



Infectious Disease Epidemiology Section
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Smallpox

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Epidemiology

Smallpox is caused by the Orthopox virus, variola, which occurs in at least two strains, variola major and the milder disease, variola minor. Despite the global eradication of smallpox and continued availability of a vaccine, the potential weaponization of variola continues to pose a military threat. This threat can be attributed to the aerosol infectivity of the virus, the relative ease of large-scale production, and an increasingly *Orthopoxvirus*-naive populace. Although the fully developed cutaneous eruption of smallpox is unique, earlier stages of the rash could be mistaken for varicella. Secondary spread of infection constitutes a nosocomial hazard from the time of onset of a smallpox patient's exanthem until scabs have separated. Quarantine with respiratory isolation should be applied to secondary contacts for 17 days post-exposure. Vaccinia vaccination and vaccinia immune globulin each possess some efficacy in post-exposure prophylaxis.

Endemic smallpox was declared eradicated in 1980 by the World Health Organization (WHO). Although two WHO-approved repositories of variola virus remain at the Centers for Disease Control and Prevention (CDC) in Atlanta and the Institute for Viral Preparations in Moscow, the extent of clandestine stockpiles in other parts of the world remains unknown. In January 1996, WHO's governing board recommended that all stocks of smallpox be destroyed by 30 June 1999. However, action on this was delayed by the Clinton administration in May 1999 due to concerns over the need for further study of the virus given its potential as a biological warfare agent. The smallpox stockpiles were scheduled for destruction on 30 June 2002.

The United States stopped vaccinating its military population in 1989 and civilians in the early 1980s. These populations are now susceptible to variola major, although recruits immunized in 1989 may retain some degree of immunity. Variola may have been used by the British Army against Native Americans by giving them contaminated blankets from the beds of smallpox victims during the eighteenth century. Japan considered the use of smallpox as a BW weapon in World War II and it has been considered as a possible threat agent against US forces for many years. In addition, the former Soviet Union is reported to have produced and stockpiled massive quantities of the virus for use as a biological weapon. It is not known whether these stockpiles still exist in Russia.

CLINICAL FEATURES

Signs and Symptoms: Clinical manifestations begin acutely with malaise, fever, rigors, vomiting, headache, and backache. 2-3 days later lesions appear which quickly progress from macules to papules, and eventually to pustular vesicles. They are more abundant on the extremities and face, and develop synchronously.

The incubation period of smallpox averaged 12 days, although it could range from 7-19 days following exposure. Clinical manifestations begin acutely with malaise, fever, rigors, vomiting, headache, and backache; 15% of patients developed delirium. Approximately 10% of light-skinned patients exhibited an erythematous rash during this phase. Two to three days later, an enanthem appears concomitantly with a discrete rash about the face, hands and forearms.

Following eruptions on the lower extremities, the rash spread centrally to the trunk over the next week. Lesions quickly progressed from macules to papules, and eventually to pustular vesicles. Lesions were more abundant on the extremities and face, and this centrifugal distribution is an important diagnostic feature. In distinct contrast to varicella, lesions on various segments of the body remain generally synchronous in their stages of development. From 8 to 14 days after onset, the pustules form scabs that leave depressed depigmented scars upon healing. Although variola concentrations in the throat, conjunctiva, and urine diminish with time, virus can be readily recovered from scabs throughout convalescence. Therefore, patients should be isolated and considered infectious until all scabs separate.

For the past century, two distinct types of smallpox were recognized. Variola minor was distinguished by milder systemic toxicity and more diminutive pox lesions, and caused 1% mortality in unvaccinated victims. However, the prototypical disease variola major caused mortality of 3% and 30% in the vaccinated and unvaccinated, respectively. Other clinical forms associated with variola major, flat-type and hemorrhagic type smallpox were notable for severe mortality. A naturally occurring relative of variola, monkeypox, occurs in Africa, and is clinically indistinguishable from smallpox with the exception of a lower case fatality rate and notable enlargement of cervical and inguinal lymph nodes.

DIAGNOSIS

Neither electron nor light microscopy is capable of discriminating variola from vaccinia, monkeypox or cowpox. The new PCR diagnostic techniques may be more accurate in discriminating between variola and other *Orthopoxviruses*.

Smallpox must be distinguished from other vesicular exanthems, such as chickenpox, erythema multiforme with bullae, or allergic contact dermatitis. Particularly problematic to infection control measures would be the failure to recognize relatively mild cases of smallpox in persons with partial immunity. An additional threat to effective quarantine is the fact that exposed persons may shed virus from the oropharynx without ever manifesting disease. Therefore, quarantine and initiation of medical countermeasures should be promptly followed by an accurate diagnosis so as to avert panic.

