23-ID-06

Committee: Infectious Disease

Title: Update to Public Health Reporting and National Notification for Mumps

☒ Check this box if this position statement is an update to an existing standardized surveillance case definition and include the most recent position statement number here: 11-ID-18.

Synopsis:
This position statement updates the standardized surveillance case definition for mumps (previous position statement 11-ID-18). Updates include:

- Removal of symptom requirement, including duration of parotitis or swelling of other (non-parotid) salivary gland(s), from the confirmed case classification
- Removal of duration of parotitis or swelling of other (non-parotid) salivary gland(s) as a requirement for epidemiologically linked probable cases
- Retention of the requirement for ≥2-day duration of parotitis or swelling of other (non-parotid) salivary gland(s) for probable cases with no epidemiologic linkage criteria*
- Clarification of which laboratory tests are considered confirmatory (i.e., positive RT-PCR, isolation of mumps virus, seroconversion, or a 4-fold or greater rise in titer)
- Clarification that a positive mumps IgM result cannot be considered confirmatory laboratory evidence for mumps, but may be used as supportive laboratory evidence for probable and suspect cases
- Addition of death certificates and medical records as recommended sources for case ascertainment
- Removal of import status case classification
- Change in epidemiologic linkage criteria to include only those with an exposure to a confirmed mumps case or an outbreak

*These probable cases are considered “sporadic cases” of mumps because they are not epidemiologically linked to another confirmed case or to an outbreak.

I. Statement of the Problem

Mumps infection typically presents with parotitis but may present only with non-specific or respiratory symptoms. Symptoms in vaccinated persons may be milder than symptoms in unvaccinated persons. The previous case definition requires a ≥2-day duration of parotitis or mumps-related complications and does not allow for the capture of cases with atypical presentations or that are asymptomatic. Between January 2016 to June 2017, when health departments reported 150 outbreaks (>9,000 cases), some epidemiologically-linked cases that tested positive for mumps could not be reported due to transient parotitis of <2-day duration. Additionally, information about duration of parotitis is not always available to public health. A better understanding of the full scope of mumps clinical presentations could clarify the true burden of disease.

Molecular assays, such as reverse-transcription PCR (RT-PCR) are highly sensitive and specific and have become more widely available. Immunoglobulin M (IgM) antibody tests can aid in diagnosis but available assays vary considerably in sensitivity and specificity. The mumps case definition needs updated guidance for use of mumps molecular and IgM testing for case reporting, ascertainment and classification, and to accommodate cases with atypical clinical presentation or that are asymptomatic.
II. Background and Justification

Mumps is caused by infection with a paramyxovirus and is transmitted person to person through direct contact with saliva or respiratory droplets of a person infected with the virus. Mumps typically presents with parotitis or other salivary gland swelling. Parotitis may be unilateral or bilateral and usually lasts 3-7 days. Prodromal symptoms can occur before parotitis and include fever, myalgia, anorexia, malaise, and headache. The most common complications of mumps include orchitis, oophoritis, mastitis, pancreatitis, hearing loss, meningitis, and encephalitis. Mumps may present only with non-specific or respiratory symptoms or may be asymptomatic. Among unvaccinated persons, approximately 20% of cases are asymptomatic.7-10 The proportion who are asymptomatic or present with atypical symptoms is unknown for vaccinated persons. Mumps can occur in fully vaccinated persons, but vaccinated persons are at much lower risk for mumps and mumps complications.1-2 Laboratory testing should be conducted if mumps is suspected, as clinical diagnosis may not be reliable. PCR is the preferred method for laboratory confirmation of mumps. Other causes of parotitis include duct obstruction, inflammatory conditions, or other infectious etiologies such as influenza, parainfluenza, Epstein-Barr virus, or SARS-CoV-2. Parotitis within 42 days after vaccination has been reported in <1%. Genotyping should be conducted to confirm whether parotitis was due to vaccine-strain.

