Measles & Mumps: Specimen Collection & Shipment

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Vaccine Preventable Diseases Surveillance Manager

September 13, 2018
Measles: Most- Infectious Virus
Unvaccinated: 90% infectivity
## Measles Reporting, Illinois 2013-Present*

<table>
<thead>
<tr>
<th>Year</th>
<th>Measles Reports Investigated (not cases)</th>
<th>Measles Cases (Actual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>80</td>
<td>5</td>
</tr>
<tr>
<td>2014</td>
<td>79</td>
<td>2</td>
</tr>
<tr>
<td>2015</td>
<td>161</td>
<td>17</td>
</tr>
<tr>
<td>2016</td>
<td>48</td>
<td>2</td>
</tr>
<tr>
<td>2017</td>
<td>60</td>
<td>0</td>
</tr>
<tr>
<td>2018*</td>
<td>44</td>
<td>4</td>
</tr>
</tbody>
</table>

\[ \sum = 472 \quad \sum = 30 \]

n=5 Outbreaks since 2014  
Case counts per outbreak range from 2 to 13 cases

*Provisional data, 9/12/18
RESPONSE

Providers

State Lab

Communicable Disease

Epi. Investigators

patient
RESPONSE

Providers

State Lab

Communicable Disease

Epi. Investigators

patient
Coordination

• Coordination with city, regional, state and federal agencies and other organizations responding to this public health emergency.
  ➢ CDC
  ➢ IDPH
  ➢ LHDs
  ➢ HCF and HCP
  ➢ Laboratories: CDC, IDPH, private/commercial labs
    • May include elected officials, law enforcement, EMS, academia, religious leaders, and community-based organizations.
**COLLECTION & SHIPMENT: THE CRITICAL COMPONENT**

- **Spec. Collection & Storage**
- **Providers**
  - **State Lab**
  - **Communicable Disease**
  - **Epi. Investigators**
- **Spec. Shipment**
- **CDC**

- **Improper Specimen Collection, Storage, & Transport Inhibits Proper Response**
January 2018 – June 2018

• Revision of both Measles & Mumps qRT-PCR assays.
  – Quicker results and more-sensitive that earlier assays.

• Revision of Measles & Mumps Collection & Shipping Requirements
  – Aligned with CDC & WHO collection, storage, and shipping requirements.
  – Greatest changes affected Mumps collection & storage.
Major Change to qRT-PCR

- **Incorporation of RNase P**
  - Human gene present in all clinical samples (i.e. viruses must replicate inside of living cells).
  - Detection of RNase P by PCR:
    - Functions as an internal extraction control
    - Indicates human cells are present & by definition if virus-infected cells are present will also be detectable by RT-PCR.

**RNase P result is indicated on the results released by the LIMS system.**
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COLLECTION & SHIPMENT: THE CRITICAL COMPONENT

- Improper Specimen Collection, Storage, & Transport Inhibits Proper Response

providers

state lab

communicable disease

epi. investigators

cdc

spec. collection & storage

patient
Mumps Collection, Storage, and Shipment.

**RNase P @ 3 Days post collection**

<table>
<thead>
<tr>
<th>Ct (mean ± sem)</th>
<th>4°C</th>
<th>37°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 0</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Day 3</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Day 4</td>
<td>32</td>
<td></td>
</tr>
</tbody>
</table>

*Untestable*

**Collection Requirements**

- **Sample Collected:**
  - Flocked swab
  - NO wood-shaft
  - NO cotton
  - No Calcium Alginate
  - In Viral / Universal Transport Media (VTM, UTM)

- **Sample Stored:**
  - 2-8°C or ≤ -70°C until shipped

- **Sample Shipped:**
  - **FROZEN** Cold-Packs (2-8°C)
  - Dry Ice if stored at ≤ -70°C

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  - Flocked swab
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What do we **need** for submitting a sample? & Where do we **find** all this information?
Where do find the Information

- **IDPH Lab Testing and Services**
  - [http://dph.illinois.gov/topics-services/lab-testing-services](http://dph.illinois.gov/topics-services/lab-testing-services)

- **IDPH Division of Laboratories Manual of Services**
IDPH Lab Testing and Services

http://dph.illinois.gov/topics-services/lab-testing-services
Clinical Testing

Clinical Testing
The mission of Illinois Department of Public Health (IDPH) Division of Laboratories is to support public health epidemiology programs by providing clinical and environmental laboratory data. The Division of Laboratories serves Illinois' public health system and environmental protection network with high quality diagnostic and analytical laboratory testing. As numerous strains continue to take place in all medical and scientific disciplines, division personnel located in Chicago, Springfield, and Carbondale strive to maintain advanced laboratory capabilities in order to improve public health and environmental quality throughout Illinois. The Division of Laboratories participates in numerous certification programs to ensure the accuracy of our testing data. The Illinois Department of Public Health Laboratory Services Manual is located in the Resources section of this page and provides a description of all clinical tests available at the laboratory and other useful information.

