FLORIDA DEPARTMENT OF HEALTH

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Miami-Dade County HEALTH DEPARTMENT

Suspected smallpox case reported at Hospital A, Miami-Dade County

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The World Health Organization (WHO) declared the eradication of smallpox in 1980; three years after the last endemic case of smallpox had been identified in Somalia. There is no current natural transmission of this disease in the world, and the only source of smallpox infection will be an accident or the result of a bioterrorism event (1).

Smallpox is a viral disease unique to humans. To sustain itself, the virus must pass from person to person in a continuing chain of infection and is spread by inhalation of air droplets or aerosols. Twelve to 14 days after infection, the patient typically becomes febrile and has severe aching pains and prostration. Some 2 to 3 days later, a papular rash develops over the face and spreads to the extremities (2).

The disease most commonly confused with smallpox is chickenpox, and during the first 2 to 3 days of rash, it may be all but impossible to distinguish between the two (2).

A Suspected Case

A sixty-nine year old Hispanic male was admitted at Hospital A on 06/01/02 with respiratory distress and diagnosis of chronic obstructive pulmonary disease. There was a report of skin lesions in the back and lower abdomen of the patient, and a temperature of 99 degrees F on admission. The patient was placed on antibiotics and steroid therapy. Three days later, on 06/04/02, his attending physician reported a rash, without any particular description. It was then perceived as a hypersensitivity reaction to antibiotics. The next day the rash was spread throughout the patient's abdomen and thorax.

On 06/11/02 the dermatologist evaluated the patient and considered that the characteristics of his skin lesions were unusual for a chickenpox case, suspecting the possibility of smallpox in the patient. The dermatologist reported it to the infection control practitioner (ICP) nurse and the nurse immediately notified the CDC and, Miami-Dade County Health Department (MDCHD) Office of Epidemiology and Disease Control (OEDC). The surveillance coordinator of OEDC received the notification about this patient, immediately communicated it to the senior officials at MDCHD, and the regional epidemiologist, and state epidemiologist, who assisted in the assessment.

Inside this issue:

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The surveillance coordinator and a medical epidemiologist from OEDC went to hospital A where they initially reviewed the patient's medical record and interviewed the nurses in order to gather more information about the patient. The medical epidemiologist and the infectious diseases specialist evaluated the patient who was in an isolation room with universal and respiratory precautions. The patient had a rash on his face, abdomen, thorax, back, and upper half of the legs (above the knees). The skin lesions were in different stages (pustules, vesicles, some scars). The most remarkable sign was that his upper extremities and lower half of the legs were completely free of skin lesions. It was more likely a case of disseminated chickenpox with secondary infection. Figure 1 showed chronology of events since the day of the patient admission. According to the CDC's algorithm "Evaluating patients for Smallpox", this patient was classified as low risk case of smallpox (3), because he did not have classic smallpox lesions, the lesions were not in the same stage of development, and we could not establish a febrile prodrome in him. The patient's clinical course and physical examination did not match with any of the four minor smallpox risk criteria as evidenced by the following information: the distribution of his lesions were centripetal (greatest concentration on face, abdomen and thorax); he did not appear toxic or moribund on examination eleven days after admission; his skin lesions were on different stages of evolution; and he had no lesions on the palms and soles.

The patient then was transferred to a negative pressure room. At 6:45 PM on June 11, 2002, the Florida Department of Health Microbiology Lab (Miami Branch) reported that the DFA test performed on the patient's sample was positive for varicella zoster.

Control of Contacts

Hospital A and Metro-Dade Fire Rescue Department tested varicella titers on all exposed employees. Those employees with a negative varicella titer were relieved from their duties until the 21st day after their last contact with the patient.

Staff from the OEDC provided health education and information about varicella to the employees in a local restaurant, which was visited frequently by the patient. A pregnant woman was referred to her attending physician for evaluation.