The usual method of diagnosis is demonstration of characteristic virions on electron microscopy of vesicular scrapings. Under light microscopy, aggregations of variola virus particles, called Guarnieri bodies are found. Another rapid but relatively insensitive test for Guarnieri bodies in vesicular scrapings is Gispén's modified silver stain, in which cytoplasmic inclusions appear black.

None of the above laboratory tests are capable of discriminating variola from vaccinia, monkeypox or cowpox. This differentiation classically required isolation of the virus and characterization of its growth on chorioallantoic membrane. The development of polymerase chain reaction diagnostic techniques promises a more accurate and less cumbersome method of discriminating between variola and other *Orthopoxviruses*.

SURVEILLANCE

Smallpox is a reportable condition. It should be reported immediately by phone because of concern about bioterrorism as a cause. Furthermore, all of the syndromic surveillance systems currently deployed by the Infectious Disease Epidemiology section utilize sets of clinical signs and symptoms that have been crafted to capture cases of smallpox prior to the availability of laboratory test results.

CASE MANAGEMENT

Treatment: At present there is no effective chemotherapy, and treatment of a clinical case remains supportive.

Medical personnel must be prepared to recognize a vesicular exanthem in possible biowarfare theaters as potentially variola, and to initiate appropriate countermeasures. Any confirmed case of smallpox should be considered an international emergency with immediate report made to public health authorities. Droplet and Airborne Precautions are recommended for a minimum of 17 days following exposure for *all* persons in direct contact with the index case, especially the unvaccinated. In the civilian setting strict quarantine of asymptomatic contacts may prove to be impractical and impossible to enforce. A reasonable alternative would be to require contacts to check their temperatures daily. Any fever above 38 C (101 F) during the 17-day period following exposure to a confirmed case would suggest the development of smallpox. The contact should then be isolated immediately, preferably at home, until smallpox is either confirmed or ruled out and remain in isolation until all scabs separate. Patients should be considered infectious until all scabs separate. Immediate vaccination or revaccination should also be undertaken for all personnel exposed to either weaponized variola virus or a clinical case of smallpox.

The potential for airborne spread to other than close contacts is controversial. In general, close person-to-person contact is required for transmission to reliably occur. Nevertheless, variola's potential in low relative humidity for airborne dissemination was alarming in two hospital outbreaks. Smallpox patients were infectious from the time of onset of their eruptive exanthem, most commonly from days 3-6 after onset of fever. Infectivity was markedly enhanced if the patient manifested a cough. Indirect transmission via contaminated bedding or other fomites was infrequent. Some close contacts harbored virus in their throats without developing disease, and hence might have served as a means of secondary transmission.

Vaccination with a verified clinical "take" (vesicle with scar formation) within the past 3 years is considered to render a person immune to smallpox. However, given the difficulties and uncertainties under wartime conditions of verifying the adequacy of troops' prior vaccination, routine revaccination of all potentially exposed personnel would seem prudent if there existed a significant prospect of smallpox exposure.

Antivirals for use against smallpox are under investigation. Cidofovir has been shown to have significant *in vitro* and *in vivo* activity in experimental animals. Whether it would offer benefit superior to immediate post-exposure vaccination in humans has not been determined.

CASE DEFINITION

Clinical Case Definition

An illness with acute onset of fever $\geq 101^{\circ}\text{F}$ ($\geq 38.3^{\circ}\text{C}$) followed by a rash characterized by firm, deep seated vesicles or pustules in the same stage of development without other apparent cause. Clinically consistent cases are those presentations of smallpox that do not meet this classical clinical case definition: a) hemorrhagic type, b) flat type, and c) *variola sine eruptione*. (Detailed clinical description is available on the CDC web site, see URL: <http://www.bt.cdc.gov/agent/smallpox/index.asp>).

Laboratory Criteria

Polymerase chain reaction (PCR) identification of variola DNA in a clinical specimen,
OR
Isolation of smallpox (variola) virus from a clinical specimen (Level D laboratory only; confirmed by variola PCR).

Note: Indications for laboratory testing of patients with suspected smallpox should be followed as described in detail in Guide A of the CDC Smallpox Response Plan. Laboratory diagnostic testing for variola virus should be conducted in Level C or D laboratories only.

Case Classification*

Confirmed: case of smallpox that is laboratory confirmed, or a case that meets the clinical case definition that is epidemiologically linked to a laboratory confirmed case.

Probable: A case that meets the 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.

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

*Exclusion Criteria: A case may be excluded as a suspect or probable smallpox case if an alternative diagnosis fully explains the illness or appropriate clinical specimens are negative for laboratory criteria for smallpox.