Currently, two doses of mumps virus-containing vaccine are routinely recommended for children at 12-15 months and 4-6 years.11 In 2017, the Advisory Committee on Immunization Practices (ACIP) recommended a third dose of mumps virus-containing vaccine for people who are identified by public health authorities as being part of a group at increased risk for mumps because of an outbreak.12 Since the mumps vaccine was licensed in 1967, reported cases of mumps had steadily decreased; however, starting in 2006, there has been an increase in mumps cases and outbreaks reported in the United States (U.S.) with several peak years.4

The purpose of this position statement is to:

- Allow for classification of cases as confirmed without meeting clinical evidence criteria given high specificity of PCR, isolation of mumps virus, seroconversion, or a 4-fold or greater rise in IgG titer.
- Clarify that IgM testing can only be used as supportive laboratory evidence to classify cases as probable or suspect because of a high potential for false positive results due to cross-reactivity.
- Allow for cases with atypical presentations and asymptomatic mumps to be classified as confirmed or suspect since infection may present with non-specific symptoms or be asymptomatic.
- Allow for a more comprehensive understanding of disease incidence and characteristics of mumps cases by including all laboratory-confirmed mumps infections.
- Increase the specificity of case classification for cases without epidemiologic linkage by retaining a requirement for ≥2-day duration of parotitis or swelling of other (non-parotid) salivary gland(s) for individuals without confirmatory laboratory evidence.

III. Statement of the Desired Action(s) to be Taken

CSTE recommends the following actions:

1. Implement a standardized surveillance case definition for mumps.
   A. Utilize standard sources (e.g., reporting*) for case ascertainment for mumps. Surveillance for mumps should use the recommended sources of data to the extent of coverage presented in Section V.
   B. Utilize standardized criteria for case ascertainment for mumps presented in Section VI and Table VI in Technical Supplement.
   C. Utilize standardized criteria for case classification for mumps presented in Section VII and Table VII in Technical Supplement.
2. Utilize standardized criteria for case ascertainment and classification (based on Sections VI and VII and Technical Supplement) for mumps and update mumps on the Nationally Notifiable Condition List using the following notification** timeframe:

☐ Immediately notifiable, extremely urgent (within 4 hours)
☐ Immediately notifiable, urgent (within 24 hours)
☒ Routinely notifiable
☐ No longer notifiable

3. CSTE recommends that all States and Territories enact laws (statute or rule/regulation as appropriate) to make this disease or condition reportable in their jurisdiction. Jurisdictions (e.g., States and Territories) conducting surveillance (according to these methods) should submit case notifications to CDC.

4. Expectations for Message Mapping Guide (MMG) development for a newly notifiable condition: the National Notifiable Diseases Surveillance System (NNDSS) can receive HL7-based messages for case notifications; the specifications for these messages are presented in MMGs. When CSTE recommends a new condition be made nationally notifiable, CDC must obtain Office of Management and Budget Paperwork Reduction Act (OMB PRA) approval prior to accepting case notifications for the new condition. Under anticipated timelines, notification using the Generic V2 MMG would support transmission of the basic demographic and epidemiologic information common to all cases and could begin with the new MMWR year following the CSTE annual conference. Input from CDC programs and CSTE would prioritize development of a disease-specific MMG for the new condition among other conditions waiting for MMG development.

5. CDC should publish data on mumps as appropriate (see Section IX). CSTE recommends the following case statuses be included in the CDC Print Criteria:

☒ Confirmed
☒ Probable
☐ Suspect
☐ Unknown

CSTE recommends that all jurisdictions (e.g., States, Localities, or Territories) with legal authority should conduct public health surveillance and use the case classifications included in this standardized surveillance position statement.

* Reporting: process of a healthcare provider, laboratory, or other entity submitting a report (case information) of a condition under public health surveillance to local, state, or territorial public health.

** Notification: process of a local or state public health authority submitting a report (case information) of a condition on the Nationally Notifiable Conditions List to CDC.

IV. Goals of Surveillance

To provide comprehensive information on the temporal, geographic, and demographic occurrence of mumps, to identify and describe risk factors for infection, and to facilitate public health response, prevention, and control in the U.S.