Lessons Learned from this event

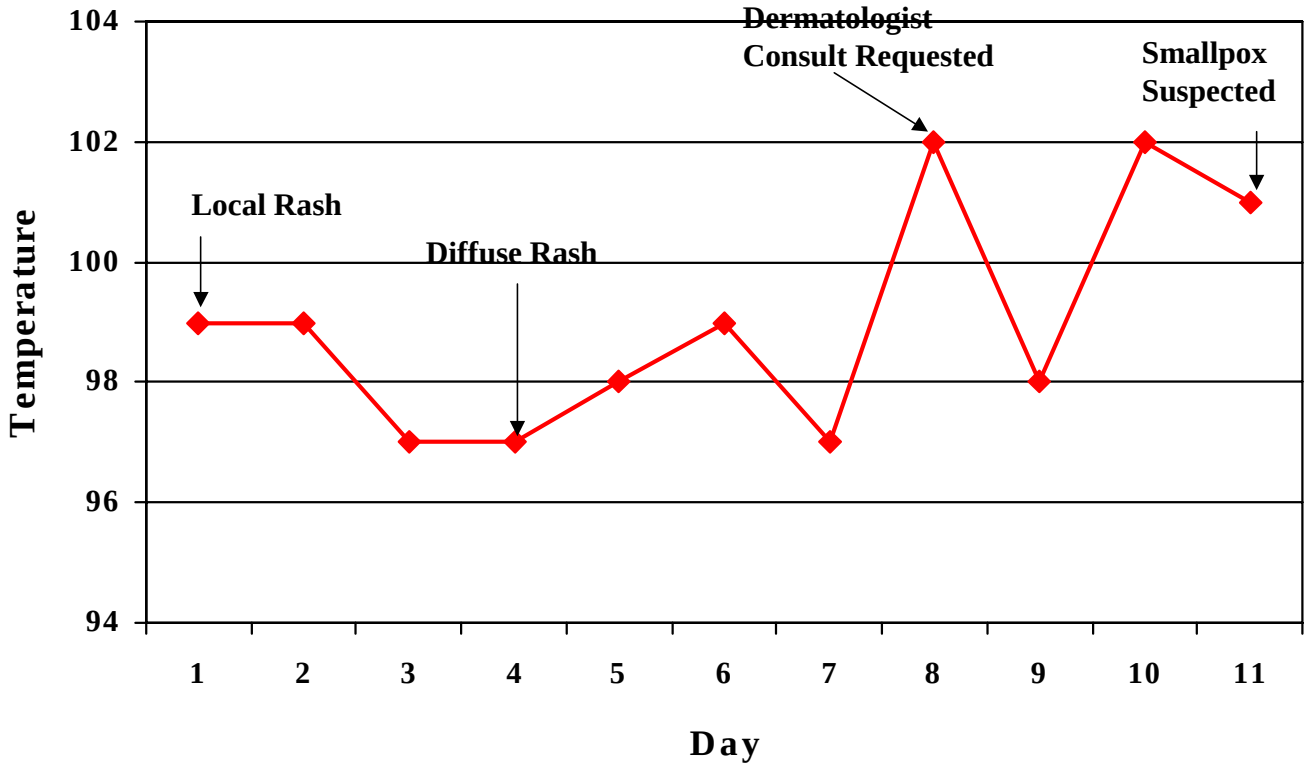
As a result of this experience, there are several actions we are considering:

- Providing training/educational materials of smallpox-related issues to local hospitals and physician's offices in the county including distribution of the CDC smallpox algorithm.
- Setting up a clear guide of co-ordination between local hospitals, ICP nurses and local, state health department and CDC.
- Creating a smallpox/bioterrorism response kit (including disease descriptions, pictures, disease investigation forms, and personal protection equipment) for the health department first responders to this kind of event.
- Encouraging timely dermatologic/infectious disease consultations for patients with rash and fever.

References:

1. Henderson DA, Inglesby TV, Bartlett JG, et al. Smallpox as a biological weapon: medical and public health management. JAMA 1999;281:2127-2137.
2. Henderson DA. Smallpox: Clinical and Epidemiologic Features. Emerg Infect Dis 1999; 5 (4):537-539.
3. Evaluating Patients for Smallpox. www.cdc.gov/nip/smallpox.

Figure 1. Chronology of events since the day of admission



Hepatitis C Testing in Miami-Dade County, 2001

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(Florida International University intern student)

Background

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV), which is found in the blood of persons who have this disease. The infection is spread by contact with the blood of an infected person. Most persons who get hepatitis C carry the virus for the rest of their lives. Most persons do not display symptoms until 10 to 30 years after they are infected, when they have complications due to liver damage. Some persons may develop cirrhosis (scarring) of the liver and liver failure, which may take many years to develop. Approximately 75-82% of those infected with hepatitis C become chronic carriers (Tierney LM et al, 1997, CDC 1998). In a chronic (long term) infection, the virus remains in the body and can be transmitted to others.