Note: The smallpox case definition is to be used only during post-event surveillance. The case definition described in Guide A of the Smallpox Response Plan and Guidelines (Version 3) on the CDC bioterrorism preparedness website (URL: <http://www.bt.cdc.gov/agent/smallpox/response-plan/index.asp>) includes different criteria for the suspected case definition and the confirmed smallpox case definition the Council of State and Territorial Epidemiologists has subsequently approved this nomenclature for use in the National Notifiable Diseases Surveillance System (NNDSS). The smallpox case definition on the CDC bioterrorism web site is more sensitive and less specific than the case definition for the NNDSS, in that a "suspect" case is defined as: "a case with febrile rash illness with fever preceding the development of rash by 1-4 days."

PROPHYLAXIS

Immediate vaccination or revaccination should be undertaken for all personnel exposed.

Vaccine: Smallpox vaccine (vaccinia virus) is most often administered by intradermal inoculation with a bifurcated needle, a process that became known as scarification because of the permanent scar that resulted. Vaccination after exposure to weaponized smallpox or a case of smallpox may prevent or ameliorate disease if given as soon as possible and preferably within 7 days after exposure. A vesicle typically appears at the vaccination site 5-7 days post-inoculation, with surrounding erythema and induration. The lesion forms a scab and gradually heals over the next 1-2 weeks.

Side effects include low-grade fever and axillary lymphadenopathy. The attendant erythema and induration of the vaccination vesicle is frequently misdiagnosed as bacterial superinfection. More severe first-time vaccine reactions include secondary inoculation of the virus to other sites such as the face, eyelid, or other persons (~ 6/10,000 vaccinations), and generalized vaccinia, which is a systemic spread of the virus to produce mucocutaneous lesions away from the primary vaccination site (~3/10,000 vaccinations).

Vaccination is *contraindicated* in the following conditions: immunosuppression, HIV infection, history or evidence of eczema, or current household, sexual, or other close physical contact with person(s) possessing one of these conditions. In addition, vaccination should not be performed during pregnancy. Despite these caveats, most authorities state that, with the exception of significant impairment of systemic immunity, there are no absolute contraindications to *post-exposure* vaccination of a person who experiences *bona fide* exposure to variola. However, concomitant VIG administration is recommended for pregnant and eczematous persons in such circumstances.

Passive Immunoprophylaxis: Vaccinia Immune Globulin (VIG) is generally indicated for treatment of complications to the smallpox (vaccinia) vaccine, and should be available when administering vaccine. Limited data suggests that vaccinia immune globulin may be of value in post-exposure prophylaxis of smallpox when given within the first week following exposure, and concurrently with vaccination. Vaccination alone is recommended for those without contraindications to the vaccine. If greater than one week has elapsed after exposure, administration of both products, if available, is reasonable. The dose for prophylaxis or treatment is 0.6 ml/kg intramuscularly. Due to the large volume (42 mls in a 70 Kg person), the dose would be given in multiple sites over 24-36 hours.

Isolation

Droplet and Airborne Precautions for a minimum of 17 days following exposure for all contacts. Patients should be considered infectious until all scabs separate. In the civilian setting strict quarantine of asymptomatic contacts may prove to be impractical and impossible to enforce and may increase the risk of infection within the quarantined population. A reasonable alternative would be to require contacts to check their temperatures daily. Any fever above 38 C (101 F) during the 17-day period following exposure to a confirmed case would suggest the development of smallpox. The contact should then be isolated immediately, preferably at home, until smallpox is either confirmed or ruled out and remain in isolation until all scabs separate.

Infectious Disease Epidemiology: Epidemiologic Response Checklist

Consultation/ Confirmation

- Discuss bioterrorism event definitions with key public health personnel (health officer, communicable disease control staff, laboratorians, etc.)

Laboratory Confirmation

- Identify point of contact (POC) at appropriate state public health laboratory in a potential bioterrorist event

Notification

- Establish local notification network to be activated in case of a possible bioterrorist event; disseminate contact information and notification protocol
- Establish relationships with local Office of Emergency Preparedness and FBI contacts to be notified in a suspected bioterrorist event and maintain up-to-date contact information

Coordination

- Establish Epidemiologic Response as a part of local Incident Command System
- Identify personnel available for epidemiologic investigation and perform inventory of skills and duties
- Establish contacts at regional and Parrish health units identify potential personnel resources available for epidemiologic “mutual aid”
- Establish contacts at the local FBI office for coordination with epidemiologic/ criminal Investigation

Communication

- Identify epidemiologic investigation spokesperson and Public Information Officer (PIO)
- Establish communication protocol to be implemented during an epidemiologic investigation between PIO and epidemiologic investigation spokesperson
- Establish a plan for rapid dissemination of information to key individuals: FAX, Email, website on the internet (if capability exists)

Epidemiologic Investigation**A. Case Finding**

- Establish plans/ capacity to receive a large number of incoming telephone calls
- Develop telephone intake form
- Identify individuals available to perform telephone intake duties
- Identify potential reporting sources (persons/ facilities) to receive case definition
- Establish a plan for rapid dissemination of case definition to potential reporting sources

