Recommended diagnostic lab tests and related specimens for confirmation of selected vaccine-preventable diseases (VPD)

Many vaccine-preventable diseases (VPDs) have become rare due to strong vaccination programs, meaning that recognizing a VPD case may be more challenging. However, early recognition is necessary to initiate time-sensitive public health mitigation measures. When uncommon diseases are suspected (e.g., measles or mumps), it is critical to promptly collect appropriate specimens **at the time of the patient's visit**. Notify the local health department of residence within 24 hours to report the case and coordinate specimen submission and approval.

The MDHHS Bureau of Laboratories (BOL) offers a wide range of VPD diagnostic testing to support public health response and follow-up. Contact the MDHHS Division of Immunization to discuss or arrange testing at 517-335-8159. If unable to reach someone, contact MDHHS Division of Emerging Infectious Diseases at 517-335-8165 or BOL, Division of Infectious Disease at 517-335-8067. More information on BOL's diagnostic testing is available at MDHHS A-Z Testing. Please contact mdhhslab@michigan.gov for questions regarding shipping specimens to the BOL or to obtain shipping labels. Please note that shipping specimens for Saturday delivery requires a special shipping label, otherwise specimens will be delivered the next business day.

Note: VPD laboratory services indicated in the table below are for diagnostic and public health-related activities. MDHHS BOL also provides immune status testing on a fee-for-service basis for health care workers and medical, nursing or allied health students; call 517-241-5583 for more information. Immune status testing fees may be waived if testing if due to exposure to a confirmed case.

*NP=nasopharyngeal, OP=Oropharyngeal, CSF, etc.

Disease	Epidemiology in the US	Recommended Test(s)	Specimen(s)	Timing for specimen collection	Testing logistics & considerations	Comments
Diphtheria	No respiratory diphtheria cases caused by toxin-producing C. diphtheriae have been reported since 1997	Culture and PCR	Throat, NP, or Diphtheritic membrane swabs.	As soon as possible	Specimens should be sent to MDHHS, for forwarding to CDC. CDC should be consulted prior to sending specimens for forwarding.	Testing done via CDC.

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***Haemophilus influenzae* (Hib) disease**	From 2019 through 2023, incidence is highest among young children and older adults, and for nontypeable bacteria.	Culture	Isolates from normally sterile sites	At time of symptom onset to until 24-48 hours after antimicrobial therapy	Send isolates from sterile sites to MDHHS BOL for serotyping, specifically those isolates from individuals <15 years of age.	Vaccination prevents only serotype B *Haemophilus influenzae* infections.
Hepatitis A (HAV)	From 2016 – 2024 there has been 44,937 cases reported from 37 states associated with person – person spread	Serology (HAV IgM)	Serum	As soon as possible after symptom onset	HAV IgM will be undetectable > 6 months after onset. Forward positive samples to MDHHS BOL for sequencing, see line below. Test ALTs at the time of serologic specimen collection.	MDHHS BOL performs this test to confirm results of testing performed at another lab or as part of an outbreak investigation. Obtain prior approval from MDHHS.
		NAAT, PCR, or Genotyping	Serum	As soon as possible after symptom onset	MDHHS BOL does not offer official reports to submitters. Genotyping is performed to determine viral genotype and strain identification for epidemiologic purposes.	Obtain prior approval from MDHHS.

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Hepatitis B (HBV)	0.7 reported cases per 100,000 population in 2023	Serology (HBsAg or IgM Anti-HBc)	Serum	As soon as possible after symptom onset	MDHHS BOL performs HBsAg testing weekly; IgM Anti-HBc available via commercial labs.	Case's pregnancy status and exposure to a known HBV infected individual must be noted on MDHHS BOL form; Test ALTs at the time of serologic specimen collection.
		NAAT, PCR, or Genotyping	Serum	As soon as possible after symptom onset	MDHHS BOL does not perform this test; available via most commercial labs.	Viral presence is an indicator of acute HBV infection.
Influenza	9.3 to 45 million people experience symptomatic illness annually	PCR or Viral Culture	NP, OP, or throat swabs, nasal aspirates, bronchoalveolar lavage, bronchial wash, sputum, lung tissue and viral isolates	Adults up to 5 days after onset, Children and infants up to 10 days after onset	MDHHS BOL performs testing weekly during Influenza Season (September – May), and as needed during off-season months.	Testing is performed for surveillance purposes only; confirmatory influenza testing is encouraged for cases of public health interest (ICU hospitalized patients, severely ill pregnant women, patients with unusual or severe presentations, death) and for congregate setting outbreak/cluster investigations.

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Measles	For the full year of 2025, a total of 2,285 confirmed measles cases were reported in the United States.	Serology (Measles IgM)	Serum	3-30 days after rash onset	False positive measles IgM results have been observed in persons with rash-illness caused by parvovirus B19, rubella, roseola, or dengue; IgM antibodies should be confirmed by performing PCR testing.	Obtain prior approval from MDHHS.
		PCR/Viral Isolation	NP swab	Up to 7 days after rash onset, ideally within 3 days of onset	Refer to BOL Measles Specimen Collection Instructions.	Obtain prior approval from MDHHS.
		PCR/Viral Isolation	Urine	Within first week after rash onset, maximum 9 days after rash onset	Collection of urine may enhance the likelihood of successful measles viral RNA or viral isolation and may be advisable in some situations such as when more than 5 days have elapsed since rash onset.	Throat or NP swabs are preferred over urine specimens. Obtain prior approval from MDHHS. Urine specimens will be forwarded to CDC or Wisconsin State Laboratory of Hygiene for testing.

