



## Monkeypox

Information for healthcare providers about monkeypox.

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### On the page

1. [Current situation](#)
2. [Clinical presentation](#)
3. [Transmission](#)
4. [Management of suspected cases](#)
5. [Infection prevention and control](#)
6. [Treatment](#)
7. [Prevention](#)
8. [Immunization](#)
9. [Patient transport](#)

Monkeypox is a viral infection, caused by a virus of the Orthopoxvirus genus. It is related to smallpox, but less severe. Until recently, monkeypox was mostly present in Central and West African countries, with sporadic cases in travellers.

Since early May 2022, the United Kingdom, many European countries, USA and Canada have seen rising cases of monkeypox. Unlike sporadic travel related cases in the past, there is currently local transmission in these non-endemic countries, including Canada. First monkeypox cases in Canada were reported on May 19, 2022 in Montreal. British Columbia's first case was confirmed on June 6, 2022. [Additional cases continue to be reported in BC, Canada and numerous countries](#).

There are two circulating clades of the monkeypox virus: West African Clade and Congo Basin Clade. Genomic studies linked some 2022 cases from Europe and Canada to the West African clade. This clade was seen in previous years' outbreaks in the USA, Israel and Singapore and the 2017-2018 Nigeria outbreak and is associated with less severe disease and lower case-fatality.

Among the monkeypox cases, a high proportion are in people who self-identify as gay, bisexual and other men who have sex with men (gbMSM). Though the reported cases thus far have been primarily among gbMSM, it is important to note that anyone can become exposed and infected. Monkeypox is not known to be sexually transmitted, but it can occur through close direct contact. Anyone with close and prolonged contact with a case of monkeypox is at risk of having the infection. Stigmatizing any group will hinder appropriate infection prevention and control efforts, and will be detrimental to the identification and management of additional cases. The recent cases among gbMSM are likely due in part to shared social networks, as well as large events that may have facilitated transmission.

In B.C., public health will follow up with individuals who may have been exposed to monkeypox or who are identified as cases.

## Clinical presentation

**Incubation:** 5 to 21 days, usually 7 to 14 days



a) early vesicle,  
3mm diameter



b) small pustule,  
2mm diameter



c) umbilicated pustule,  
3-4mm diameter



d) ulcerated lesion,  
5mm diameter



e) crusting of a mature  
lesion



f) partially removed  
scab

Image credit: United Kingdom

Clinical presentation resembles smallpox but is less severe. Symptoms can vary depending on different factors, including exposure characteristics, age, presence of conditions that alter immune response, previous immunity for smallpox and viral strain.

Monkeypox infection has two clinical phases:

1. A prodromal illness that lasts between 1 to 5 days characterized by fever, intense headache, lymphadenopathy, back pain, myalgia, fatigue. Other symptoms have been also described, such as sore throat, cough and less frequently, vomiting or diarrhea.

In some cases, no prodromal symptoms were reported or these symptoms occurred after the beginning of the rash.

2. A skin rash that begins 1-5 days after fever.

The rash evolves from macules, papules, vesicles then pustules, before crusting, which then scale off. Lesions are frequently painful and can be pruritic. Lesions of different clinical stages can be present at the same moment.

The number of lesions and affected regions can vary. Lesions can be found on all parts of the body, including palmar and plantar areas. In the current outbreak, lesions frequently begin and affect the genital, anal and oral areas. Some cases developed proctitis (for ex. rectal pain, bloody stools, diarrhea). Facial lesions can potentially lead to ocular involvement, affecting the conjunctivae and cornea.

Symptoms last 2 to 4 weeks.

Children, pregnant women and some immunocompromised individuals are considered at higher risk for severe disease. Recent cases in Canada and western countries have been described as mild. Since May 2022, no deaths have been reported in western countries.

Long-term skin effects, such as prolonged ulcer healing and scarring, have been described in the literature. Complications can include secondary infections (for example, cellulitis), and less frequently pneumonia, sepsis, encephalitis and keratitis leading to vision loss.

## Differential diagnosis

Given the epidemiology of the cases confirmed thus far in Europe and North America, clinicians should be aware of the differential diagnosis as lesions associated with monkeypox can resemble several other infections, including:

- Herpesviruses (e.g. herpes simplex virus, varicella zoster virus [i.e. shingles and chicken pox])
- Syphilis (*Treponema pallidum*)
- Chancroid (*Haemophilus ducreyi*)
- Other poxviruses (e.g. *molluscum contagiosum*)
- Lymphogranuloma venereum (LGV)

Features of monkeypox virus infection may overlap with sexually transmitted infections (STI), and co-infections are possible. For each individual, consider risk-informed STI testing.

## Transmission

**Period of communicability:** during the symptomatic period, including the prodrome. Lesions are considered infectious until the scabs fall off and new skin can be seen.

### Modes of transmission

Monkeypox doesn't generally spread easily between people. Most historical transmissions occurred through close contact with infected animals (bite, scratch or ingesting meat). The current global outbreak, however, is facilitated by human to human transmission.