B. Case Interviews

- Obtain appropriate case investigation questionnaires
- Identify personnel available to conduct case interviews

- Establish a protocol for training case interviewers
- Obtain template outbreak disease-specific investigation questionnaires

C. Data Analysis

- Obtain template database for data entry
- Assure Epi Info software is installed on data entry computers
- Identify personnel available for data entry
- Identify personnel with skills to perform descriptive and analytic epidemiologic analysis
- Develop/ obtain data analysis plan
- Develop/ obtain outbreak investigation monitoring tool

Contact Tracing

- Establish a system for locating contacts and familiarize personnel with contact tracing protocol(s)
- Obtain Contact Tracing Forms
- Obtain contact management algorithms for diseases that are communicable from person-to-person
- Obtain treatment/ prophylaxis guidelines
- Develop local drug and vaccine distribution plan
- Establish a system for daily monitoring of all contacts under surveillance

Public Health Recommendations

- Obtain treatment and prophylaxis recommendations for bioterrorist threat agents
- Develop or obtain bioterrorist disease-specific fact sheets
- Establish contact with key health care providers/ facilities and establish protocol for rapid dissemination of recommendations regarding treatment, prophylaxis, personal protective equipment, infection control, and isolation/ quarantine

Consultation / Confirmation

- Disease scenario meets the bioterrorist event definition

Laboratory Confirmation

- Lab specimens are en route to the local public health laboratory/ Laboratory Response Network

Notification

- Department of Health and Human Services
- State Medical Officer

- (225)342-3417 (regular business hours)
- (800)990-5366 pin 6710 (pager for evenings, weekends, holidays)
- State Epidemiologist (504)458-5428 Mobile
- Public Health Lab (504)568-5371
- Public Health Lab Pager (800)538-5388
- OPH Regional Offices (Internal Notification Network)
- Louisiana EOC (225)-925-7500
- Louisiana State Police (800)469-4828 (Crisis Management Center)

Coordination

- Epidemiology personnel identified for investigation
- Additional epidemiology personnel support requested (From other regions) Investigation activities coordinated with FBI

Communication

- Epidemiology investigation spokesperson identified
- Communication protocol established between epidemiologic investigation spokesperson and Public Information Officer (PIO)

Epidemiologic Investigation

- Hypothesis-generating interviews conducted
- Preliminary epidemiologic curve generated
- Case definition established

A. Case finding

- Telephone hotline established
- Telephone intake form distributed
- Case definition disseminated to potential reporting sources
 - Hospitals
 - Physicians
 - Laboratories
 - EMS
 - Coroner
 - Media

B. Case interviews

- Interviewers trained
- Uniform multi-jurisdictional outbreak investigation form(s) obtained

C. Data Analysis

- Uniform multi-jurisdictional database template for data entry obtained
- Epidemiologic curve generated

- Cases line-listed
- Case descriptive epidemiology completed
 - Age
 - Gender
 - Illness onset
 - Clinical profile
 - % Laboratory confirmed
 - Hospitalization rate
 - Case fatality rate
 - Case geographic distribution mapped (GIS mapping if available)
 - Analytic epidemiology completed
 - Disease risk factors identified
 - Mode of transmission identified
 - Source of transmission identified
 - Population at continued risk identified

Contact Tracing

- Contact tracing forms distributed
- Health education materials available
- Contact management triage algorithm reviewed with staff
- Treatment/ prophylaxis guidelines available
- Treatment/ prophylaxis distribution plan in place
- System in place for locating contacts
- Tracking system in place to monitor contacts' trends/ gaps

Laboratory

- Establish point of contact (POC) at appropriate Level A and/ or Level B public health laboratory to refer queries regarding specimen packaging, storage and shipping guidelines in a potential bioterrorist event [See Laboratory Section's Bioterrorism Plan]

Public Health Recommendations

- See Medical Response Section Bioterrorism Plan

SMALLPOX

Case investigation form

ID NUMBER: _____

INTERVIEWER: _____ JOB TITLE: _____

DATE OF INTERVIEW: ____/____/____

PERSON INTERVIEWED: Patient Other

IF OTHER, NAME OF PERSON _____

TELEPHONE _____ - _____ - _____

DESCRIBE RELATIONSHIP _____

DEMOGRAPHIC INFORMATION

LAST NAME: _____ FIRST NAME: _____

DRIVER LICENCE OR SOCIAL SECURITY NUMBER (Circle one): _____

SEX: Male Female DATE OF BIRTH: ____/____/____ AGE ____

RACE: White Black Asian Other, specify _____ Unknown

ETHNICITY: Hispanic Non-Hispanic Unknown

HOME PHONE: () _____ - _____ WORK/OTHER PHONE: () _____ - _____

HOME ADDRESS STREET: _____

CITY: _____ STATE: _____ ZIP: _____

EMPLOYED: Yes No Unknown

BRIEF DESCRIPTION OF JOB: _____

SCHOOL/PLACE OF EMPLOYMENT: _____

DEPARTMENT _____ FLOOR: _____ ROOM: _____

WORK/SCHOOL ADDRESS: STREET: _____ CITY: _____

STATE: _____ ZIP: _____

ARE YOU A:

LAB WORKER/TECHNICIAN: Yes No Unknown

TAXIDERMIST: Yes No Unknown

VETERINARIAN: Yes No Unknown

FARMER: Yes No Unknown

ABATTOIR: Yes No Unknown

BUTCHER: Yes No Unknown

OTHER FOOD PREPERATION: Yes No Unknown

HOBBY:

Do you work with fibers/wool/animal skin/or other animal product? Yes No Unknown

Have you been camping in past two months? Yes No Unknown

Have you stayed in cabins in the past two months? Yes No Unknown

Have you been hunting? Yes No Unknown

Have you skinned or dressed and animal? Yes No Unknown

Have you had an animal stuffed or mounted? Yes No Unknown

HOW MANY PEOPLE RESIDE IN THE SAME HOUSEHOLD? _____

LIST NAME(S), AGE(S), AND RELATIONSHIPS (use additional pages if necessary):

	PERSON 1	PERSON 2	PERSON 3	PERSON 4	PERSON 5	PERSON 6
Name						
Age						
Relationship						

HOUSEHOLD PETS:

Does your household have any pets (indoor or outdoor)? Yes No Unknown

If so what type of pet: _____

Have any of the pets been ill or died recently? Yes No Unknown

If so describe: _____

CLINICAL INFORMATION (as documented in admission history of medical record or from case/proxy interview)

CHIEF COMPLAINT: _____

DATE OF ILLNESS ONSET: ____/____/____

Briefly summarize History of Present Illness:

SIGNS AND SYMPTOMS	Present at interview?	Present before rash? (Prodromal)
Fever	If yes, Maximum temperature ____ °F Antipyretics taken <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown Date of onset: / /
Chills	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Headache	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Malaise/Fatigue	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Back Pain	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Muscle tenderness/pain	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Abdominal pain	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Delirium/confusion	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Cough	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Coryza	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Conjunctivitis	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Lymphadenopathy	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Bleeding	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Other Symptoms/ Abnormality	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown Describe: _____	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown Describe: _____

PAST MEDICAL HISTORY:

Do you have a regular physician? Yes No Unknown
If yes, Name: _____ Phone Number: (____) _____ - _____

Are you currently taking any medication: Yes No Unknown
If yes, list: _____

Have you had any wound or lesion in the past several months?
 Yes No Unknown
If yes, where: _____ Appearance: _____

Other Dermatologic condition Yes No Unknown

If yes, describe: _____

Food or drug allergies Yes No Unknown

If yes, specify type: _____

Diabetes Yes No Unknown

Malignancy Yes No Unknown

Currently pregnant Yes No Unknown

HIV infection Yes No Unknown

Other immunocompromising condition (e.g., renal failure, cirrhosis, chronic steroid use)

Yes No Unknown

Currently on treatment: Yes No Unknown

If yes, specify disease or drug therapy: _____

Other underlying condition(s):

Prescription medications:

Were antibiotics taken in the week prior to the onset of the rash?

Yes No Unknown

If yes identify: _____

SOCIAL HISTORY:

Current alcohol abuse: Yes No Unknown

Past alcohol abuse: Yes No Unknown

Current injection drug use: Yes No Unknown

Past injection drug use: Yes No Unknown

Current smoker: Yes No Unknown

Former smoker: Yes No Unknown

Other illicit drug use: Yes No Unknown

If yes, specify: _____

HOSPITAL INFORMATION:

HOSPITALIZED: Yes No

NAME OF HOSPITAL: _____

DATE OF ADMISSION: ___/___/___ DATE OF DISCHARGE ___/___/___

ATTENDING PHYSICIAN:

LAST NAME: _____ FIRST NAME: _____

Office Telephone: () ___ - ___ Pager: () ___ - ___ Fax: () ___ - ___

MEDICAL RECORD ABSTRACTION :

MEDICAL RECORD NUMBER: _____

WARD/ROOM NUMBER: _____

ADMISSION DIAGNOSIS(ES): 1) _____

2) _____

3) _____

PHYSICAL EXAM:

Admission Vital Signs:

Temp: ____ (Oral / Rectal F / C) Heart Rate: _____ Resp. Rate: _____ B/P: ____/____

Mental Status: Normal Abnormal Not Noted

If abnormal, describe: _____

Respiratory status: Normal spontaneous Respiratory distress Ventilatory support

If abnormal, check all that apply:

Rales Stridor/wheezin Decreased or absent

Other (specify: _____)

Skin rash:

Rash description, check all that apply:

- Papular Macular Vesticular
- Petechial Bullous Erythrematous
- Purpuric Pustules Scabs
- Other: _____

Rash location: Check off all areas of the body where rash is/was, check all that apply:

- Face Neck Mouth
- Chest Abdomen Back
- Arms Hands Palms
- Legs Feet Soles

Did the rash develop at the same stage on any body area?