Risk factors for hepatitis C include sharing injection drug equipment; receiving a blood transfusion or organ transplant prior to 1992; receiving clotting factor concentrates prior to 1987; or transmission from mother to infant (Isselbacher KJ et al, 1998). The virus appears to be transmitted by sexual contact but very inefficiently (CDC 1998). Persons at risk should be tested for the presence of serum antibodies against HCV. The presence of anti-HCV antibodies in a person with a risk factor or evidence of liver disease strongly suggests the diagnosis of chronic hepatitis C. The absence of anti-HCV (EIA)

antibodies generally rules out the diagnosis. Tests for HCV RNA in blood should be done in those individuals with anti-HCV antibodies to confirm the diagnosis and in the rare patient who does not have anti-HCV antibodies but in whom the diagnosis is still strongly suspected on clinical grounds. The RIBA test is another confirmatory option (Tierney LM et al, 1997).

About 3.9 million (1.8%) Americans have been infected with HCV so far. Most are chronically infected and may be unaware of infection (CDC, 1998). Hepatitis C is a significant public health issue in the state of Florida. Applying the hepatitis C prevalence rate of the United States (1.8%) to Florida and Miami-Dade County's population, it is estimated that at least 287,683 people in Florida are infected with hepatitis C virus including 40,560 in Miami-Dade County.

Investigation

Methods

To better understand the hepatitis C testing practices within our community, we contacted the known laboratories within Miami-Dade County to find out which of them perform hepatitis testing and how many tests they conducted during 2001. On March 05, 2002, letters were mailed along with a list of zip codes, and a county map to those laboratories that perform hepatitis testing We asked each laboratory for the number of positive hepatitis C tests and total number of hepatitis C tests performed on Miami-Dade County residents during the year 2001. Reminder faxes were sent on April 2nd to those laboratories that did not respond to the letters. Some laboratories were also contacted by phone.

Results

As of May 21, 2002, 42 laboratories were contacted by mail, fax and phone. Of the 42 laboratories contacted, 37 (88.1%) provided information on their testing procedures. Of these, 14 (33.3%) of the responding laboratories reported no hepatitis C testing at their facility. Two (4.8%) were unable to separate their laboratory results by county or zip codes, and another three (7.1%) laboratories did not provide the information we requested. Twelve (28.6%) laboratories send their samples to a referral laboratory. Nine laboratories (21.5%) were able to provide the total number of tests performed as well as the positive test results. The data provided from these nine laboratories show that 17,561 hepatitis tests were performed, and 1,715 (9.8%) of them tested hepatitis C virus (HCV) antibody (Ab) (+). One laboratory was able to provide only the total number of tests performed, and thus was not included in the denominator.

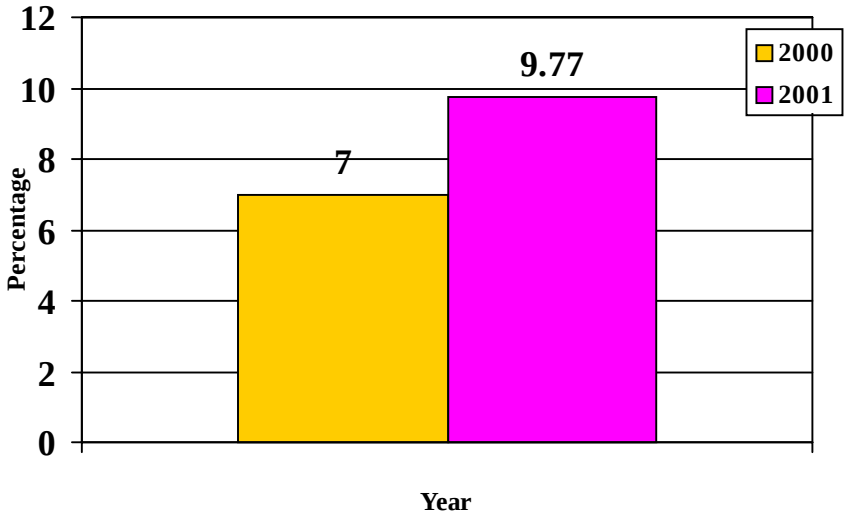
Six laboratories participated in our survey in years 2000 and 2001. The total number of hepatitis C tests done increased in four laboratories from 2000 to 2001. In the other two laboratories, the total tests were about the same. The percentage of the positive tests increased by almost 100% in three of the laboratories; Whereas, in the other three laboratories, there has been a slight decline.

