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RÉGIE RÉGIONALE DE LA SANTÉ ET DES SERVICES SOCIAUX DU NUNAVIK
NUNAVIK REGIONAL BOARD OF HEALTH AND SOCIAL SERVICES

Info-MADO
Newsletter on Reportable Diseases
Nunavik Department of Public Health

Call for vigilance: monkeypox

By
Infectious-Diseases Team
Department of Public Health, Nunavik RBHSS

Context

Monkeypox is a sylvatic zoonosis that leads to accidental human infections that generally occur sporadically in the forested regions of central and western Africa. The virus' reservoir is unknown, but rodents native to the African continent could be the natural reservoir. Non-human primates can be carriers of the virus and can infect humans.

The current situation

Since the start of May 2022, infections with the monkeypox virus (close to 70 000 cases) have been reported globally, in countries where the virus is not normally endemic. More than 500 cases have also been confirmed in Montréal and several other regions of Québec. Epidemiological investigations continue in Québec, and the Nunavik Department of Public Health is keeping informed of the situation, the objective being to detect the virus' presence rapidly in the region should it arrive.

Information on monkeypox

In humans, the classic manifestation of infection with the monkeypox virus is similar but more benign than the symptoms of smallpox, both being diseases of the genus *Orthopoxvirus*. Infection usually manifests with initial systemic signs of fever, headache, fatigue, chills, aches (myalgia, arthralgia, dorsalgia) and adenopathy, followed one to three days later by cutaneous eruptions (cycle of macules, papules, vesicles, pustules and crusting) starting on the face and spreading to the rest of the body, including the hands, feet and genital organs.

The main difference between the symptoms of smallpox and those of monkeypox is that monkeypox causes swelling of the lymph nodes (adenopathy).

In Québec, although the initial cases were characterized by the presence of lesions primarily around the mouth, the perineal region and the genital organs, more recent cases also include the more classic signs of infection (generalized skin lesions appearing on the face and spreading to the torso and limbs). Although some cases show no systemic symptoms, the majority have been reported with localized adenopathy, fever, chills, nocturnal diaphoresis, fatigue, myalgia, arthralgia, headaches, sore throat or cough, or rectal pain.

P.O. Box 900
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Tel.: 1 844 964-2244/819 964-2224
Fax: 1 866 867-8026
Website: nrbhss.gouv.qc.ca

The dermatological manifestations of monkeypox can vary greatly. The anatomical sites often affected are the anal and genital area, torso, arms, legs, face, palms of the hands and soles of the feet. Lesions take the form of skin eruptions (macules, papules, vesicles, pustules and crusting) that can be characterized by various phases. Lesions are often described as being vesicular-pustular, and umbilicated lesions are particularly suggestive of monkeypox.

The number of lesions can also vary considerably. For example, one infected individual can have several lesions whereas another may have only one in the genital area, which demonstrates the potential of linking a monkeypox case to other STBBIs. As with syphilis, single lesions may be observed in the genital area but lesions can also occur on the palms of the hands and soles of the feet.

Images of monkeypox lesions may be found here (men), here (men) and here (women).

Skin eruptions can be very painful.

The incubation period is 5 to 7 days but can be as long as 21 days. The disease lasts two to four weeks.

The contagious period starts once symptoms appear (including systemic symptoms) and ends once the skin lesions have crusted over completely and fallen off and a layer of healthy skin has formed.

In Québec, no cases are presently hospitalized. Some hospitalizations have been reported since the start of the outbreak for treatment of secondary infections. A few dozen individuals have required specific treatment (Tpoxx®), including the first pediatric case. Elsewhere in the world, deaths linked to monkeypox have been reported in some countries, particularly the United States (n = 2), Brazil (n = 1), Ghana (n = 1), India (n = 1), Peru (n = 1), Spain (n = 2) and Ecuador (n = 1). Some countries have also reported pediatric cases, particularly Brazil (n = 3) and Sudan (n = 1).

The outbreak continues to disproportionately affect men who have sexual relations with other men; however, cases among cisgender women as well as children have been reported in Québec and elsewhere in the world.

Transmission

Transmission is primarily through direct contact of skin or mucous membranes with the lesions or bodily fluids (droplets of saliva or from exhalation or exudate from a wound) of an infected animal or human or, to a lesser degree, with material (clothing, laundry or bedding) contaminated by the virus (through direct or indirect contact).