Yes No Unknown

Through what order of body parts did the rash spread? (number the following boxes 1=first and 3=last. Multiple boxes can have the same number)

____ Head ____ Trunk ____ Extremities

Is the rash concentrated in one or more areas?

Yes No Unknown

If yes, where? _____

DIAGNOSTIC STUDIES:

Test	Results of tests done on Admission (___/___/___)	Abnormal test result at any time (specify date mm/dd/yyyy)
Hemoglobin (Hb)		(___ / ___ / ___)
Hematocrit (HCT)		(___ / ___ / ___)
Platelet (plt)	Thrombocytopenia?	(___ / ___ / ___)
Total white blood cell (WBC)		(___ / ___ / ___)
WBC differential:		(___ / ___ / ___)
% granulocytes (PMNs)		(___ / ___ / ___)
% bands		(___ / ___ / ___)
% lymphocytes		(___ / ___ / ___)
Prothrombin Time (PT)		(___ / ___ / ___)
Partial Thromboplastin Time (PTT)		(___ / ___ / ___)
Renal function: BUN/Cr		(___ / ___ / ___)
Liver enzymes: ALT/AST		(___ / ___ / ___)
Blood cultures: (Bacterial)	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)

Test	Results of tests done on Admission (___/___/___)	Abnormal test result at any time (specify date mm/dd/yy)
Blood cultures: (Viral)	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)
Viral isolation culture of lesion	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)
Tzank smear	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)
Lesion scraping/biopsy	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)
Urinalysis	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)
Hematuria	<input type="checkbox"/> positive <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)
Chest radiograph	<input type="checkbox"/> normal <input type="checkbox"/> unilateral, lobar/consolidation <input type="checkbox"/> bilateral, lobar/consolidation <input type="checkbox"/> interstitial infiltrates <input type="checkbox"/> widened mediastinum <input type="checkbox"/> pleural effusion <input type="checkbox"/> other _____	<input type="checkbox"/> normal <input type="checkbox"/> unilateral, lobar/consolidation <input type="checkbox"/> bilateral, lobar/consolidation <input type="checkbox"/> interstitial infiltrates <input type="checkbox"/> widened mediastinum <input type="checkbox"/> pleural effusion <input type="checkbox"/> other _____ (___ / ___ / ___)
Other pertinent study results (e.g., chest CT, pleural fluid)		(___ / ___ / ___)

INFECTIOUS DISEASE CONSULT: Yes No Unknown

Date of Exam: ___/___/___

Name of ID physician: Last Name _____ First Name _____

Telephone or pager number (_____) _____ - _____

HOSPITAL COURSE:

A. antibiotics: Yes No Unknown

If yes, list all that apply: _____

B. antivirals : Yes No Unknown

If yes, check all that apply:

- Acyclovir (Zovirax)
- Amantadine (Symmetrel)
- Oseltamivir (Tamiflu)
- Rimantidine (Flumadine)
- Zanamivir (Relenza)
- other _____

C. Was the patient placed in a negative pressure room?: Yes No Unknown
If yes, how soon after admission: Immediately Minutes Hours Days

D. Did patient require intensive care: Yes No Unknown
If patient was admitted to Intensive Care Unit:
a. Length of stay in ICU, in days: _____
b . Was patient on mechanical ventilation: Yes No Unknown

WORKING OR DISCHARGE DIAGNOSIS(ES) :

- 1) _____
- 2) _____
- 3) _____

OUTCOME:

- Recovered/discharged
- Died
- Still in hospital: improving? worsening?

Risk Exposure Questions

The following questions pertain to the 2 week period prior to the onset of your illness/symptoms:

Occupation (provide information for all jobs/ volunteer duties)

1. Please briefly describe your job/ volunteer duties: _____

2. Does your job involve contact with the public? : Yes No

If "Yes", specify _____

3. Does anyone else at your workplace have similar symptoms?

Yes No Unknown

If "Yes", name and approximate date on onset (if known) _____

Knowledge of Other Ill Persons

4. Do you know of other people with similar symptoms? : Yes No Unknown

(If Yes, please complete the following questions)

Name of ill Person	AGE	Sex	Address	Phone	Date of Onset	Relation To you	Did they seek Medical care? Where	Diagnosis

Travel*

*Travel is defined as staying overnight (or longer) at somewhere other than the usual residence

