Laboratory Testing for Varicella (Chickenpox) and Zoster (Shingles)

Testing for varicella

- Testing should be done for all cases of varicella because:
  - Clinical diagnosis is now less reliable. The classic maculopapular vesicular rash is seen less frequently, and rash in vaccinated patients may lack vesicles and resemble other viral rashes or even bug bites.
  - Recommendations for exclusion and post-exposure prophylaxis are diagnosis-dependent.
  - The MDH Public Health Laboratory (MDH-PHL) and most reference laboratories provide PCR testing for varicella cases. However, MDH requests specimens from lesions be submitted to MDH-PHL for PCR.

Testing for zoster

- Testing for suspected cases of zoster should only be sent to the MDH-PHL when:
  - Case is under 18 years of age.
  - Case of any age has history of vaccination for varicella-zoster virus (VZV) and no history of varicella disease.

<table>
<thead>
<tr>
<th>Method</th>
<th>Where available</th>
<th>Best specimens for diagnosis</th>
<th>Advantages and disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>VZV PCR (Recommended)</td>
<td>Most reference laboratories, MDH-PHL</td>
<td>Vesicular fluid, crusts/scabs, maculopapular scraping</td>
<td>Sensitive, specific, timely. MDH-PHL distinguishes wild-type from vaccine strain.</td>
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<tr>
<td>VZV DFA</td>
<td>Reference laboratories, virology laboratories</td>
<td>Vesicular scraping</td>
<td>Less sensitivity than PCR, but specific and timely.</td>
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<tr>
<td>Virus Culture</td>
<td>Reference laboratories, virology laboratories, MDH-PHL</td>
<td>Vesicular fluid, maculopapular scraping</td>
<td>Specific, but less sensitive and timely than PCR. Requires active (“live” virus) in viral transport medium. May detect other viruses causing rash.</td>
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<tr>
<td>Serology (VZV IgG) (Only recommended for immunity testing)</td>
<td>Most reference laboratories</td>
<td>Serum</td>
<td>Recommended for testing for immunity, but not for diagnosis of disease.</td>
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<tr>
<td>Serology (VZV IgM) (Not recommended)</td>
<td>Most reference laboratories</td>
<td>Serum</td>
<td>Many commercial assays are unreliable.</td>
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</tbody>
</table>

Collection instructions

- Collecting crusts (scabs).
  - Crusts are an ideal specimen and can be lifted off the skin and placed in between two glass slides in a sturdy cardboard container or in a break-resistant, snap-cap or screw-top tube. Ship dry.
- Polyester swab method-vesicular lesions.
  - Use a sterile needle to unroof the top of the vesicle. Vigorously swab the base of the lesion, applying enough pressure to collect epithelial cells without causing bleeding-and collect vesicular fluid. Place swab into labeled tube. Ship dry. Do not place transport media into tube.
- Glass slide method-maculopapular lesions (if no vesicles are present).
  - Rake edge of a sterile slide over the maculopapular lesion, enough so skin cells are gathered on the slide. Then use a single swab to scrub the lesion and also to gather the material on the edge of the slide. Insert the swab into labeled tube. Ship dry. Do not place transport media into tube. Note: with young children, it may be less stressful if you ask them to help.
For information and a video on recommended techniques for collecting specimens from lesions, see CDC’s Collecting Specimens for Varicella Zoster Virus (VZV) Testing (www.cdc.gov/chickenpox/lab-testing_collecting-specimens.html) website.

**Sending VZV specimens to MDH-PHL**

- Notify MDH that specimens are being sent.
  - For varicella, use the Varicella Reporting Form (www.health.state.mn.us/diseases/varicella/hcp/varicellaform.html).
  - For zoster, use the MDH Yellow Disease Report Card (www.health.state.mn.us/diseases/reportable/forms/reptcard.html).
- Complete a "Clinical Testing and Submission Form" from Forms for the Infectious Disease Laboratory (www.health.state.mn.us/diseases/idlab/forms.html).
  - Each specimen requires its own form.
  - Completely fill out the form and indicate which test is requested.
- Send specimens to:
  - MDH Public Health Laboratory
    Attn: Biological Accessioning
    601 Robert Street N.
    St. Paul, MN 55155-2531

**Media, containers, and shipping conditions**

**Types of swabs**

- Use sterile swabs that can be inserted into a protective holder/tube for transport. (Such as a throat swab.) The swab must be shipped dry.
- Do not use gel swabs, calcium alginate-tipped swabs, or those with wooden shafts.

**Containers appropriate for specimen**

- Vesicular fluid – put swab in a tube, dry.
- Crusts/scabs and maculopapular scrapings.
  - Swab tube, dry.
  - Sterile screw-capped vials.
  - Slides in sturdy cardboard container.

**Transport media**

- Specimens may be shipped dry, without transport media.

**Storage and shipping temperature**

- Dry specimens: room temperature.

**Results and turnaround**

- Results for testing done at MDH-PHL will be sent via fax to the submitting laboratory.
- Turnaround time for PCR results is typically 2 business days after receipt of specimen(s).

**Additional information**

Visit Varicella Information for Health Professionals (www.health.state.mn.us/diseases/varicella/hcp/index.html).

Vaccine Preventable Disease Section
PO Box 64975, St. Paul, MN 55164-0975
651-201-5414 | www.health.state.mn.us/immunize

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