According to the data received, over 17,561 hepatitis tests were performed during 2001 in Miami-Dade County. Of these, 1,715 (9.8%) were positive by HCV EIA tests. We are unable to determine how many of these were confirmed by HCV RIBA or PCR testing because the laboratories could not supply us with the confirmatory testing results of the specimens they sent to referral laboratories. Compared with the year 2000, the percentage of positive tests in 2001was slightly higher (7.0 in 2000 vs. 9.8 in 2001) (Figure 1).

Discussion

The response rate from the laboratories contacted was 88.1%. The 17,561 hepatitis tests are the total number of HCV EIA tests and not necessarily the number of people tested (some people may have been tested more than once). Although most laboratories were cooperative, the large reference laboratories were unable to supply the data because they were not able to separate the data by zip code or county. Therefore, a large proportion of tests are unaccounted for. There is a need to work at the state/ federal level with the national reference laboratories to get the required data.

Figure 1. Percentage of Positive HCV EIA Tests of HCV EIA Tests Performed in Nine Laboratories in Miami-Dade County, 2000-2001



References:

- CDC. Recommendations for Prevention and Control of Hepatitis C Virus Infection and HCV-Related Chronic Disease. MMWR 1998; 47 (No. RR-19): 1-12.
- Isselbacher KJ, Braunwald E, Wilson JD. Hepatitis C. Harrison's Principles of Internal Medicine. McGraw-Hill, Inc. 13th Ed; Vol 1. 1998: 1466-67, 1480-1481.
- Tierney LM, McPhee SJ, Papadakis MA. Viral Hepatitis. Current Medical Diagnosis and Treatment. Prentice-Hall International, Inc. 36th Edition; 1997: 612-613.

To report diseases or for information:

Office of Epidemiology and Disease Control

Childhood lead poisoning prevention program	(305) 324-2414
Hepatitis	(305) 324-2490
Other diseases and outbreaks	(305) 324-2413
HIV/AIDS Program	(305) 324-2459
STD Program	(305) 325-3242
Tuberculosis Program	(305) 324-2470
Special Immunization Program	(305) 376-1976
Nights, weekends, and holidays	(305) 377-6751

Monthly Report
Selected Reportable Diseases/Conditions in Miami-Dade County, May 2002

Diseases/Conditions	2002 this Month	2002 Year to Date	2001 Year to Date	2000 Year to Date	1999 Year to Date	1998 Year to Date
AIDS *Provisional	77	496	602	602	653	633
Campylobacteriosis	7	36	39	39	33	22
Chancroid	0	0	0	0	0	0
Chlamydia trachomatis	314	1631	1507	1323	1851	834
Ciguatera Poisoning	0	0	0	0	0	0
Cryptosporidiosis	1	3	6	1	4	4
Cyclosporosis	0	0	0	0	0	1
Diphtheria	0	0	0	0	0	0
E. coli , O157:H7	0	0	0	1	0	2
E. coli , Other	1	1	0	0	0	1
Encephalitis	0	0	0	0	0	0
Giardiasis, Acute	16	70	95	10	26	18
Gonorrhea	142	768	752	881	1229	610
Granuloma Inguinale	0	0	0	0	0	0
Haemophilus influenzae B (invasive)	0	0	1	1	0	0
Hepatitis A	14	64	59	29	27	56
Hepatitis B	7	13	21	14	14	25
HIV *Provisional	214	838	617	651	593	641
Lead Poisoning	29	101	74	N/A	N/A	N/A
Legionnaire's Disease	0	0	0	0	0	1
Leptospirosis	0	0	0	0	0	0
Lyme disease	0	0	1	3	0	0
Lymphogranuloma Venereum						
Malaria	1	5	10	13	11	10
Measles	0	0	0	0	0	0
Meningitis (except aseptic)	4	6	3	6	13	12
Meningococcal Disease	1	8	9	11	6	5
Mumps	0	0	0	1	2	0
Pertussis	0	1	1	3	7	10
Polio	0	0	0	0	0	0
Rabies, Animal	0	0	0	0	0	1
Rubella	0	0	0	0	0	0
Salmonellosis	26	94	65	48	68	70
Shigellosis	14	77	34	42	45	66
Streptococcus pneumoniae, Drug Resistant	25	60	74	84	78	40
Syphilis, Infectious	18	75	79	60	29	14
Syphilis, Other	65	378	241	353	384	246
Tetanus	0	0	1	0	0	0
Toxoplasmosis	3	10	6	0	0	0
Tuberculosis *Provisional	N/A	N/A	57	105	97	128
Typhoid Fever	0	1	0	0	14	2
Vibrio , cholera	0	0	0	0	0	0
Vibrio , Other	0	0	0	0	0	1