8. Have you traveled anywhere in the last two weeks? : Yes No Unknown

Dates of Travel: ___/___/___ to ___/___/___

Method of Transportation for Travel: _____

Where Did You Stay? _____

Purpose of Travel? _____

Did You Do Any Sightseeing on your trip? : Yes No

If yes, specify: _____

Did Anyone Travel With You? : Yes No

If yes, specify: _____

Are they ill with similar symptoms? : Yes No Unknown

If yes, specify: _____

Public Functions/Venues (during 2 weeks prior to symptom onset)

Category	Y/ N/ U	Description of Activity	Location of Activity	Date of Activity	Time of Activity (start, end)	Others ill? (Y/N/U)
9. Airports						
10. Beaches						
11. Bars/Clubs						
12. Campgrounds						
13. Carnivals/Circus						
14. Casinos						
15. Family Planning Clinics						
16. Government Office Building						
17. Gym/Workout Facilities						
18. Meetings or Conferences						
19. Movie Theater						
20. Museums						
21. Parks						
22. Parties (including Raves, Prom, etc)						
23. Performing Arts (ie Concert, Theater, Opera)						
24. Picnics						
25. Political Events (including Rallies)						
26. Religious Gatherings						
27. Shopping Malls						
28. Sporting Event						
29. Street Festivals, Flea Markets, Parades						
30. Tourist Attractions (ie French Quarter, Aquarium)						

Transportation

Have you used the following types of transportation in the 2 weeks prior to onset?

31. Bus/Streetcar: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Bus Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Bus# _____)

Company Providing Transportation: _____ Destination: _____

32. Train: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Route Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Route # _____)

Company Providing Transportation: _____ Destination: _____

33. Airplane: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Flight Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Flight # _____)

Company Providing Transportation: _____ Destination: _____

34. Ship/Boat/Ferry: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Ferry Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Ferry # _____)

Company Providing Transportation: _____ Destination: _____

35. Van Pool/Shuttle: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Route Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Route # _____)

Company Providing Transportation: _____ Destination: _____

Food & Beverage

36. During the 2 weeks before your illness, did you eat at any of the following *food establishments or private gatherings with food or beverages*?

Food Establishment	Y/ N/ U	Name of Establishment	Location of Meal	Date of Meal	Time of Meal (start, end)	Food and Drink items consumed	Others ill? (Y/N/U)
Cafeteria at School, hospital, or other							
Casino or mall food court							
Grocery Store or Corner Store							
Concert, movie, or other entertainment							
Dinner party, birthday party or other celebration							
Gas station or convenience store							
Plane, boat, train, or other							
Picnic, Barbecue, Crawfish boil, or potluck							
Outdoor farmers market, festival, or swap meet							
Restaurant, fast-food, or deli							
Sporting event or snack bar							
Street vended food							
Other food establishment							
Other Private Gathering							

37. During the 2 weeks before your illness, did you consume any free *food samples* from.....?

Grocery store Yes No Unknown

Race/competition Yes No Unknown

Public gathering? Yes No Unknown

Private gathering? Yes No Unknown

If "YES" for any in question #37, provide date, time, location and list of food items consumed:

Date/Time: _____

Location (Name and Address): _____

Food/drink consumed: _____

Others also ill? Yes No Unknown

(Explain): _____

38. During the 2 weeks before your illness, did you consume any of the following *products*?

Vitamins Yes No Unknown

Specify (Include Brand Name): _____

Herbal remedies Yes No Unknown

Specify (Include Brand Name): _____

Diet Aids Yes No Unknown

Specify (Include Brand Name): _____

Nutritional Supplements Yes No Unknown

Specify (Include Brand Name): _____

Other Ingested non-food Yes No Unknown

Specify (Include Brand Name): _____

39. During the 2 weeks before your illness, did you consume any unpasteurized products (ie milk, cheese, fruit juices)? Yes No Unknown

If yes, specify name of item: _____

Date/Time: _____

Location (Name and Address): _____

Others also ill?: Yes No Unknown

(Explain): _____

40. During the 2 weeks before your illness, did you purchase food from any internet grocers?

Yes No Unknown

If yes, specify date / time of delivery: _____ Store/Site: _____

Items purchased: _____

41. During the 2 weeks before your illness, did you purchase any mail order food?

Yes No Unknown

If yes, specify date/time of delivery: _____

Store purchased from: _____ Items

purchased: _____

42. Please check the routine sources for drinking water (check all that apply):

- Community or Municipal
- Well (shared)
- Well (private family)
- Bottled water (Specify Brand: _____)
- Other (Specify: _____)

Aerosolized water

43. During the 2 weeks prior to illness, did you consume water from any of the following sources (check all that apply):

- Wells
- Lakes
- Streams
- Springs
- Ponds
- Creeks
- Rivers
- Sewage-contaminated water
- Street-vended beverages (Made with water or ice and sold by street vendors)
- Ice prepared w/ unfiltered water (Made with water that is not from a municipal water supply or that is not bottled or boiled)
- Unpasteurized milk
- Other (Specify: _____)