V. Recommended Data Sources and Methods for Surveillance

Surveillance for mumps should use the following recommended sources of data and/or methodologies and the extent of coverage listed in Table V.
Table V. Recommended Sources of Data, Surveillance Methods, and Extent of Coverage for Ascertainment of Cases of Mumps.

<table>
<thead>
<tr>
<th>Source of Data/Methodology for Case Ascertainment</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Population-Wide</td>
</tr>
<tr>
<td>Clinician reporting</td>
<td>X</td>
</tr>
<tr>
<td>Laboratory reporting</td>
<td>X</td>
</tr>
<tr>
<td>Reporting by other entities, specify:</td>
<td>X</td>
</tr>
<tr>
<td>• Hospitals</td>
<td></td>
</tr>
<tr>
<td>• Schools</td>
<td></td>
</tr>
<tr>
<td>• Daycares</td>
<td></td>
</tr>
<tr>
<td>• Correctional and detention facilities</td>
<td></td>
</tr>
<tr>
<td>Death certificates</td>
<td>X</td>
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<tr>
<td>Hospital discharge or outpatient records</td>
<td>X</td>
</tr>
<tr>
<td>Data from electronic medical records</td>
<td>X</td>
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<tr>
<td>Telephone or online survey</td>
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<tr>
<td>School-based survey</td>
<td></td>
</tr>
<tr>
<td>Other, specify: N/A</td>
<td></td>
</tr>
</tbody>
</table>

VI. Criteria for Case Ascertainment

Case ascertainment is the process through which public health identifies potential cases of a disease or condition using data reported or provided to public health by healthcare, laboratories, and other reporting entities. This public health reporting is triggered by the case ascertainment criteria (a single criterion or a combination of criteria) included in this position statement, and each initial report sent to public health should include common data elements and disease-specific data elements. Case ascertainment criteria are not intended to be used for clinical diagnosis purposes.

A. Narrative: A description of suggested criteria for case ascertainment of a specific condition and recommended reporting procedures.

Recommended reporting procedures for mumps:
- All cases of mumps should be reported.
- Reporting should be ongoing and routine.
- Frequency of reporting should follow the state health department’s routine schedule.

Report a possible mumps case to public health authorities when any of the following criteria are met:

A1. Clinical Criteria for Reporting
- In the absence of a more likely alternative diagnosis:
  o An acute illness characterized by parotitis (i.e., acute onset of unilateral or bilateral tender, self-limited swelling of the parotid) or swelling of other (non-parotid) salivary gland(s), OR
  o An acute illness characterized by at least one of the following mumps-associated complication(s): orchitis, oophoritis, aseptic meningitis, encephalitis, hearing loss, mastitis, or pancreatitis.

A2. Laboratory Criteria for Reportinga
- Positive reverse-transcriptase polymerase chain reaction (RT-PCR) for mumps-specific nucleic acidb, OR
- Isolation of mumps virus, OR
- Significant rise (i.e., at least a 4-fold rise in quantitative titer or seroconversionc) in paired acute and convalescent serum mumps immunoglobulin G (IgG) antibodyb, OR
- Positive test for serum mumps immunoglobulin M (IgM) antibodys,d.

A negative laboratory result in a person with clinically compatible mumps symptoms does not rule out mumps as a diagnosis.

Not explained by MMR vaccination during the previous 6-45 days.
Seroconversion is defined as a negative serum mumps IgG followed by a positive serum mumps IgG.
May be ruled out by a negative convalescent mumps IgG antibody using any validated method.
A3. Epidemiologic Linkage Criteria for Reporting
N/A

A4. Vital Records Criteria for Reporting
• A person whose death certificate lists mumps as an underlying cause of death or significant condition contributing to death.

A5. Healthcare Record Criteria for Reporting
• A person whose healthcare record contains a diagnosis of mumps (exclude reports in which mumps is ruled out).