Human-to-human transmission can also occur through droplets (the virus enters the organism through a skin lesion (even if not visible), the respiratory tract or mucous membranes (eyes, nose or mouth)) or direct contact with blood or bodily fluids (droplets of saliva or from exhalation or exudate from a wound) during close, prolonged (at least 3 hours cumulatively out of 24), face-to-face contact without a medical mask for either the case or the contact.

The outbreaks described to date particularly involved close, prolonged contact between humans, for example, between members of the same family living under the same roof or between sexual partners.

Transmission can also occur from mother to foetus through the placenta (congenital monkeypox).

According to current knowledge, infection with the monkeypox virus is not considered a sexually transmitted infection. Transmission through sexual contact is presently under study. There is preliminary evidence suggesting that the monkeypox virus can remain in the semen up to 12 weeks after lesions have healed. At the moment, it is unknown whether the presence of the virus in the semen constitutes a risk of transmission of the infection. Infected individuals should consider risk-reduction methods during sexual contact.

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The attack rate after contact with a contagious individual is 3%. Attack rates up to 50% have been reported among contacts living with an infected individual. The most benign cases of monkeypox can go undetected and represent a risk of human-to-human transmission.

Treatment

Most infections heal on their own in two to four weeks. Nevertheless, 5 to 10% of infected individuals come down with more severe symptoms that require antiviral treatment. Those symptoms are usually caused by mechanical infection in the ear, nose or throat (ENT) (e.g., odynophagia, dysphagia, trismus, dyspnea), the eyes (e.g., conjunctivitis) or the genitourinary tract (e.g., inability to urinate). Treatment may also be considered in pediatrics or for pregnant women. The antiviral in question, presently in non-formulary use but with the status of "extraordinary-use new drug," is Tecovirimat (Tpoxx®).

To obtain Tecovirimat, the attending physician must apply for consultation with a microbiologist/infectious-disease specialist who will assess the indication for treatment and undertake the prescribed procedures according to the process for specific medical need (joint decision of the health-care team with the support of the Department of Public Health), given that the product is not included on the institutions' medication list.

The MUHC's pharmacy is depository of a pre-set stock of Tecovirimat. It is the only channel for access to the product. It is up to the head of a health centre's pharmacy who wishes to prescribe Tecovirimat to apply with the MUHC's pharmacy in order to obtain the product, by indicating that the process for specific medical need has been followed.

It is important to ensure close monitoring of the use of Tecovirimat by clinicians for the purposes of documentation (e.g., undesirable effects, efficiency, observance).

Vaccination

In Québec, Imvamune, a vaccine used against smallpox, is available at no cost, pre- and post-exposure, for individuals aged 18 years and older who meet the criteria established by the Department of Public Health (see below);

In Nunavik, the vaccine is available at the central pharmacies in Puvirnituq and Kuujjuaq. Rapid supply will be possible in case of need.

Criteria for pre-exposure administration:

- All men (cis[1] or trans) who have or will have sexual relations with another man (cis or trans):
    - other than a single, regular sexual partner (i.e., with the intention of sexual exclusivity);

    OR

    - in a setting (or 2GBTQIA+ event) with sexuality on site;

    OR

    - in exchange for money or other goods or services (given or received);

[1] Refers to an individual whose sexual identity corresponds to that with which he or she was born.

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OR

- Any worker or volunteer in a setting (or 2GBTQIA+ event) with sexuality on site;

OR

- Sex workers.

For pre-exposure vaccination, the authorized schedule includes two doses of 0.5 mL administered subcutaneously, at an interval of at least 28 days. The second dose must be considered for individuals for whom the risk of exposure persists. A single dose is necessary for individuals who have received a vaccine against smallpox in the past.

For immunosuppressed individuals, the Québec immunization committee (*CIQ*) recommends administration of two doses with an interval of at least 28 days, even for cases previously vaccinated against smallpox.

Vaccination for health workers is not recommended pre-exposure, given that these workers all wear personal protective equipment and that transmission requires close, prolonged contact.

Criteria for post-exposure administration:

Significant contacts (see contact definition below) aged 18 years or older of a confirmed or probable case of infection with the monkeypox virus, within the preceding 14 days, should receive a single dose of the Imvamune vaccine, ideally within 4 days of exposure, to prevent infection.

The authorized schedule consists of one dose of 0.5 mL administered subcutaneously. A second dose of Imvamune could be administered after an interval of at least 28 days after the primary vaccination if the risk of exposure persists.

In the case where symptoms compatible with monkeypox already exist at the time of vaccination, the smallpox vaccine should not be administered.