* Data on AIDS are provisional at the county level and are subject to edit checks by state and federal agencies.
** Data on tuberculosis are provisional at the county level.

VERSION 1.0: 31 JANUARY 2002

CDC
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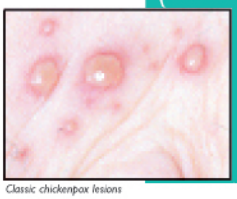
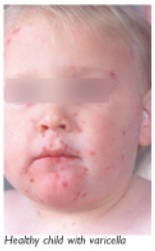
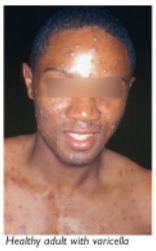
Chickenpox
(varicella)

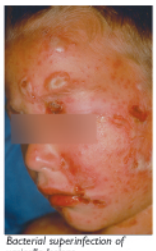

Classic chickenpox lesions

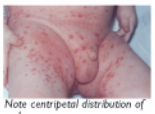

Typical chickenpox rash distribution

Images of Chickenpox (Varicella)

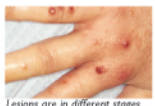

Healthy child with varicella

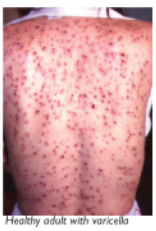

Healthy adult with varicella

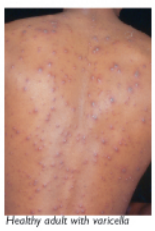

Bacterial superinfection of varicella lesions

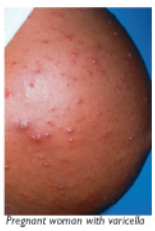

Note centripetal distribution of rash


Day 3 of rash


Lesions are in different stages of development (back of hand)


Healthy adult with varicella


Healthy adult with varicella


Pregnant woman with varicella

Differentiating Chickenpox from Smallpox

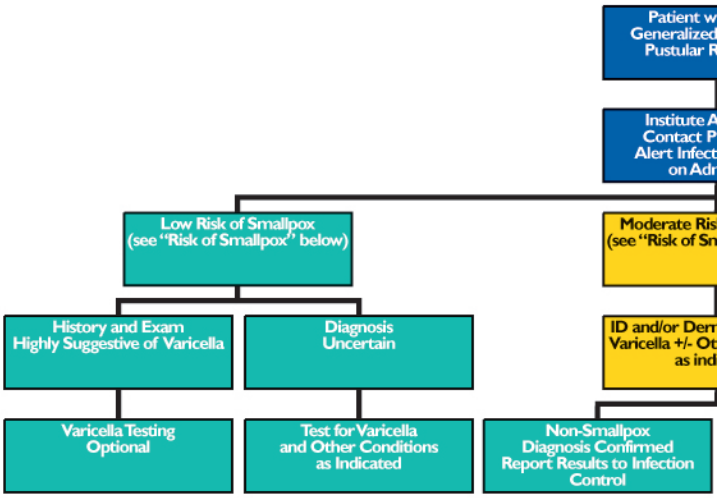
Chickenpox (varicella) is the most likely condition to be confused with smallpox.

