

January 31, 2017

***Important Reminder Regarding Diagnosis of Vaccine-Preventable Diseases***

Dear Colleague,

Rates of vaccine-preventable diseases (VPD) are very low in the United States. Unfortunately, there has been a resurgence of some of these diseases, particularly pertussis, varicella, measles, and mumps. Continued vaccination efforts are important to help prevent infection. Correct identification of infections is also important in order to control the spread of these pathogens.

The decline in the incidence of VPD has caused all of us healthcare providers to have less clinical experience recognizing the clinical signs and symptoms of these diseases. It can be very challenging to differentiate these rare and more serious illnesses from other viral syndromes or noninfectious conditions. Also, in breakthrough cases occurring in vaccinated children, the presentation can be very atypical and difficult to diagnose clinically.

For these reasons, **LABORATORY TESTING IS A VERY IMPORTANT PART OF CONFIRMING THE DIAGNOSIS OF VACCINE PREVENTABLE DISEASES**. A table of recommended testing for measles, mumps, pertussis, and varicella has been included at the end of this letter for your reference. To avoid false-positive results, **it is important to only use testing in the appropriate clinical situation to confirm a diagnosis, not to rule out a diagnosis**. For excellent images and videos of these illnesses, go to <http://www.immunize.org/vaccines/> and click on the respective disease of interest. Likewise, go to <https://www.cdc.gov/az/>, select the disease of interest, then select the "Healthcare Providers" section to find detailed information regarding clinical presentation, diagnosis, photos, and other information.

Further details regarding the diagnosis, evaluation, and control of VPD can also be found at [www.michigan.gov/immunize](http://www.michigan.gov/immunize), scroll to and click on the "Health Care Professional/Providers" link, scroll to the "Surveillance of Vaccine Preventable Diseases" section, and finally click on the "Vaccine-Preventable Disease Investigation Guidelines." Alternatively, the guidelines can be directly accessed from the following link: [http://www.michigan.gov/mdhhs/0,5885,7-339-73971\\_4911\\_4914\\_6385-141609--,00.html](http://www.michigan.gov/mdhhs/0,5885,7-339-73971_4911_4914_6385-141609--,00.html).

The recommended laboratory testing can be provided by the Michigan Bureau of Laboratories and order forms, specimen collection details, and further information can be located at <http://michigan.gov/mdhhs/lab>. Testing is also available through most local laboratories and the medical technologists at your lab can answer questions you may have about ordering and sample collection that is specific to your lab system.

As always, we at the health department are here to assist you and your patients in any way that we can. Please feel free to contact the branch office in your county or me directly if there is ever anything we can do or if you have any questions.

Sincerely,



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**The following tests are advised by the Centers for Disease Control and Prevention (CDC) to confirm diagnoses of Measles, Mumps, Pertussis, and Varicella in the appropriate clinical situations:**

<b>Disease</b>	<b>Test</b>	<b>Specimen</b>	<b>Timing</b>	<b>Notes</b>
<b>Measles</b>	Measles IgM*	Serum	If IgM negative in serum collected less than 72 hours after rash onset, repeat serum collection and testing after 72 hours and before 30 days after onset of rash	Paired IgG testing of serum <i>can</i> also be done (**to run a paired IgG: acute-phase sample should be collected as soon possible after rash development and held in refrigeration at lab; redraw a convalescent-phase serum 10 to 30 days later. Test IgG in both samples using same testing method once convalescent serum available.)  Significant increase in IgG is consistent with acute infection
	<b>AND</b> Measles RNA by PCR	Dacron/synthetic swab ( <b>do not use cotton or calcium</b> ) of throat (alternatives: nasopharynx swab or nasal wash), placed in viral transport media  <i>AND (if available)</i> Urine sample	Collect as soon as possible after rash development; do not collect after 10 days from onset of rash	
<b>Mumps</b>	Mumps RT-PCR*	Swab of buccal mucosa near parotid salivary gland duct (opposite upper molars) or duct of other affected salivary gland (i.e. near swelling). Massage affected area (e.g. exterior cheek) for 30 seconds before swabbing.  For specimen collection guidance: <a href="https://www.cdc.gov/mumps/lab/detection-mumps.html">https://www.cdc.gov/mumps/lab/detection-mumps.html</a>	Perform buccal swab ASAP after parotitis onset. Collect for up to 9 days after parotitis onset. May be negative if collected longer than 9 days after parotitis onset.	IgM elevation in previously vaccinated persons may be absent, delayed, or transient.  Paired IgG testing of serum <i>can</i> also be done (see ** above; collect acute-phase as soon after symptoms as possible). Fourfold rise in IgG titer consistent with acute infection. <b>However:</b> IgG will rise very quickly in those previously vaccinated and acute-phase sample may already contain near- or at-peak IgG levels, masking a detectable rise in convalescent-phase serum.
	<b>AND</b> Mumps IgM	Serum	Obtain serum within 5 days of symptom onset; if negative, consider repeating test 1 to 3 weeks after onset of illness (especially in previously vaccinated individuals)	
<b>Pertussis</b>	Pertussis PCR	Posterior nasopharyngeal swab ( <b>not throat</b> ) or aspirate; use Dacron/synthetic swab ( <b>do not use cotton or calcium</b> ).  For specimen collection guidance: <a href="https://www.cdc.gov/pertussis/clinical/diagnostic-testing/specimen-collection.html">https://www.cdc.gov/pertussis/clinical/diagnostic-testing/specimen-collection.html</a>	Within first 3 weeks of cough onset.	Serology testing is NOT RECOMMENDED; commercially, there are several different serologic tests used in the United States, all with unproven or unknown clinical accuracy and none have been cleared by the FDA for diagnostic use
<b>Varicella</b>	Varicella PCR	Vesicular fluid by swabbing base of freshly opened vesicle; use Dacron/synthetic swab ( <b>do not use cotton or calcium</b> ). can also test scabs, or lesion crusts.  For specimen collection guidance: <i>VARICELLA VIDEO</i> <a href="https://www.cdc.gov/chickenpox/lab-testing/collecting-specimens.html">https://www.cdc.gov/chickenpox/lab-testing/collecting-specimens.html</a>	When vesicles or scabs/crust present	Commercial IgM assays are often not reliable and false negative results are common.  Paired IgG testing of serum <i>can</i> also be done (see ** above).  Fourfold rise in IgG titer consistent with acute infection. However, it is NOT as sensitive as PCR testing.

\*preferred/most important test