Council of State and Territorial Epidemiologists
Position Statement

03-ID-03

Committee: Infectious Disease

Title: Smallpox Surveillance

Statement of the Problem:
The last case of smallpox disease in the United States occurred in 1949, and the disease was later declared eradicated in 1980 by the World Health Assembly. As a result, smallpox was removed from the National Notifiable Disease Surveillance System's (NNDSS) list of notifiable diseases in 1988. However, with the current threat of an intentional release of smallpox as a biological weapon, resumption of smallpox surveillance is needed. Rapid detection of smallpox is essential to ensure prompt initiation of public health activities to contain and control the spread of disease.

Desired Actions to be taken:
CSTE recommends that

1. Smallpox be placed under national surveillance as part of the NNDSS.
2. All states/cities/territories add smallpox to their reportable disease lists.
3. CDC work with CSTE to develop guidelines for implementation of post-event surveillance for confirmed and probable smallpox cases with reporting by states via the NNDSS.
4. CDC work with CSTE to develop a plan for CDC to collect aggregate, pre-event data on cases of vesicular/pustular rash illnesses suspicious for smallpox, that are investigated by state/city/territorial health departments.

Goals of Surveillance:
The goals of surveillance at both the state/local and national levels are:

1. To permit the rapid detection of the first case of smallpox as the result of a bioterrorist attack or the unintentional release of smallpox virus, for example in a laboratory accident.
2. Prior to a case of smallpox occurring, to provide a systematic and standard approach to collect aggregate data on investigations of vesicular/pustular rash illnesses suspicious for smallpox. Most such cases are likely to be varicella; therefore, some form of varicella surveillance should be implemented in all states, as previously recommended by CSTE.
3. To monitor the epidemiology of smallpox cases to guide containment, control and future prevention, in the event of the occurrence of smallpox in the population.

Methods of Surveillance:
Prior to any smallpox cases occurring (pre-event), education of providers combined with passive surveillance of suspected smallpox cases is recommended. Because varicella infection is the most likely disease to be confused with suspected smallpox disease, some form of varicella surveillance should be implemented in all states, as previously recommended by CSTE. All health care providers in acute care settings should be educated on the signs and symptoms of smallpox and reminded regularly of the reporting requirements. Pre-event smallpox surveillance should include the use of the CDC "Evaluating Patients for Smallpox" protocol. Cases of vesicular/pustular rash illness suspicious for smallpox should immediately be reported to the local health department. State health departments should immediately notify CDC by telephone of any reports they receive of probable cases. CDC will work with CSTE to develop methods to report routine summary data on cases investigated by states in the pre-event setting for the purpose of evaluating national smallpox surveillance efforts and the usefulness of the current clinical rash illness algorithm.

Should a case of smallpox be confirmed anywhere in the world (post event), enhanced, streamlined reporting of suspected smallpox cases to CDC may be recommended, depending on the numbers and epidemiology of the cases occurring. During post-event surveillance, enhanced or active surveillance is recommended (see Guide A of the CDC Smallpox Response Plan). Detailed case information on confirmed smallpox cases should be sent to the NNDSS via

telephone, fax, or, when available, the National Electronic Disease Surveillance System (NEDSS).

Case Definition:

Clinical Case Definition: An illness with acute onset of fever ≥101º F (≥38.3 º 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).

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 (Post-event Surveillance):

Confirmed case: A 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 case**:** 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 case: A case with a generalized, febrile 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.

Period of Surveillance:
On-going, continuous surveillance.

Background and Justification:
While smallpox disease is not currently present anywhere in the world, the intentional release of the smallpox virus as a bioterrorist agent or the unintentional release of the virus as a laboratory accident is possible. Early detection of the first smallpox case can limit the spread of disease through prompt initiation of containment and control activities. Reporting of suspected smallpox cases is critical for early detection. To facilitate early detection, the CDC protocol for evaluating patients for smallpox (Protocol and Worksheet) provides a mechanism for identifying suspected cases at moderate or high risk for smallpox. Once one laboratory-confirmed case of smallpox is detected, an outbreak has occurred resulting in implementation of the CDC and State Smallpox Response Plans. Other criteria for implementation of response plans include scenarios such as a large outbreak of clinically compatible illness pending etiologic confirmation; reports of suspected or probable cases once an outbreak has been identified elsewhere in the country; and confirmation of smallpox virus in an environmental sample, package, or device associated with human exposure. Immediate reporting of probable cases is critical for early recognition of these scenarios and for a rapid response.

References:

1. Centers for Disease Control and Prevention. CDC Smallpox Response Plan. Draft Guide A, May 21, 2003. http://www.bt.cdc.gov/agent/samllpox/response-plan. Accessed 29 May 2003.
2. Centers for Disease Control and Prevention. Notice to Readers: 25th Anniversary of the Last Case of Naturally Acquired Smallpox. MMWR, 2002. Oct 25; 51(42): 952. Centers for Disease Control and Prevention.
3. Poster: Evaluating Patients for Smallpox. http://www.bt.cdc.gov/agent/smallpox/diagnosis/evalposter.asp. Accessed 29 May 2003.

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