In chickenpox:

- No or mild prodrome
- Lesions are superficial vesicles: "dewdrop on a rose petal" (see photo at top)
- Lesions appear in crops; on any one part of the body there are lesions in different stages (papules, vesicles, crusts)
- Centripetal distribution: greatest concentration of lesions on the trunk, fewest lesions on distal extremities. May involve the face/scalp. Occasionally entire body equally affected.
- First lesions appear on the face or trunk
- Patients rarely toxic or moribund
- Rapid evolution: lesions evolve from macules –> papules –> vesicles –> crusts quickly (<24 hours)
- Palms and soles rarely involved
- Patient lacks reliable history of varicella or varicella vaccination
- 50-80% recall an exposure to chickenpox or shingles 10-21 days before rash onset

Photo Credits: Dr. Thomas Mack, Dr. Barbara Watson, Dr. Scott A. Norton, Dr. Patrick Alguire, World Health Organization, American Academy of Pediatrics, American Academy of Dermatology

Evaluating Pa
Acute, Generalized Vesicul



Risk of Smallpox

High Risk of Smallpox –> Report Immediately

1. Febrile prodrome (defined below) **AND**
2. Classic smallpox lesion (defined below & photo at top right) **AND**
3. Lesions in same stage of development (defined below)

Moderate Risk of Smallpox –> Urgent Evaluation

1. Febrile prodrome (defined below) **AND**
2. One other **MAJOR** smallpox criterion (defined below)

OR

1. Febrile prodrome (defined below) **AND**
2. ≥4 **MINOR** smallpox criteria (defined below)

Low Risk of Smallpox –> Manage as Clinically Indicated

1. No febrile prodrome

OR

1. Febrile prodrome **AND**
2. <4 **MINOR** smallpox criteria (defined below)

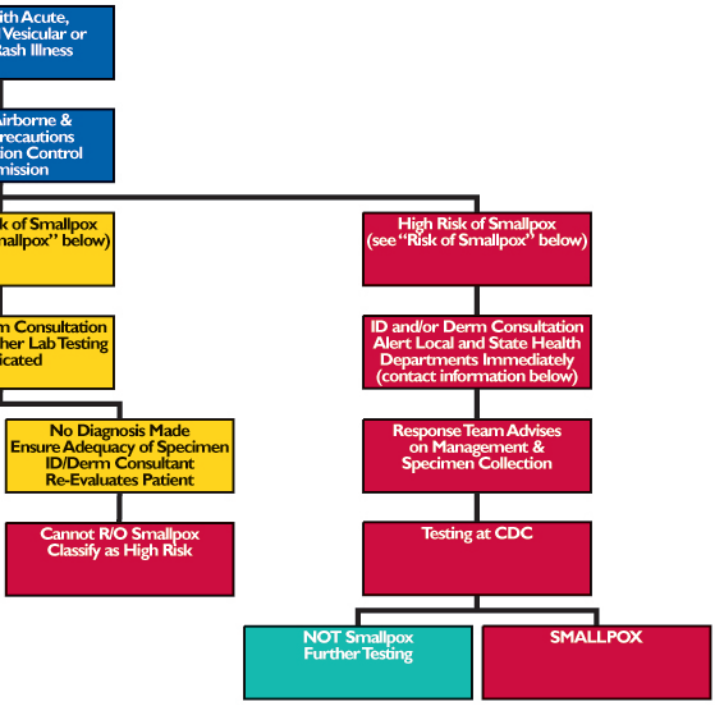
MAJOR Smallpox Criteria

- **FEBRILE PRODROME:** occurring 1-4 days before rash onset: fever ≥101°F **and** at least one of the following: prostration, headache, backache, chills, vomiting or severe abdominal pain.
- **CLASSIC SMALLPOX LESIONS:** deep-seated, firm/hard, round well-cir cumscribed vesicles or pustules; as they evolve, lesions may become umbilicated or confluent
- **LESIONS IN SAME STAGE OF DEVELOPMENT:** on any one part of the body (e.g., the face, or arm) all the lesions are in the same stage of development (i.e., all are vesicles, or all are pustules)

Department of Health
Centers for Disease C

ATIENTS FOR SMALLPOX

LAR OR PUSTULAR RASH ILLNESS PROTOCOL



There have been no naturally occurring cases of smallpox anywhere in the world since 1977. A high risk case of smallpox is a public health and medical emergency.