B. Disease-Specific Data Elements to be Included in the Initial Report
Disease-specific data elements should be included in addition to the common data elements that are to be reported for all initial individual case reports (see CSTE Position Statement 09-SI-01 “Common Core Data Elements for Case Reporting and Laboratory Result Reporting” https://cdn.ymaws.com/www.cste.org/resource/resmgr/PS/09-SI-01.pdf). Public health authorities do not expect that an initial report will contain all the information necessary for case investigation and case classification.

Additional disease-specific data elements to include when available:
• Clinical Presentation
  o Parotitis or swelling of sublingual or submandibular salivary glands
  o Mumps-associated complication (describe)
  o Hospitalized (include duration and reason for hospitalization, if known)
  o Died (include date of death)
• Epidemiological Evidence
  o Contact with a person infected with mumps or experiencing a mumps-associated complication
  o Member of a group or population identified by public health authorities at increased risk for acquiring mumps because of an outbreak
  o Travel history within 25 days of symptom onset
• Immunization History
  o Number of doses of mumps-containing vaccine received
  o Dates of all doses of mumps-containing vaccine received

VII. Case Definition for Case Classification
This case definition for case classification is intended solely for public health surveillance purposes and does not recommend criteria for clinical diagnosis purposes. Once a public health agency has ascertained data on potential cases of a disease or condition from reporting entities, the public health agency assigns case statuses based on the case classifications included within this position statement.

A. Narrative: A description of criteria to determine how public health should classify a case of mumps.

A1. Clinical Criteria
In the absence of a more likely alternative diagnosis, an acute illness characterized by:
• Parotitis or swelling of other (non-parotid) salivary gland(s) of any duration, OR
• At least one of the following mumps-associated complication(s):
  o Orchitis
  o Oophoritis
  o Aseptic meningitis
  o Encephalitis
  o Hearing loss
  o Mastitis
  o Pancreatitis
A2. Laboratory Criteria**

**Confirmatory Laboratory Evidence:**
- Positive reverse transcriptase polymerase chain reaction (RT-PCR) for mumps-specific nucleic acid, OR
- Isolation of mumps virus, OR
- Significant rise (i.e., at least a 4-fold rise in a quantitative titer or seroconversion) in paired acute and convalescent serum mumps immunoglobulin G (IgG) antibody

**Supportive Laboratory Evidence:**
- Positive test for serum mumps immunoglobulin M (IgM) antibody

*Note: The categorical labels used here to stratify laboratory evidence are intended to support the standardization of case classifications for public health surveillance. The categorical labels should not be used to interpret the utility or validity of any laboratory test methodology.

**A negative laboratory result in a person with clinically compatible mumps symptoms does not rule out mumps as a case.**

**Not explained by MMR vaccination during the previous 6-45 days.**

**Seroconversion is defined as a negative serum mumps IgG followed by a positive serum mumps IgG.**

**May be ruled out by a negative convalescent mumps IgG antibody using any validated method.**

A3. Epidemiologic Linkage Criteria
- Exposure to or contact with a confirmed mumps case, OR
- Member of a group or population identified by public health authorities as being at increased risk for acquiring mumps because of an outbreak

A4. Case Classifications

**Confirmed:**
- Meets confirmatory laboratory evidence.

**Probable:**
- Meets clinical criteria AND epidemiologic linkage criteria, OR
- Meets supportive laboratory evidence AND
  - Meets clinical criteria of:
    - ≥2-day duration of parotitis or other salivary gland swelling OR
    - a mumps-related complication
  - AND
  - Does NOT meet epidemiologic linkage criteria**

**Suspect:**
- Meets the clinical criteria but does not meet laboratory or epidemiologic linkage criteria, OR
- Meets supportive laboratory evidence but does not meet the clinical criteria AND has documentation that mumps was suspected

**These are considered sporadic cases.**

B. Criteria to Distinguish a New Case of Mumps from Reports or Notifications which Should Not be Enumerated as a New Case for Surveillance

The following should be enumerated as a new case:
- Person with a new onset of symptoms that meets the criteria for a confirmed or probable case; OR
- Person not previously enumerated as a case with a newly available laboratory result that meets the criteria for a confirmed case; OR
- Person was previously reported but not enumerated as a confirmed or probable case (e.g., suspect), then subsequently available information meets the criteria for a confirmed or probable case.
- Person was previously enumerated as a case followed by a documented period of recovery AND newly meets the criteria for a confirmed or probable case.***

***Mumps generally confers life-long protection. There have been a few reports of recurrent mumps that have occurred weeks to months after the prior acute onset of mumps infection. However, data on the timing between two mumps infections is unknown. CDC consultation is encouraged for case classification of persons with possible recurrent mumps.
VIII. Period of Surveillance

Surveillance should be ongoing.