Studies confirm that the vaccine provides protection against this virus.

The Imvamune vaccine has not been evaluated in pediatrics or in pregnant women. However, preliminary data suggest that the safety profile is adequate for these groups. The advantages and inconveniences of vaccination should be assessed on a case-by-case basis jointly with the Department of Public Health.

For further details on the Imvamune vaccine, consult the Protocole d'immunisation du Québec as well as the interim notice from the Comité d'immunisation du Québec sur la Vaccination contre la variole simienne.

Evolution of the disease/complications

Individuals infected with the monkeypox virus generally recover spontaneously in two to four weeks. Serious cases occur more frequently among children under 12 years, immunosuppressed individuals and pregnant women and are linked to the individual's initial state of health, the method of exposure and the strain of virus. The West African clade of monkeypox presently in circulation is linked to a more benign form of the disease, fewer deaths and limited human-to-human transmission.

The following complications have been reported: secondary infections, bronchopneumonia, meningitis, encephalitis, septicemia and infection of the cornea possibly leading to loss of vision.

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Case definitions

SUSPECTED CASE:

- Individual with skin lesions (macules, papules, vesicles, pustules, ulcers or crusted lesions) and at least one systemic symptom (fever, headaches, myalgia, arthralgia, dorsalgia or lymphadenopathy), with no other obvious cause;

OR

- Individual with skin (macules, papules, vesicles, pustules, ulcers or crusted lesions), genital, perineal or buccal lesions, with no other obvious cause.

PROBABLE CASE:

- Detection of a virus of the *Orthopox* genus through an appropriate laboratory test;

OR

- **Suspected case who meets one of the following two criteria:**
    - significant exposure (see definition of contact below) to a confirmed case of monkeypox during the 21 days preceding onset of symptoms;

OR

    - male who is a suspected case and has had sexual contact at least once with another male during the 21 days preceding onset of symptoms.

CONFIRMED CASE:

- Detection of a virus of the *Orthopox* genus through an appropriate laboratory test.

Contact definitions[2]

Exposure is considered significant in the presence of:

- direct contact of an individual's skin or mucous membrane with the skin lesions or bodily fluids (droplets of saliva or from exhalation or exudate from a wound) or surfaces and objects contaminated by the bodily fluids, including clothing and bedding, of a probable or confirmed symptomatic case of monkeypox;
- face-to-face physical contact within one metre, lasting at least 3 hours over a cumulative period of 24 hours, with a probable or confirmed symptomatic case of monkeypox, with neither case nor contact wearing a medical mask.

Care for suspected, probable and confirmed cases and contacts

[2] In health-care settings, for the definition of close contact for health workers and users, as well as for instructions on management of such close contacts, refer to the document *Variole simienne : Mesures de prévention et de contrôle des infections pour les cliniques médicales et les centres hospitaliers de soins de courte durée*.

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In the presence of an individual with genital or buccal ulcerations:

- consider the most common etiologies, i.e., herpes simplex, syphilis, chickenpox-zona virus or venereal lymphogranuloma. Refer to your health centre's collective prescriptions, the Canadian Guidelines on Sexually Transmitted and Blood-Borne Infections and the guides d'usage optimal de l'INESSS for diagnostic tests and the recommendations for care;
- in the context of Nunavik, syphilis must be suspected, and treatment with long-acting penicillin may be provided immediately for individuals with compatible symptoms, pending test results;
- specimens should be obtained from individuals corresponding to the definition of suspected or probable cases to search for infection with the monkeypox virus;
- consider a diagnosis of monkeypox in individuals with compatible symptoms, even if they have received the monkeypox vaccine recently. No vaccine is 100% effective.

Instructions for suspected, probable and confirmed cases:

- Cover skin lesions;
- Wear a medical mask during social interactions;
- Avoid sexual contact.

Additional instructions for probable and confirmed cases:

Until all skin lesions have entirely crusted over and fallen off and a layer of healthy skin has formed:

- cover skin lesions with clothing or a bandage;
- avoid sexual contact;
- avoid all activities (e.g., family, social, professional, recreational) likely to involve direct contact between an uncovered lesion or a lesion that cannot be covered and:
    - the skin or mucous membranes of another person;
    - any object or surface with which other persons may come into contact;
- where possible, avoid sharing common spaces with children, pregnant women and individuals with a compromised immune system living under the same roof (in homes and in shared living environments);
- wear a medical mask when within one metre of other persons, both indoors and outdoors;
- do not share personal objects such as clothing, bedding, utensils, etc.;
- take precautions when handling bandages or soiled laundry to avoid direct contact with contaminated material;
- take precautions when washing laundry (e.g., bedding, towels and clothing):
    - do not shake or otherwise handle soiled laundry in a way likely to disperse infectious particles in the air;
    - wash soiled laundry in a washing machine with warm water and detergent;