Newborn Screening
Newborn screening is a half-century old, state-mandated public health activity aimed at early identification of babies affected with certain genetic, metabolic and congenital disorders. Screening, in Illinois, began in 1965 with testing for PKU (phenylketonuria, a metabolic disorder) and now encompasses screenings prior to discharge from a hospital or birthing center for more than 40 disorders, including newborn hearing (2002) and critical congenital heart disease (2019). Newborn screening is recognized as one of the most successful public health accomplishments, and was the first population-based genetic screening program to become an integral component of public health practice. Early detection, diagnosis and treatment of these conditions can prevent death or disability and enable children to reach their full potential. Each year in Illinois, more than 700 babies are diagnosed through newborn screening either by using a few drops of blood from the newborn's heel or through special equipment to detect hearing loss or critical congenital heart disease. A list of the conditions which are tested by IDPH are included in the Resources section of this page. For additional information on Newborn Screening, please visit the IDPH Newborn Screening Program webpage at http://www.dph.illinois.gov/topics-services/life-stage-populations/newborn-screening.

Infectious Diseases
The IDPH Division of Laboratories works closely with the IDPH Division of Infectious Diseases to protect people from infectious diseases through disease surveillance, analysis, immunization, and education by performing or assuring the ability of laboratory tests. Laboratory subject matter experts are available to consult on Communicable Diseases, HIV/AIDS, Sexually Transmitted Diseases, Vaccine Preventable Diseases as well as Novel Diseases. The Illinois Department of Public Health Laboratory Services Manual is located in the Resources section of this page and provides a description of all clinical tests available at the laboratory.
Measles Virus Collection & Shipment

Mumps Virus Collection & Shipment
**Clinical Supply Requisition Form:**
- For Ordering:
  - Measles Collection kits
  - Mumps Collection kits

**Communicable Disease (CD) Laboratory Requisition Form:**
- For Requesting Measles or Mumps Testing from IDPH State Laboratories

What do I Need?
Clinical Supply Kits include:
- Nasopharyngeal Swabs (Measles)
- Buccal Swabs (Mumps)
- Viral Transport Media (VTM)
- Collection & Shipping Instructions
- CD Laboratory Requisition Form
- Freezer Cold Packs
- Insulated Shipping Container
- Return UPS Label to IDPH Lab

Indicate Measles or Mumps

Fax the completed form to:
217.558.3476
Clinical Supply Kit Includes:
A. Insulated Shipping Container
B. Viral Transport Media (VTM)
C. Nasopharyngeal Swab (Measles Kit Only)
D. Buccal Swabs (Mumps Kit Only)
E. Freezer Packs
F. CD Test Requisition Form
G. Collection, Storage, and Shipping Instructions
H. Self-Addressed Return UPS Label

If Mumps, indicate Buccal

**CD Laboratory Test Requisition**
- **Local Health Dept. Authorization Code.**
  - Typically begins with:
    - MEA for Measles
    - MUM for Mumps
- **Provider Information**
  - Good FAX number
- **Patient Information**
  - Date/Time Collected
  - Name of Person Collecting

Indicate Measles or Mumps Testing

Write Buccal swab for Mumps collection.
Why samples are **REJECTED**

**Improper Transport Media**
- Not VTM/UTM

**Improper swabs**
- Calcium Alginate
- Wooden Shafted

**Improper Temp.**
- Not enough/No Dry Ice
- No cold packs
- Used cold compresses
Examples of Approved Flocked Swabs

Flocked Swabs (Mumps)
BD 220115

Flocked Swabs (Measles)
Quidel™ 20226
Examples of **Approved** Transport Media

Sample containing 1-3 ml (3ml preferred) of:
- **Any** Universal Transport Media
- **Any** Viral Transport Media (VTM)
- **Any** Viral Culture Media (VCM)

BD 220220  
Copan 330C
If you have **ANY** Questions

**IDPH Laboratory**

- Laboratory Phone: 217.557.2589
- Testing Staff: Taylor.Smith@illinois.gov
- Supervisor: Josh Geltz:
  - Office: 217.782.9810
  - Joshua.Geltz@illinois.gov

**IDPH Communicable Diseases**

- CD Phone: 217.782.2016
- Heather Reid:
  - Heather.Reid@Illinois.gov
- Jodi Morgan:
  - Jodi.Morgan@illinois.gov
- Mallory Sinner:
  - Mallory.Sinner@Illinois.gov