IX. Data Sharing/Release and Print Criteria

CSTE recommends the following case statuses* be included in the ‘case’ count released outside of the public health agency:

- ☒ Confirmed
- ☒ Probable
- ☐ Suspect
- ☐ Unknown

*Which case statuses are included in case counts constitute the “print criteria.”

Jurisdictions (e.g., States and Territories) conducting surveillance under this case definition can voluntarily submit de-identified case information to CDC, if requested and in a mutually agreed upon format.

Production of national data summaries and national data re-release for non-NNCs:

- Prior to release of national data summaries CDC should follow the CDC/ATSDR Policy on Releasing & Sharing Data, issued on April 16, 2003 and referenced in 11-SI-01 and custodians of such data should consult the CDC-CSTE Intergovernmental Data Release Guidelines Working Group report (www.cste2.org/webpdfs/drgwgreport.pdf) which contains data release guidelines and procedures for CDC programs re-releasing state, local, or territorial-provided data.
- CDC programs have a responsibility, in collaboration with states, localities, and territories, to ensure that CDC program-specific data re-release procedures meet the needs of those responsible for protecting data in the states and territories.

X. Revision History

<table>
<thead>
<tr>
<th>Position Statement ID</th>
<th>Section of Document</th>
<th>Revision Description</th>
</tr>
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<tbody>
<tr>
<td>23-ID-06</td>
<td>Table V. Recommended sources of data</td>
<td>Addition of death certificates and medical records as population wide data sources for reporting.</td>
</tr>
<tr>
<td>23-ID-06</td>
<td>Section VI. Case ascertainment</td>
<td>• Criteria updated with removal of duration of parotitis or swelling of other (non-parotid) salivary gland(s) in the clinical criteria.&lt;br&gt;  • Added additional criteria for PCR, IgG seroconversion, and IgM testing (i.e., not explained by MMR vaccination during the previous 45 days).</td>
</tr>
<tr>
<td>23-ID-06</td>
<td>Section VII. Case definition for case classification (Table VII. Classification Table)</td>
<td>• Removed symptom requirement for cases with confirmatory lab results.&lt;br&gt;  • Removed parotitis or swelling of other (non-parotid) salivary gland(s) duration for epidemiologically linked probable cases.&lt;br&gt;  • PCR positive cases without symptoms are no longer suspect cases (now confirmed).&lt;br&gt;  • Added additional criteria for PCR, IgG seroconversion, and IgM testing (i.e., not explained by MMR vaccination during the previous 45 days).&lt;br&gt;  • Removal of import status case classification.&lt;br&gt;  • Epidemiologic linkage criteria was changed to include only those with an exposure to a confirmed mumps case or an outbreak.</td>
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</table>
| 11-ID-18              | I. Statement of the Problem; II. Background and Justification; III. Statement of the desired action(s) to be taken; VI. Criteria for Reporting; | • Updated the Statement of the Problem, Background and Justification, and Statement of the desired action(s) to be taken.<br>  • Changed the criteria for reporting to potential cases with (1) acute illness characterized by parotitis or other salivary gland(s), lasting at least 2 days, (2) Acute illness characterized by a mumps-associated complication and epidemiologic evidence or (3) laboratory tests suggesting an acute mumps infection without clinical information.
<table>
<thead>
<tr>
<th>Position Statement ID</th>
<th>Section of Document</th>
<th>Revision Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>09-ID-50</td>
<td>All sections</td>
<td>Standardized reporting definition for Mumps to facilitate more timely, complete, and standardized local and national reporting of this condition.</td>
</tr>
<tr>
<td>07-ID-02</td>
<td>Statement of the Problem; Statement of the desired action(s) to be taken; Clinical case definition; Clinically Compatible Illness; Laboratory criteria; Case classification; Case Classification for Import Status</td>
<td>• Included acute mumps complications, &lt;br&gt;• Added a suspected case classification for state/local use only, &lt;br&gt;• Included newer laboratory tests, and &lt;br&gt;• Included import status for case classification</td>
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<tr>
<td>99-ID-09</td>
<td>Mumps Case Definition</td>
<td>Removed case classification that two probable cases that are epidemiologically linked would be considered confirmed, even in the absence of laboratory confirmation.</td>
</tr>
<tr>
<td>1996-18</td>
<td>Laboratory Criteria for Diagnosis; Comments</td>
<td>• Clarification that a significant rise in mumps antibody level means a rise between acute- and convalescent-phase titers in serum mumps immunoglobulin. &lt;br&gt;• Addition of a note that false-positive IgM results by immunofluorescent antibody assays have been reported.</td>
</tr>
<tr>
<td>N/A</td>
<td>1990-6</td>
<td>Creation of a standard case definition for mumps. Note: mumps was made nationally notifiable prior to this position statement.</td>
</tr>
</tbody>
</table>