Human-to-human transmission occurs via:

- Direct contact with cutaneous or mucosal lesions;
- Fomites, i.e. contaminated material such as linens or clothing;
- Respiratory droplets from prolonged face-to-face contact.

Monkeypox has been detected in many body sites, including semen. However, the significance of this finding on the potential for sexual transmission through semen is not yet known. Transmissions in the context of sexual activity are likely related to close contact as described above.

Monkeypox virus can cross the placental barrier. No case of vertical transmission has been reported in non-endemic countries. However, a case of fetal infection with pathological signs of monkeypox has been described from an endemic country, indicating the potential for vertical transmission.

## Management of suspected cases

- Please obtain infection control guidance
- Report suspected cases to the local Medical Health Officer immediately

## Diagnosis & Testing

Monkeypox diagnosis is available at the BCCDC PHL by a partially validated, in-house PCR (nucleic acid) test (detecting presence of monkeypox virus DNA in patient samples) with confirmation of positive results by sequencing and/or PCR testing at the National Microbiology Laboratory.

If sampling for monkeypox virus is indicated please proceed as following:

- For all individuals, if skin lesions are present, it is recommended to collect lesion material (roofs, crusts, aspirate, exudate, tissue), including dry swabs or swabs in Universal Transport Medium (UTM). **Lesion testing does not require BCCDC Microbiologist approval.**
- For individuals who do not have skin lesions and are suspected to be in the first stage of illness (prodrome), oropharyngeal swabs, nasopharyngeal swabs, EDTA blood and urine can also be considered for testing; **please discuss with a BCCDC Microbiologist on call (604-661-7033) and/or your local hospital microbiologist before collecting and submitting these sample types.**
- For individuals who have passed the first and second clinical stages, and in whom monkeypox was suspected, urine should be considered for testing (serology is currently not available); **please discuss with a BCCDC Microbiologist on call (604-661-7033) and/or your local hospital microbiologist before collecting and submitting this sample type.**
- Collected specimens should be stored and shipped refrigerated. Monkeypox is a Risk Group 3 pathogen. Samples from suspect cases can be shipped by ground to laboratories as TDG Category B (temporary Transport Canada certificate) but need to be shipped as TDG Category A by air.

- Given that the differential includes HSV, VZV and enterovirus, frontline testing laboratories should consider testing for HSV, VZV and enterovirus on lesion material using Containment Level 2+ procedures. If testing for these is not available at the frontline laboratory, this should be indicated to the BCCDC PHL to perform testing.
- Routine chemistry and haematology can proceed as normal given the existing safeguards that are routinely followed to protect staff from bloodborne infections.
- The turnaround time for BCCDC PHL testing is approximately 24 hours from specimen receipt and the turnaround time for NML testing is 2 calendar days once the sample is received. For other testing details, please refer to the [BCCDC Public Health Laboratory test menu on eLab](#)
- Use the BCCDC PHL [Virology Requisition](#) and indicate "Monkeypox" in the PATIENT STATUS/TRAVEL HISTORY/EXPOSURE" box.

## Infection Prevention & Control

Refer to the Provincial Infection Control Network's infection prevention and control guidance for monkeypox:

**B.C.'s interim infection prevention and control guidance for monkeypox in health care settings**

## Treatment

Most individuals with monkeypox have mild symptoms and do not require any specific interventions. Treatment for monkeypox remains supportive and targeted on symptoms (e.g. fever control, hydration support, treat secondary infections). There are no specific antiviral treatments that have proven to be effective in human cases of monkeypox.

The antivirals cidofovir, brindofovir, and tecovirimat have all been examined in in vitro and/or animal models, and may be considered in severe cases of human monkeypox on a case-by-case basis. Specifically, the antiviral tecovirimat may be considered as an 'off-label' treatment for monkeypox if needed, though this would be done on a case-by-case basis.

## Prevention

Suspected cases should be instructed to limit their contact until results are obtained and practice frequent hand and respiratory hygiene. Lesions should be covered whenever possible, and contaminated objects should be manipulated by the case only.

## Immunization

Health Canada maintains a limited stockpile of monkeypox vaccine (Imvamune™) that is made available to BCCDC for use in the event of monkeypox cases. The National Advisory Committee on Immunization published [recommendations](#) for the use of Imvamune in the context of monkeypox outbreaks. In BC, regional public health authorities will identify contacts or any other high-risk group who is eligible and can benefit from the vaccine.

## Patient Transport

If a patient suspected or confirmed to have monkeypox requires transportation, the patient must be provided with a medical mask and lesions must be covered (e.g., patient gown, sheet or dry dressing). The receiving department/facility and transporting personnel should be informed of the need for airborne, droplet and contact precautions.

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### Related links

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Information for the public

Public Health Agency of Canada: Outbreak update

Canada's interim guidance on infection prevention and control within healthcare settings

WHO monkeypox fact sheet

**SOURCE:** Monkeypox ( <http://www.bccdc.ca/health-professionals/clinical-resources/monkeypox> )

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