The incubation period is usually 7–14 days but can range from 5–21 days. People with monkeypox are infectious from the start of the prodromal period (before the rash forms) until the lesions heal and new skin forms underneath scabs.

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES • DIVISION OF PUBLIC HEALTH

LOCATION: 225 North McDowell St., Raleigh, NC 27603
MAILING ADDRESS: 1902 Mail Service Center, Raleigh, NC 27699-1902
www.ncdhhs.gov • TEL: 919.733.7301 • FAX: 919.733.1020

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

At this time, there are no specific treatments available for monkeypox infection, but smallpox vaccine, cidofovir, ST-246, and vaccinia immune globulin (VIG) have been used to control previous outbreaks.

Guidance for Clinicians:

Any suspected cases of monkeypox should immediately be reported to the Communicable Disease Branch Epidemiologist on Call at 919-733-3419. The NC Division of Public Health is available to assist with monkeypox evaluation and testing, and testing can be performed at the NC State Laboratory of Public Health (NCSLPH).

North Carolina providers should consider monkeypox in patients presenting with a [clinically consistent picture](#). Testing for varicella and syphilis should be performed for patients in whom a monkeypox diagnosis is suspected, but this testing should not delay report to public health. Assistance with rule out testing can be provided by NCSLPH.

Suspicion for monkeypox should be heightened if the rash occurs in people who 1) traveled to countries with recently confirmed cases of monkeypox, 2) report having had contact with a person or people who have a similar appearing rash or received a diagnosis of confirmed or suspected monkeypox, or 3) is a man who regularly has close or intimate in-person contact with other men, including those met through an online website, digital application (“app”), or at a bar or party.

When monkeypox is suspected, contact and airborne precautions should be implemented, including gloves, protective gown, eye protection, and NIOSH-approved N95 or higher-level respirator. Providers should be aware that fomite transmission is possible with *Monkeypox virus*, therefore respirators should not be re-used between patients. For patients with suspected monkeypox who do not require hospitalization, home isolation is required during the infectious period.

NCSLPH Specimen Collection and Testing Guidelines:

Testing Criteria

- All suspect or probable cases of monkeypox infections based on the clinical criteria described in this document should be reported to the **NC DPH Communicable Disease Branch at (919) 733-3419 for prior approval for laboratory testing.**

Testing Employed

- The NCSLPH Bioterrorism and Emerging Pathogens (BTEP) Unit has validated the CDC Orthopox, Non-variola Orthopox, and Variola real-time PCR (RT-PCR) assays. Presumptive positive specimens will be forwarded to the CDC for confirmation.
- Estimated turn-around time for initial results is 6-48 hours from time of specimen receipt and based upon the number of specimens received.

- USE STANDARD, CONTACT, AND DROPLET PRECAUTIONS WHEN COLLECTING SPECIMENS FOR MONKEYPOX TESTING:
<https://www.cdc.gov/poxvirus/monkeypox/clinicians/prep-collection-specimens.html>
- Duplicate specimens (i.e. swabs of lesion fluid) must be collected and sent to SLPH. One set of specimens will be used for testing at SLPH, the second set will be sent to CDC as needed.

Specimens for Monkeypox RT-PCR Testing	
<p>NOTE: At least two lesions should be sampled, preferably from different locations on the body and/or from lesions with differing appearances.</p> <p>To allow for confirmatory analysis at CDC, duplicate samples should be taken at each site.</p> <p>**PREFERRED SPECIMENS for suspected monkeypox RT-PCR testing are swabs of lesions/lesion fluid**</p>	
Disease Stage	Acceptable Specimen Types
Macules / Papules	Lesion biopsy
Vesicles / Pustules	Swab of lesion fluid (preferred), roof, or biopsy
Scabs	Lesion scab

Specimen Collection Guidance:

- Place each specimen in individual collection tube (i.e., one tube per lesion sampled).
- Label each specimen separately with:
 - Specimen site / type
 - Patient name
 - Date of birth
 - Date of collection

Swab collection - (lesion fluid)– sterile nylon, polyester, or Dacron swabs with a plastic, wood, or thin aluminum shaft. Do not use other types of swabs. Dry swabs are preferred for molecular detection; do not add transport media.

1. Use a disposable scalpel (or a sterile 26 Gauge needle) to open and remove the top of the vesicle or pustule (do not send the scalpel or needle). Retain lesion roof for testing if available.
2. Swab the base of the lesion with a sterile polyester or Dacron swab.

3. Break off end of applicator into a screw-capped plastic aliquot tube without any preservative. DO NOT ADD ANY VIRAL TRANSPORT MEDIA.
4. Repeat steps 2 and 3 to collect an additional confirmation specimen.

Biopsy collection

1. Place punch biopsy specimen into a sterile screw-capped plastic container without any preservative. DO NOT ADD ANY VIRAL TRANSPORT MEDIA.

Lesion roof collection

1. Use a disposable scalpel (or a sterile 26 Gauge needle) to open and remove the top of the vesicle or pustule (do not send the scalpel or needle).
2. Place the skin of the vesicle roof into a screw-capped plastic aliquot tube without any preservative. DO NOT ADD ANY VIRAL TRANSPORT MEDIA.

Scab collection

1. Use a 26 Gauge needle to pick or dislodge at least 4 scabs; two scabs each from at least two body locations.
2. Place scabs from each location in separate screw-capped plastic container without any preservative. DO NOT ADD ANY VIRAL TRANSPORT MEDIA.

Specimen Storage and Shipping Requirements:

- Within one hour of collection, place all specimens in 2-8°C refrigerator or freezer at -20°C or colder.
- Refrigerated (2-8°C) samples are acceptable for testing up to 7 days after collection. Frozen samples (-20°C or lower) are acceptable for testing for up to 1 month after collection.
- Shipment to SLPH – If shipment is to be received at SLPH within 5 days of collection, specimens must be received cold (2-8°C) (packaged with frozen cold packs) to be acceptable for testing. For delays exceeding 5 days, freeze specimens at -70°C & ship on dry ice to be received at SLPH frozen (-20°C or lower).
- Specimens can be packaged and shipped to SLPH as Category B.
- ALL specimens collected as part of a case investigation should be sent to SLPH.

All specimen submissions **must** have a completed [BTEP Specimen Submission Form](#)

THE BTEP UNIT MUST BE CONTACTED (919-807-8600) PRIOR TO ANY SHIPMENT OR IF YOU HAVE QUESTIONS.

Additional information on monkeypox:

<https://www.cdc.gov/poxvirus/monkeypox/index.html>

<https://emergency.cdc.gov/han/2022/han00466.asp>

<https://www.nejm.org/doi/full/10.1056/NEJMoa032299>