### XI. References


XII. Coordination

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

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Mumps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Criteria for Reporting</strong></td>
<td></td>
</tr>
<tr>
<td>Parotitis</td>
<td>O</td>
</tr>
<tr>
<td>Swelling of other (non-parotid) salivary gland(s)</td>
<td>O</td>
</tr>
<tr>
<td>Orchitis</td>
<td>O</td>
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<tr>
<td>Oophoritis</td>
<td>O</td>
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<tr>
<td>Aseptic meningitis</td>
<td>O</td>
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<tr>
<td>Encephalitis</td>
<td>O</td>
</tr>
<tr>
<td>Hearing loss</td>
<td>O</td>
</tr>
<tr>
<td>Mastitis</td>
<td>O</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>O</td>
</tr>
<tr>
<td>Absence of more likely alternative diagnosis</td>
<td>N</td>
</tr>
<tr>
<td><strong>Laboratory Criteria for Reporting</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Positive RT-PCR for mumps-specific nucleic acid&lt;sup&gt;b&lt;/sup&gt;</td>
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</tr>
<tr>
<td>Isolation of mumps virus</td>
<td>S</td>
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<tr>
<td>Significant rise (i.e., at least a 4-fold rise in quantitative titer or seroconversion&lt;sup&gt;c&lt;/sup&gt;) in paired acute and convalescent serum mumps IgG antibody&lt;sup&gt;d&lt;/sup&gt;</td>
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</tr>
<tr>
<td>Positive test for serum mumps IgM antibody&lt;sup&gt;e&lt;/sup&gt;,&lt;sup&gt;d&lt;/sup&gt;</td>
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<tr>
<td><strong>Epidemiologic Linkage Criteria for Reporting</strong></td>
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<tr>
<td>N/A</td>
<td></td>
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<tr>
<td><strong>Vital Record Criteria for Reporting</strong></td>
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<tr>
<td>A person whose death certificate lists mumps as an underlying cause of death or significant condition contributing to death</td>
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<tr>
<td><strong>Healthcare Record Criteria for Reporting</strong></td>
<td></td>
</tr>
<tr>
<td>A person whose healthcare record contains a diagnosis of mumps (exclude reports in which mumps is ruled out)</td>
<td>S</td>
</tr>
</tbody>
</table>

Notes:

- S = This criterion alone is SUFFICIENT to report a case.
- N = All “N” criteria in the same column are NECESSARY to report a case.
- O = At least one of these “O” (ONE OR MORE) criteria in each category (categories=clinical, laboratory, epidemiologic linkage, vital records, etc.) in the same column—in conjunction with all “N” criteria in the same column—is required to report a case.

<sup>a</sup>A negative laboratory result in a person with clinically compatible mumps symptoms does not rule out mumps as a case.

