



Communicable Disease Case Reporting and Investigation Protocol **SMALLPOX**

I. IDENTIFICATION AND DEFINITION OF CASES

A. Clinical Description:

The last naturally acquired case of smallpox in the world occurred in October 1977 in Somalia. The World Health Organization (WHO) officially certified the world as smallpox-free in 1979. Two secure laboratories, the Centers for Disease Control and Prevention (CDC) in the U.S. and one in Russia, are the only known holders of the smallpox virus.

Smallpox is spread by droplet and aerosol; it may also be spread by direct inoculation from a lesion to an open wound or cut in the skin. It has been postulated that the smallpox virus can be weaponized and spread by aerosol transmission. Transmission is usually limited to close contacts such as household members. The incubation period is from 7 to 17 days; patients are infectious once the rash or oral lesions have appeared.

Any occurrence of smallpox is classified as an outbreak and a bioterrorism event. Thus careful evaluation and testing, as well as notification of authorities, is necessary.

Smallpox disease is distinct from other general body rashes. Because the disease does not exist in the population, laboratory testing will be confined to those cases meeting the clinical case definition below.

Major smallpox criteria:

- Febrile prodrome
- Presence of classic smallpox lesions (deep-seated, firm/hard, round well-circumscribed vesicles or pustules)
- Lesions in the same stage of development on any one part of the body

Minor smallpox criteria:

- Centrifugal distribution of lesions
- First lesions on oral mucosa or face, palate, and forearms
- Patient appears toxic or moribund
- Slow evolution of lesions (from macules to papules to vesicles to pustules, each phase lasting one to two days)
- Lesions on palms of hands or soles of feet or both

B. Laboratory Criteria:

A case of smallpox is considered laboratory confirmed by:

- Polymerase chain reaction (PCR) identification of variola DNA in a clinical specimen, OR
- Isolation of smallpox (variola) virus from a clinical specimen (WHO smallpox reference laboratory or laboratory with appropriate reference capabilities) with variola PCR confirmation.

Samples can be obtained from lesions by carefully unroofing a vesicle with a sterile needle and placing the sample in a sterile container. Swabs of the lesion may also be obtained and placed in viral transport medium for submission to the laboratory. Detailed specimen collection and submission instructions can be found in the References section below.

All laboratory testing must take place in a CDC-approved laboratory response network laboratory. All results must be confirmed by additional testing at CDC.

C. Wisconsin Surveillance Case Definition:

- **Suspected:** A case with a generalized, acute vesicular or pustular rash illness with fever preceding development of rash by 1-4 days.

- **Probable:** A case that meets the classical clinical case definition or a clinically consistent case that does not meet the clinical case definition and has an epidemiological link to a confirmed case of smallpox.
- **Confirmed:** A case of smallpox that is laboratory confirmed or a case that meets the classical clinical case definition that is epidemiologically linked to a laboratory-confirmed case.

II. REPORTING

- Wisconsin Notifiable Disease Category I – Methods for Reporting:** Smallpox infections shall be reported **IMMEDIATELY BY TELEPHONE** to the patient's local health officer or to the local health officer's designee upon identification of a case or suspected case, per Wis. Admin. Code § [DHS 145.04 \(3\) \(a\)](#). In addition to the immediate report, complete and fax, mail or electronically report an Acute and Communicable Disease Case Report (DHS [F-44151](#)) to the address on the form, or enter the data into the Wisconsin Electronic Disease Surveillance System, within 24 hours.
- Responsibility for Reporting:** According to Wis. Admin. Code § [DHS 145.04\(1\)](#), persons licensed under Wis. Stat. ch. [441](#) or [448](#), laboratories, health care facilities, teachers, principals, or nurses serving a school or day care center, and any person who knows or suspects that a person has a communicable disease identified in [Appendix A](#).
- Clinical Criteria for Reporting:** An illness with acute onset of fever >101°F (38.3°C) followed by a rash characterized by firm, deep-seated vesicles or pustules in the same stage of development without other apparent cause.
- Laboratory Criteria for Reporting:**
 - Polymerase chain reaction (PCR) identification of variola DNA in a clinical specimen, **OR**
 - Isolation of smallpox (variola) virus from a clinical specimen (CDC laboratory only) with variola PCR confirmation.

III. CASE INVESTIGATION

- Responsibility for case investigation:** It is the responsibility of the local health department (LHD) to investigate or arrange for investigation of suspected or confirmed cases as soon as is reasonably possible. A case investigation may include information collected by phone, in person, in writing, or through review of medical records or communicable disease report forms, as necessary and appropriate. LHDs must work with DHS during the investigation.
- Required Documentation:**
Complete the WEDSS disease incident investigation report and upload investigation documentation into the incident filing cabinet. Consult DHS for specific documentation required.

IV. PUBLIC HEALTH INTERVENTIONS AND PREVENTION MEASURES

- In accordance with Wis. Admin. Code § [DHS 145.05](#), local public health agencies should follow the methods of control recommended in the current editions of *Control of Communicable Diseases Manual*, edited by David L. Heymann, published by the American Public Health Association, and the American Academy of Pediatrics' *Red Book: Report of the Committee on Infectious Diseases*, unless otherwise specified by the state epidemiologist.
- Any person with a suspicious rash and prodrome typical of smallpox should be immediately placed in airborne and contact isolation. Access to the room should be limited to the minimum number of necessary caregivers; staff such as cleaning and dietary personnel should NOT be allowed in the room. A log should be kept of all individuals who have contact with the patient.
- Vaccination against smallpox can be performed before or after exposure; vaccine and needles are obtained through the state health department from CDC. The vaccine contains vaccinia virus, which when inoculated causes a lesion or lesions similar to a smallpox lesion: moving from macular to papular to vesicular to pustular. At this time, military personnel and some laboratory personnel are the only persons in the U.S. who are regularly vaccinated with vaccinia. Transmission of vaccinia from the lesion to close contacts can occur and may cause a single or multiple lesions. Vaccinia transmission should be considered when a smallpox-like lesion is seen.

V. CONTACTS FOR CONSULTATION

- A. Local health departments and tribal health agencies:
<https://www.dhs.wisconsin.gov/lh-depts/index.htm>
- B. Bureau of Communicable Diseases, Communicable Diseases Epidemiology Section: 608-267-9003
- C. Wisconsin State Laboratory of Hygiene: 1-800-862-1013

VI. RELATED REFERENCES

- A. Heymann DL, ed. Smallpox (variola). In: *Control of Communicable Diseases Manual*. 20th ed. Washington, DC: American Public Health Association, 2015: 561-569.
- B. Pickering LK, ed. Smallpox (variola). In: *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics, 2015: 709-712.
- C. Centers for Disease Control and Prevention. Nationally notifiable infectious diseases, 2017. Available at <https://wwwn.cdc.gov/nndss/conditions/notifiable/2017/>
- D. Centers for Disease Control and Prevention. Smallpox: Clinical Disease. Available at: <https://www.cdc.gov/smallpox/clinicians/clinical-disease.html>
- E. CDC Specimen Collection and Transport Guidelines for Suspect Smallpox Cases. Available at: <https://www.cdc.gov/smallpox/lab-personnel/specimen-collection/specimen-collection-transport.html>
- F. Centers for Disease Control and Prevention. Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, 2007. Available at <https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines.pdf>