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- as precaution, infected individuals should protect their pets as they would other persons around them. Infections with this virus have been identified in some exotic animals (e.g., rodents), and transmission between animals and humans is possible. Avoid contact with animals if possible;
- if an individual provides care for you, she[3] must observe hand hygiene with soap and water before and after providing care, don gloves before touching soiled objects and surfaces, discard the used gloves in a bag or closed waste container and then proceed with hand hygiene;
- in the absence of a sink for hand hygiene with soap and water, use an aqueous alcoholic solution;
- inform cases that they must notify the persons with whom they have had significant contact since the onset of symptoms (systemic or cutaneous), regardless of the type of contact or whether or not a condom was used during sexual contact:
    - discuss strategies to notify contacts (e.g., meeting, telephone call, *Messenger*);
    - provide information on the infection for the infected individual so he can in turn inform his contacts of the instructions to follow;
    - inform about the resources where contacts can be assessed and tested in case of symptoms;
    - as needed, offer the support of a public-health professional of your region.

Additional instructions for confirmed cases of monkeypox

There is preliminary evidence suggesting that the monkeypox virus can remain in the semen up to 12 weeks after lesions have healed. It is unknown whether the presence of the virus in the semen constitutes a risk of transmission of the infection. Infected individuals should consider risk-reduction methods during sexual contact.

Instructions for contacts who have had significant exposure to a probable or confirmed case of monkeypox:

The instructions apply to contacts during the 21 days after significant exposure (i.e., from onset of symptoms until crusting has fallen off and a healthy layer of skin has formed) to a probable or confirmed case during the latter's contagious period.

Situation	Instructions
Contact with lesions compatible with monkeypox	• Consult a health professional. • If the individual is required to go somewhere for consultation, privilege a mode of transportation that minimizes direct contact with others. • Follow the other instructions for probable cases.
Contact with systemic symptoms compatible with monkeypox	• Monitor the appearance of lesions.

[3] In the interest of simplicity, the masculine or feminine form is used in this text to denote either sex.

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	• Wear a medical mask during social interactions outside the home. • Avoid sexual relations. • Limit outings to essential activities. • Take temperature twice a day. • In case of fever, swollen lymph nodes or skin lesions, consult a health professional.
Asymptomatic contact	• Self-monitor symptoms (fever, swollen lymph nodes, skin lesions, muscle pain, headache, fatigue, night sweats) for 21 days after the last significant exposure. • Take temperature twice a day. • In case of fever, swollen lymph nodes or skin lesions, consult a health professional.

Testing

- Contact the laboratory before taking the specimen to know the types of test as well as the procedures at your health centre and to notify of time of reception at the laboratory.
- Notify the microbiologist on duty at the McGill University Health Centre.
- Notify the *Laboratoire de santé publique du Québec* (*LSPQ*) that specimens from Nunavik are expected. **Leave a message at 514-457-2070, extension 2278, indicating the number of individuals from whom specimens were taken and the number of specimens**.
- Fill out all the required fields in the *LSPQ*'s PHAGE electronic form (http://www.inspq.qc.ca/formulaire-sgil/) by selecting the test for "Orthopoxvirus simien – détection (TAAN)."
- **Possible specimens according to site and presentation of lesions:**
  - swab of buccal lesions **(priority)**;
  - biopsy AND swab of corporeal lesions **(priority)**;
  - biopsy of crusting **(priority)**;
  - nasopharyngeal swab **(favorably complementary)**;
  - serum **(optional)**.
- **Take specimens from at least two different sites.**
- **Apply measures for PCI before talking specimens.**
- **For biopsy with punch:**
  - disinfect the skin;
  - remove the top of the lesion using a needle, scalpel of biopsy instrument;

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- place the fresh tissue in a container for urine culture or other sterile plastic container;
- the specimen may be placed on a gauze pad moistened with saline;
- send frozen specimens to the *LSPQ*.