<sup>b</sup>Not explained by MMR vaccination during the previous 6-45 days.

<sup>c</sup>Seroconversion is defined as a negative serum mumps IgG followed by a positive serum mumps IgG.

<sup>d</sup>May be ruled out by a negative convalescent mumps IgG antibody using any validated method.
Table VII.A. Classification Table: Criteria for defining a case of mumps.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Confirmed</th>
<th>Probable</th>
<th>Suspect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Evidence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parotitis</td>
<td>O</td>
<td>O*^</td>
<td>O</td>
</tr>
<tr>
<td>Swelling of other (non-parotid) salivary gland(s)</td>
<td>O</td>
<td>O*^</td>
<td>O</td>
</tr>
<tr>
<td>Orchitis</td>
<td>O</td>
<td>O^</td>
<td>O</td>
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<td>Oophoritis</td>
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<td>Aseptic meningitis</td>
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<td>Encephalitis</td>
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<tr>
<td>Hearing loss</td>
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<td>Mastitis</td>
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<tr>
<td>Pancreatitis</td>
<td>O</td>
<td>O^</td>
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</tr>
<tr>
<td>Absence of more likely alternative diagnosis</td>
<td>N</td>
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</tr>
<tr>
<td><strong>Laboratory Evidence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive RT-PCR for mumps-specific nucleic acid$^a$</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolation of mumps virus</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant rise (i.e., at least a 4-fold rise in quantitative titer or seroconversion$^b$) in paired acute and convalescent serum mumps IgG antibody$^b$</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive test for serum mumps immunoglobulin M (IgM) antibody$^b,d$</td>
<td>N^</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td><strong>Epidemiologic Linkage Evidence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to or contact with a confirmed mumps case</td>
<td>O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member of a group or population identified by public health authorities as being at increased risk for acquiring mumps because of an outbreak</td>
<td>O</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other Evidence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documentation that mumps was suspected</td>
<td></td>
<td></td>
<td>N</td>
</tr>
</tbody>
</table>

Notes:
- **S** = This criterion alone is SUFFICIENT to classify a case.
- **N** = All "N" criteria in the same column are NECESSARY to classify a case.
- **O** = At least one of these "O" (ONE OR MORE) criteria in each category (categories=clinical evidence, laboratory evidence, and epidemiologic evidence) in the same column—in conjunction with all "N" criteria in the same column—is required to classify a case.
- * Duration of parotitis or swelling of other (non-parotid) salivary gland(s) must be ≥ 2 days.
- ^These probable cases are considered "sporadic cases" of mumps because they are not epidemiologically linked to another confirmed case or to an outbreak.
- $^a$A negative laboratory result in a person with clinically compatible mumps symptoms does not rule out mumps as a case.
- $^b$Not explained by MMR vaccination during the previous 6-45 days.
- $^c$Seroconversion is defined as a negative serum mumps IgG followed by a positive serum mumps IgG.
- $^d$May be ruled out by a negative convalescent mumps IgG antibody using any validated method.

Table VII.B. Classification Table: Criteria to distinguish a new case of Mumps from reports or notifications which should not be enumerated as a new case for surveillance.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Confirmed</th>
<th>Probable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person with a new onset of symptoms that meets the criteria for a confirmed case</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Person not previously enumerated as a case with a newly available laboratory result that meets the criteria for a confirmed case</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Person with a new onset of symptoms that meets the criteria for a probable case.</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Person was previously reported but not enumerated as a case (i.e., suspect), then subsequent available information meets the criteria for a confirmed case</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Person was previously reported but not enumerated as a case (i.e., suspect), then subsequently available information meets the criteria for a probable case</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Person was previously enumerated as a case followed by a documented period of recovery AND newly meets the criteria for a confirmed case.</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Person was previously enumerated as a case followed by a documented period of recovery AND newly meets the criteria for a probable case.</td>
<td>S</td>
<td></td>
</tr>
</tbody>
</table>

Notes: **S** = This criterion alone is SUFFICIENT to enumerate as a new case.