

Committee: Infectious

Title: Public Health Reporting and National Notification for Varicella

I. Statement of the Problem

CSTE position statement 07-EC-02 recognized the need to develop an official list of nationally notifiable conditions and a standardized reporting definition for each condition on the official list. The position statement also specified that each definition had to comply with American Health Information Community recommended standards to support “automated case reporting from electronic health records or other clinical care information systems.” In July 2008, CSTE identified sixty-eight conditions warranting inclusion on the official list, each of which now requires a standardized reporting definition.

II. Background and Justification

Background¹

Varicella is generally a mild disease with few complications. However, adolescents and adults are at greater risk of experiencing complications. Fatalities are rare, but are most common in adults and healthy children. Following the introduction of varicella vaccine in 1995, varicella morbidity and mortality have decreased dramatically. Although disease has declined significantly, mild, breakthrough disease among persons who had received only a single dose of varicella vaccine led to a recommendation for a routine 2-dose policy for varicella-containing vaccines. Continued surveillance for varicella is needed to evaluate the effectiveness of immunization policy in controlling disease and detecting and controlling outbreaks.

Justification

Varicella meets the following criteria for a nationally and **standard** notifiable condition, as specified in CSTE position statement 08-EC-02:

- A majority of state and territorial jurisdictions—or jurisdictions comprising a majority of the US population—have laws or regulations requiring **standard** reporting of varicella to public health authorities
- CDC requests **standard** notification of varicella to federal authorities
- CDC has condition-specific policies and practices concerning the agency’s response to, and use of, notifications.

¹ Much of the material in the background is directly quoted from the CDC’s varicella website. See the references for further information on this source.

III. Statement of the desired action(s) to be taken

CSTE requests that its members adopt this standardized reporting definition and that CDC adopt the standardized notification criteria for measles to facilitate more timely, complete, and standardized local reporting and national notification of this condition.

IV. Goals of Surveillance

To provide information on the temporal, geographic, and demographic occurrence of varicella to facilitate its prevention and control.

V. Methods for Surveillance

Surveillance for varicella should use the sources of data and the extent of coverage listed in Table V.

Table V. Recommended sources of data and extent of coverage for ascertaining cases of varicella.

Source of data for case ascertainment	Coverage	
	Population-wide	Sentinel sites
clinician reporting	X	
laboratory reporting	X	
reporting by other entities (e.g., hospitals, veterinarians, pharmacies)	X	
death certificates	X	
hospital discharge or outpatient records	X	
extracts from electronic medical records	X	
telephone survey		
school-based survey		
other (schools, day care centers)_____	X	

VI. Criteria for Reporting

Reporting refers to the process of healthcare providers or institutions (e.g., clinicians, clinical laboratories, hospitals) submitting basic information to governmental public health agencies about cases of illness that meet certain reporting requirements or criteria. Cases of illness may also be ascertained by the secondary analysis of administrative health data or clinical data. The purpose of this section is to provide those criteria that should be used by humans and machines to determine whether a specific illness should be reported.²

² “Human-based” criteria (described below under “A. Narrative”) can be applied by medical care providers and laboratory staff based on clinical judgment and clinical diagnosis. Machine-based criteria (described below under

A. Narrative description of criteria to determine whether a case should be reported to public health authorities

Report any illness to public health authorities that meets any of the following criteria:

1. Any person with a generalized, maculopapulovesicular rash characteristic of varicella.
2. Any person with a positive laboratory test confirming varicella infection. Acceptable tests are: isolation of varicella-zoster virus (VZV) from a clinical specimen, positive direct fluorescent antibody (DFA) for VZV DNA from a clinical specimen, a positive polymerase chain reaction (PCR) for VZV DNA, or a significant rise (i.e., at least a 4-fold rise) in serum varicella immunoglobulin G (IgG) antibody level on paired sera by any standard serologic assay.
3. A person whose healthcare record (e.g., hospital discharge or outpatient record) contains a diagnosis of varicella.
4. A person whose death certificate lists varicella as the cause of death or a contributing cause of death.

Other recommended reporting procedures

- All cases of varicella should be reported.
- Reporting should be on-going and routine.
- Frequency of reporting should follow the state health department's routine schedule.

B. Table of criteria to determine whether a case should be reported to public health authorities.

Table VI-B. Proposed Table of criteria to determine whether a case should be reported to public health authorities. Note: The following criteria are proposed for evaluation before general implementation. For purposes of currently implementing reporting the narrative description in VI-A, should be used.