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Meningococcal Disease	In 2024, 503 confirmed and probable cases were reported based on preliminary data. This is the largest number of U.S. meningococcal disease cases reported **since** 2013.	PCR	CSF and blood	Prior to the start of antibiotic therapy	MALDI-TOF used for identification at MDHHS BOL.	
		Culture Isolate	CSF and blood isolates	Prior to the start of antibiotic therapy	*N. meningitidis* cultures will be serogrouped only on isolates recovered from blood or cerebral spinal fluid. Specimens will be forwarded to the Wisconsin State Laboratory of Hygiene for serotyping.	Vaccination only protects against serogroups A, B, C, W, and Y.
Mpox/Orthopox	During the 2022 Clade 2 IIb outbreak over 30,000 cases were reported	PCR	Dry swab of lesion	While rash lesions are present	No more than 3 sites/swabs per patient will be tested.	Refrigerated specimens can be stored for up to 7 days and frozen specimens may be stored for up to a month.

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Mumps	Reported U.S. mumps cases and outbreaks increased since 2006.	Serology (Mumps IgM)	Serum	3-30 days after parotitis onset	Separate serum from blood by centrifugation and pour into PLASTIC serum tube and refrigerate. Freeze serum if it cannot be shipped and received in MDHHS lab within 3 days.	Obtain prior approval from MDHHS
		PCR	Buccal / parotoid duct swab	0-9 days after parotitis onset	Use only Dacron-tipped swabs with an aluminum or a plastic shaft; place in vial of viral transport medium.	Obtain prior approval from MDHHS.
Novel Coronavirus SARS-CoV-2 (COVID-19)	In the 2025-26 respiratory season, CDC estimates 640,000 to 1.8 million COVID-9 outpatient visits and 11,000 to 32,000 COVID-19 deaths.	PCR or antigen	NP, nasal, midturbinate, or OP swabs, nasal aspirates	Testing Instructions	Swabs should be shipped in viral transport medium or PBS for PCR testing.	Swabs with calcium alginate or cotton tips and wooden shafts are unacceptable.

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Pertussis	Preliminary data show that more than six times as many cases were reported in 2024 compared to 2023.	Culture or PCR	NP swab	Generally first 1-2 weeks of cough up to 21 days after onset, or until 5th day of antibiotic treatment	Dacron swabs (on aluminum or plastic shafts) are recommended.	Pertussis diagnostic testing is not available at MDHHS, but arrangements can be made for testing at CDC; commercial labs also offer testing.

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Polio	Polio has been eliminated in the US, however, in 2022 there was a case of polio in an unvaccinated individual reported from a New York resident	Serology	Serum	Acute phase specimen: collect as soon after onset of paralysis as possible Convalescent phase specimen: collect at least 3 weeks after acute specimen.	Separate serum from blood by centrifugation and pour into PLASTIC serum tube and refrigerate. Freeze serum if it cannot be shipped and received by MDHHS BOL within 3 days.	These tests are by special request and arrangement only; advance notification and arrangement necessary - contact MDHHS.
		PCR	2 or more stool specimens 2 or more throat swabs	First specimens should be obtained as soon as possible, but ideally within the first 15 days after onset of paralytic disease; Second specimen should be obtained 24 hours after the first specimen.	Stool specimens collected >2 months after the onset of paralytic manifestations are unlikely to yield poliovirus. Throat swabs are less often positive than stool samples. Virus is rarely detected in CSF.	These tests are by special request, performed either at MDHHS or CDC; advance arrangement required - contact MDHHS.

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Respiratory Syncytial Virus (RSV)	During the 2024-2025 respiratory disease season it is estimated that 190,00-370,000 hospitalizations were due to RSV	PCR	NP swab	While symptoms are present	Specimens must be tested within 4 hours if stored at room temp, within 3 days if stored refrigerated, or within 30 days if stored frozen.	Obtain prior approval from MDHHS. Swabs with calcium alginate or cotton tips and wooden shafts are unacceptable.

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Rubella	In 2004, endemic rubella was declared eliminated in the United States, with fewer than 10 cases reported annually and less than one Congenital Rubella Syndrome case per year	Serology	Serum	Serum for IgM 3-30 days after rash onset If serum collected <5 days after rash onset is negative, collect a new specimen 5+ days after rash onset.	Separate serum from blood by centrifugation and pour into PLASTIC serum tube and refrigerate. Freeze serum if it cannot be shipped and received to MDHHS BOL within 3 days.	Obtain prior approval from MDHHS.
		Viral Culture/ PCR	Throat swab 50-100 ml of urine	Collect during acute illness, ideally within 4 days of rash onset Collect within 4 days of rash onset with first morning void	Swab should be placed and viral transport media and refrigerated or frozen if not able to ship within 48 hours. Centrifuge if possible, ship resuspended sediment in viral culture or cell culture medium and freeze. If unable to centrifuge refrigerate.	Obtain prior approval from MDHHS.

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Varicella (Chickenpox)	Fewer than 150,000 cases, 1,400 hospitalizations, and 30 deaths each year	PCR	Swabs of fluid from unroofed vesicles and/or crusts	As long as vesicles are present	Use synthetic swabs (e.g., polyester) and place in a sterile, empty tube (do not place transport medium in tube); Crusts or scabs can be collected with a tweezer; placed into a sterile dry container.	Varicella diagnostic testing is not available at MDHHS, but arrangements can be made for testing at CDC; commercial labs also offer varicella-zoster virus testing.
		DFA	Scraping or swab from the base of open vesicles	As long as vesicles are present	DFA tests are an alternate method of confirmation; these are not as sensitive as PCR.	Varicella diagnostic testing is not available at MDHHS, but arrangements can be made for testing at CDC; commercial labs also offer varicella-zoster virus testing.