- **For swabs:**
  - perform an NAAT (PCR) (such as for herpes, with or without UTM);
  - use a polyester, nylon or dacron swab for taking specimens. Break vesicles or lift the crust to swab deeply inside of lesions;
  - do not use gel transport swabs used for throat or wound cultures or for searching for *N. gonorrhoeae*;
  - dry specimens (without liquid for transport) are accepted and are no longer to be privileged;
  - a dry swab for liquid from a lesion or for the surface of the lesion is acceptable;
  - freeze specimens at minus 80 degrees Celsius if shipping is not possible within 48 hours.

- **Other specimens:**
  - It is possible to send a nasopharyngeal swab in the UTM, as well as a serum (one LAVENDER tube and one GOLD tube). **Caution:** these specimens are presumed less sensitive; the recommendation is to take specimens from lesions if they appear in the following days.

- **Other blood tests:**

As laboratory tubes from a suspected, probable or confirmed case of monkeypox must be handled under a hood, some tests that require decanting must await disconfirmation of the case before being taken and sent, outside Puvirnituq and Kuujjuaq. See the table below:

Tube to use depending on test for all suspected, probable or confirmed cases, in villages without a laboratory						
Test	Tube	Centrifuge	Decant	Possible at IHC	Possible at UTHC	Particularities
Syphilis	**GOLD**	**Yes**	**No**	**Yes**	**Yes**	
HIV	**GOLD**	**Yes**	**No**	**Yes**	**Yes**	
General biochemistry	**GOLD**	**Yes**	**No**	**Yes**	**Yes**	
Troponin	**GREEN**	**Yes**	**No**	**Yes**	**No**	
FSC	**LAVENDER**	**No**	**No**	**Yes**	**Yes**	**Ship at 4°C**
Serum for monkeypox	**GOLD and LAVENDER**	**GOLD (yes) LAVENDER (no)**	**No**	**Yes**	**Yes**	**Ship at 4°C (LAVENDER)**
For blood cultures, PCR (gonorrhea/chlamydia/herpes/shingles) or any other culture, proceed as usual.						
For all other tests, check with your laboratory.						

- **Conservation:**
  - Specimens may be kept in the refrigerator (biopsies should be frozen) and shipped in a package containing ice packs if they can arrive at the *LSPQ* within 48 hours of being taken. Otherwise, they should be frozen and shipped on dry ice. Avoid freeze-thaw cycles.

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- **Transport:**
  - Place each specimen in an individual biohazard plastic bag (one specimen per bag) with absorbent material and disinfect the bags;
  - Place all individual plastic bags in three larger biohazard bags: **one for cultures, one for PCR and one for blood samples** and disinfect the bags;
  - Place paper forms in another sealed biohazard plastic bag;
  - Identify each bag with a label marked with "**Caution: monkeypox**";
  - Send the specimens in the usual lab box used exclusively for specimens from the case under investigation.

Measures for prevention and control of infections

Clinicians should establish the following interim measures:

- apply measures as precautions against aerial contact and for eye protection for any clinical situation suggestive of infection with monkeypox;
- as much as possible, organize triage of individuals with compatible symptoms in order to avoid any unnecessary contact with other persons in the clinical setting, isolate them in a closed room of the clinic and have them wear a medical mask;
- **personal protective equipment**: professionals in direct contact with individuals with symptoms compatible with the monkeypox virus should wear single-use gloves, a disposable gown, eye protection and an N95 mask where possible;
- **hygiene and cleanliness**: monkeypox is deactivated by the disinfectants routinely used in clinical settings (product with recognized effectiveness (virucide) and approved (DIN) by Health Canada);
- **hospitalization**: negative-pressure chamber or, if unavailable, a room with a closed door.

For further details on the measures for the prevention and control of infections, consult the document Variole simienne : Mesures de prévention et de contrôle des infections pour les cliniques médicales et les centres hospitaliers de soins de courte durée.

Training

A few proposals for training on monkeypox:

- L'orthopoxvirose simienne : Un nouveau danger ?
- How to Spot a Monkeypox : A Tutorial
- Monkeypox: Epidemiology, preparedness, and response for African outbreak contexts (aussi disponible en français)

Page Web du MSSS pour les professionnels de la santé sur la variole simienne

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Reporting to the Department of Public Health

For the moment, monkeypox is a reportable disease. The Department of Public Health invites health professionals to report any situation suggestive of an infection compatible with monkeypox by directly calling the physician on duty for Public Health (toll-free at 1 855 964-2244 or, in case of problems with the toll-free number, 1 819 299-2990).

AND

By confidential fax (1 866 867-8026), using the formulaire national de déclaration MADO.

For any questions or clinical support during office hours, e-mail may be sent to stbbi.nrbhss@ssss.gouv.qc.ca.

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