Report ALL **HIGH RISK CASES** immediately (without waiting for lab results) to:

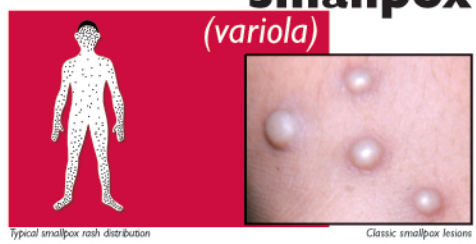
1. Hospital Infection Control _____ ( ) _____-_____
   _____ ( ) _____-_____
2. _____ health department ( ) _____-_____
   ( ) _____-_____
3. _____ health department ( ) _____-_____
   ( ) _____-_____

MINOR SMALLPOX CRITERIA

- Centrifugal distribution: greatest concentration of lesions on face and distal extremities
- First lesions on the oral mucosa/palate, face, or forearms
- Patient appears toxic or moribund
- Slow evolution: lesions evolve from macules to papules –> pustules over days (each stage lasts 1-2 days)
- Lesions on the palms and soles

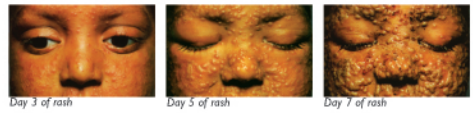
H AND HUMAN SERVICES
ONTROL AND PREVENTION

Smallpox
(variola)

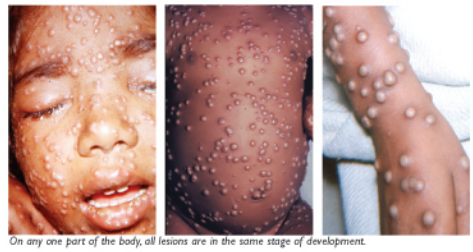


Typical smallpox rash distribution *Classic smallpox lesions*

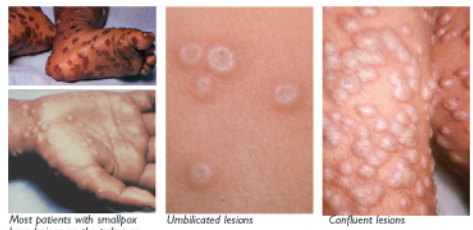
IMAGES OF SMALLPOX



Day 3 of rash *Day 5 of rash* *Day 7 of rash*



On any one part of the body, all lesions are in the same stage of development.



Most patients with smallpox have lesions on the palms or soles *Umbilicated lesions* *Confluent lesions*

COMMON CONDITIONS THAT MIGHT BE CONFUSED WITH SMALLPOX

CONDITION	CLINICAL CLUES
Varicella (primary infection with varicella-zoster virus)	Most common in children <10 years; children usually do not have a viral prodrome
Disseminated herpes zoster	Immunocompromised or elderly persons; rash looks like varicella, usually begins in dermatomal distribution
Impetigo *(Streptococcus pyogenes, Staphylococcus aureus)*	Honey-colored crusted plaques with bullae are classic but may begin as vesicles; regional not disseminated rash; patients generally not ill
Drug eruptions	Exposure to medications; rash often generalized
Contact dermatitis	Itching; contact with possible allergens; rash often localized in pattern suggesting external contact
Erythema multiforme minor	Target, "bull's eye", or iris lesions; often follows recurrent herpes simplex virus infections; may involve hands & feet (including palms & soles)
Erythema multiforme (incl. Stevens Johnson Syndrome)	Major form involves mucous membranes & conjunctivae; may be target lesions or vesicles
Enteroviral infection esp. Hand, Foot and Mouth disease	Summer & fall; fever & mild pharyngitis 1-2 days before rash onset; lesions initially maculopapular but evolve into whitish-grey tender, flat often oval vesicles; peripheral distribution (hands, feet, mouth, or disseminated)
Disseminated herpes simplex	Lesions indistinguishable from varicella; immunocompromised host
Scabies; insect bites (incl. fleas)	Itching is a major symptom; patient is not febrile & is otherwise well
Molluscum contagiosum	May disseminate in immunosuppressed persons

For more information, please go to the CDC website http://www.cdc.gov/nip/smallpox and http://www.bt.cdc.gov/EmContact/index.asp