If "YES" for any in question #43, provide date, time, location and type of water consumed:

Date/Time: _____

Location (Name and Address): _____

Type of water consumed: _____

Others also ill?: Yes No Unknown

(explain): _____

44. During the 2 weeks prior to illness, did you engage in any of the following recreational activities (check all that apply):

- Swimming in public pools (e.g., community, municipal, hotel, motel, club, etc)
- Swimming in kiddie/wading pools
- Swimming in sewage-contaminated water
- Swimming in fresh water, lakes, ponds, creeks, rivers, springs, sea, ocean, bay (please circle)
- Wave pools? Water parks? Waterslides? Surfing
- Rafting? Boating?
- Hot tubs (non-private)? Whirlpools (non-private)?
- Jacuzzis (non-private)? Other (Specify: _____)

If "YES" for any in question #44, provide date, time, location and type of activity:

Date/Time: _____

Location (Name and Address): _____

Type of water consumed: _____

Others also ill?: Yes No Unknown

(Explain): _____

45. During the 2 weeks prior to illness, were you exposed to aerosolized water from any of the following non-private (i.e., used in hospitals, malls, etc) sources (check all that apply):

- Air conditioning at public places
- Respiratory devices
- Vaporizers
- Humidifiers
- Misters
- Whirlpool spas
- Hot tub
- Spa baths
- Creek and ponds
- Decorative fountains
- Other (please explain) _____

If "YES" for any in question #45, provide date, time, and location of exposure to aerosolized water:

Date/Time: _____
Location (Name and Address): _____
Explanation of aerosolized water: _____
Others also ill: Yes . No Unknown
(Explain): _____

Recreation (Activities that are not related to work)

46. In the past two weeks, did you participate in any outdoor activities?

- Yes . No Unknown

(If "yes", list all activities and provide locations)

47. Do you recall any insect or tick bites during these outdoor activities?

- Yes . No Unknown

(If "yes", list all activities and provide locations of activities)

48. Did you participate in other indoor recreational activities (i.e. clubs, crafts, etc that did not occur in a private home)?

- Yes . No Unknown

(List all activities and provide location)

Vectors

49. Do you recall any insect or tick bites in the last 2 weeks?

Yes No Unknown

Date(s) of bite(s): _____ Bitten by: Mosquito

Tick Flea Fly Other:

Where were you when you were bitten? _____

50. Have you had any contact with wild or domestic animals, including pets?

Yes No Unknown

Type of Animal: _____

Explain nature of contact: _____

Is / was the animal ill recently: Yes No Unknown

If yes please describe the animal's symptoms:

Date / Time of contact: _____

Location of contact: _____

51. To your knowledge, have you been exposed to rodents/rodent droppings in the last 2 weeks?

Yes No Unknown

If yes, explain type of exposure: _____

Date/Time of exposure: _____

Location where exposure occurred: _____

Smallpox Contact Surveillance Form

Vaccination is recommended for contacts and response to the vaccination should be monitored. In a typical successful primary vaccination response, a red papule appears at the vaccination site after 3 days, becomes vesicular by the 5th day, by the 7th days the lesion becomes umbilicated with turbid lymph surrounded by an erythematous areola that expands for 3 more days. Regional lymphadenopathy and fever may develop. The pustule then dries up leaving a dark crust which normally falls at 3 weeks. A response that reaches a peak erythema within 48 hours is a hypersensitivity reaction and is an indication for re-vaccination. Individuals immunized previously may present an accelerated reaction with a small papule surrounded by erythema that reaches a peak between 3 and 7 days.

Contacts should be monitored up to 18 days after exposure to event or last exposure to a case. If a person's temperature is $\geq 38^{\circ}\text{C}$ or 100.4°F on two consecutive readings, place on home isolation. Monitor for the next 5 days, if no rash develops, release from home isolation.

Household members should be educated about pneumonic smallpox transmission, risks and precautions.

OPH-ID Epidemiology Section: Smallpox Contact Surveillance Form												CONFIDENTIAL		
Same demographic information as for the contact evaluation form														
Assessment			Signs and symptoms									Drug taken since last contact	Disposition	Interviewer initials
Date	Time	Type V=visual, P=Phone	Temp	Fever: Y >38°C	Rash	Headache	Backache	Malaise	Prostration	Cough	Vaccination site			

Vaccination site: 0 = No vaccination, 1 = No reaction, 2 = redness, 3 = induration, 4 = papule, 5 = ulcer, 6 = adverse reaction

Contact disposition: Fw = fever watch, DPr = Droplet precautions, Tx = referred for treatment, Hi = Home isolation