Criterion	Reporting			
<i>Clinical Presentation</i>				
Generalized maculopapulovesicular rash	S			
Fever	C			
Malaise	C			
Pruritis	C			
Healthcare record contains a diagnosis of varicella			S	

“B. Table”) can be applied using computerized algorithms that operate in electronic health record systems, including computerized records of laboratory test orders and laboratory test results; other clinical data systems (e.g., hospital discharge data systems serving multiple hospitals); or administrative data (e.g., healthcare provider billing data, vital records, and EMS data).

Death certificate lists varicella as the cause of death or a contributing cause of death				S
<i>Laboratory findings</i>				
Isolation of varicella virus from a clinical specimen		S		
Positive direct fluorescent antibody (DFA) for varicella from a clinical specimen		S		
Positive polymerase chain reaction (PCR) for varicella-specific nucleic acid		S		
A significant rise in serum varicella immunoglobulin G (IgG) antibody level by any standard serologic assay		S		

Notes:

S = This criterion alone is sufficient to report a case

C = This finding corroborates (i.e., supports) the diagnosis of—or is associated with—Varicella, but is not required for reporting.

C. Disease Specific Data Elements:

Disease-specific data elements to be included in the initial report are listed below.

Clinical factors

Number of lesions (by category: <50, 50–249, 250–500, >500) and actual number of lesions if <50

Fever

Complications

Hospitalization

Epidemiologic factors

Predisposing conditions (e.g., immunocompromising condition)

Previous varicella history

Transmission setting

Association with an outbreak

Immunization History

Doses of varicella-containing vaccine received

Date(s) of dose(s) of varicella-containing vaccine received

VII. Case Definition for Case Classification

A. Narrative description of criteria to determine whether a case should be classified as confirmed or probable (presumptive).

Case classification

Probable:

- An acute illness with
 - diffuse (generalized) maculopapulovesicular rash; and
 - lack of laboratory confirmation; and
 - lack of epidemiologic linkage to another probable or confirmed case.

Confirmed:

- An acute illness with diffuse (generalized) maculopapulovesicular rash; and
 - epidemiologic linkage to another probable or confirmed case, or
 - laboratory confirmation by any of the following:
 - isolation of varicella virus from a clinical specimen; or
 - varicella antigen detected by direct fluorescent antibody test; or
 - varicella-specific nucleic acid detected by polymerase chain reaction (PCR); or
 - significant rise in serum anti-varicella immunoglobulin G (IgG) antibody level by any standard serologic assay.

Notes

Two probable cases that are epidemiologically linked would be considered confirmed, even in the absence of laboratory confirmation.

In vaccinated persons who develop varicella more than 42 days after vaccination (breakthrough disease), the disease is almost always mild with fewer than 50 skin lesions and shorter duration of illness. The rash may also be atypical in appearance (maculopapular with few or no vesicles).

Laboratory confirmation of cases of varicella is not routinely recommended; laboratory confirmation is recommended for fatal cases and in other special circumstances.

B. Classification Tables

Table VII-B lists the criteria that must be met for a case to be classified as confirmed or probable (presumptive).

Table VII-B. Proposed table of criteria to determine whether a case is classified. Note: The following criteria are proposed for evaluation before general implementation. For purposes of current notification, the narrative description in VII-A, should be used.

Criterion	Confirmed		Probable
<i>Clinical Presentation</i>			
Acute illness with diffuse (generalized) maculopapulovesicular rash	N	N	S
<i>Laboratory findings</i>			
Isolation of varicella virus from a clinical specimen		O	
Detection of varicella antigen by direct fluorescent antibody test;		O	
Detection of varicella-specific nucleic acid by polymerase chain reaction (PCR)		O	
Significant rise in serum anti-varicella immunoglobulin G (IgG) antibody level by any standard serologic assay		O	
<i>Epidemiological risk factors</i>			
Contact of a confirmed case of varicella infection	O		
Member of a risk group as defined by the public health authorities during an outbreak	O		

Notes:

S = This criterion alone is sufficient to classify a case

N = This criterion in conjunction with all other “N” and any “O” criteria in the same column is required to classify a case.

O = At least one of these “O” criteria in each category in the same column (e.g., clinical presentation and laboratory findings)—in conjunction with all other “N” criteria in the same column—is required to classify a case.

VIII. Period of Surveillance

Surveillance should be on-going.

IX. Data sharing/release and print criteria

Notification to CDC for confirmed and probable cases of varicella is recommended.

- Data reported to NCIRD staff is summarized weekly internally via an NCIRD surveillance report for vaccine preventable diseases. Electronic reports of varicella cases in NNDSS are also summarized weekly in the MMWR Tables. Annual number of cases of varicella is also summarized in the yearly Summary of Notifiable Diseases.
- State-specific data on number of cases of varicella will continue to be published in the weekly and annual MMWR. In addition to those reports, the frequency of reports/feedback to the states and territories with more detailed data including frequency of cases, age distribution, vaccination status, and disease severity, will also occur on an annual basis.
- State-specific data on number of cases of varicella will continue to be published in the weekly and annual MMWR. Additionally, the frequency of release of additional publication of this data will be dependent on the current epidemiologic situation in the country. Release of this published data may include methods such as email, MMWR, Epi-X, or manuscripts in peer-reviewed journals. Confidentiality of data will be appropriately maintained.
- No personal identifying or state-specific information is re-released to other parties who may request the case data. Varicella morbidity data is currently not reported to PAHO or WHO because few countries have a varicella vaccination program in place. However, if data are requested for re-release to other parties, confidentiality would be appropriately maintained.

X. References

Centers for Disease Control and Prevention (CDC). Case definitions for infectious conditions under public health surveillance. MMWR 1997; 46(No. RR-10):1–57. Available from: <http://www.cdc.gov/mmwr/>

Centers for Disease Control and Prevention (CDC). National notifiable diseases surveillance system: case definitions. Atlanta: CDC. Available from: <http://www.cdc.gov/ncphi/disss/nndss/casedef/index.htm> Last updated: 2008 Jan 9. Accessed:

Council of State and Territorial Epidemiologists (CSTE). CSTE official list of nationally notifiable conditions. CSTE position statement 07-EC-02. Atlanta: CSTE; June 2007. Available from: <http://www.cste.org>.

Council of State and Territorial Epidemiologists (CSTE). Criteria for inclusion of conditions on CSTE nationally notifiable condition list and for categorization as immediately or routinely notifiable. CSTE position statement 08-EC-02. Atlanta: CSTE; June 2008. Available from: <http://www.cste.org>.

Council of State and Territorial Epidemiologists (CSTE). Varicella Surveillance. 02-ID-06. Atlanta: CSTE; June 2002. Available from: <http://www.cste.org>.

Council of State and Territorial Epidemiologists (CSTE). Data Release Guidelines of the Council of State & Territorial Epidemiologists for the National Public Health System. Atlanta: CSTE; June 1996.

Council of State and Territorial Epidemiologists, Centers for Disease Control and Prevention. CDC-CSTE Intergovernmental Data Release Guidelines Working Group (DRGWG) Report: CDC-ATSDR Data Release Guidelines and Procedures for Re-release of State-Provided Data. Atlanta: CSTE; 2005. Available from: <http://www.cste.org/pdffiles/2005/drgwgreport.pdf> or <http://www.cdc.gov/od/foia/policies/drgwg.pdf>.

Heymann DL, editor. Control of communicable diseases manual. 18th edition. Washington: American Public Health Association; 2004.

Whitley RJ. Varicella-Zoster Infections. In: Mandell GL, Bennett JE, Dolin R, editors. Principles and Practice of Infectious Diseases, 6th edition. Philadelphia: Churchill Livingstone; 2005.

XI. Coordination:

Agencies for Response:

- (1) Thomas R Frieden, MD, MPH
Director
Centers for Disease Control and Prevention
1600 Clifton Road, NE
Atlanta GA 30333
(404) 639-7000
txf2@cdc.gov

XII. Submitting Author:

- (1) Dale Morse, MD MS
Assistant Commissioner, Office of Science
New York State Department of Health
Tower Building-Room 2040
Empire State Plaza
Albany, NY 12237
(518) 473-4959
Dlm04@health.state.ny.us

Co-Authors:

- (1) Associate Member
Harry F. Hull, Medical Epidemiologist
HF Hull & Associates, LLC
1140 St. Dennis Court
Saint Paul, MN 55116
(651) 695-8114
hullhf@msn.com
- (2) Associate Member
Cecil Lynch, Medical Informaticist
OntoReason
7292 Shady Woods Circle
Midvale, UT 84047
(916) 412.5504
clynch@ontoreason.com
- (3) Associate Member
R. Gibson Parrish, Medical Epidemiologist
P.O. Box 197
480 Bayley Hazen Road
Peacham, VT 05862
(802) 592-3357
gib.parrish@gmail.com