

Vaccine-preventable disease testing guide

This document is intended to help medical providers with vaccine preventable disease diagnostic testing and evidence of immunity to limited vaccine-preventable diseases (VPDs). National disease epidemiology is also included to help assess likelihood of disease.

[Click here](#) for more information from the CDC on vaccine immunization schedules.

[Click here](#) to access CDC's *Epidemiology and Prevention of Vaccine-Preventable Diseases* (also known as the "Pink Book").

Disease	Epidemiology in the U.S.	Testing for infection	Testing for immunity
Chickenpox (Varicella)	Up to 150,000 cases per year	Swab of lesion(s) or crust submission for PCR	Serologic test for varicella IgG antibodies can assess immunity
Diphtheria and diphtheria-like illness* *Caused by coryneforms other than <i>Corynebacterium diphtheriae</i>	Fewer than one case of diphtheria per year. Toxigenic disease caused by other coryneforms is clinically indistinguishable from classic disease, but cases are not nationally reportable.	Nasopharyngeal and oropharyngeal swabs for culture and PCR (suspected respiratory and cutaneous cases). Additional wound or skin swab for culture and PCR if cutaneous infection suspected.	N/A—adults should receive Td/Tdap booster every ten years
<i>Haemophilus influenzae</i> disease	1.78 cases per 100,000 population in 2022	Culture or PCR from a normally sterile site (blood, CSF, etc.). Isolates should be forwarded to UPHL for serotyping.	N/A—vaccination can prevent type B
Hepatitis A	Varies due to outbreaks. 2.9 cases per 100,000 population in 2023	Hepatitis A IgM serology and liver function tests	Hepatitis A IgG serology can assess immunity—total antibody tests do not differentiate between IgM and IgG antibodies and should not be used for immunity testing

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Hepatitis B	<p>Acute: 0.4 per 100,000 population in 2023</p> <p>Chronic: 2.2 cases per 100,000 population in 2023</p>	Serologic testing (HBsAg, IgM anti-HBc, etc.) and liver function tests	Hepatitis B surface antibody (anti-HBs) serology can assess immunity
Measles	Varies due to outbreaks. 0.04 cases per 100,000 population in 2022	Measles IgM serology AND nasopharyngeal swab for PCR (if high risk)	Measles IgG serology can assess immunity
Meningococcal disease	0.6 cases per 100,000 population in 2021	Culture or PCR from a normally sterile site (blood, CSF, etc.). Isolates should be forwarded to UPHL for serotyping.	N/A—vaccination can prevent types A, C, W, Y, and B
Mumps	Varies due to outbreaks. Between 200-6,000 cases, per year.	Buccal swab for PCR, IgM serology	Serologic testing not recommended to assess immunity
Pertussis	Varies due to outbreaks, but generally increasing since the 1980s. Most recent national outbreak was in 2012 with 48,277 reported cases.	<p>0–2 weeks post-cough onset: Nasopharyngeal culture (gold standard)</p> <p>0–4 weeks post-cough onset: Nasopharyngeal swab for PCR (highly sensitive)</p> <p>2–12 weeks post-cough onset: IgA and IgG by ELISA with Reflex to Immunoblot</p>	<p>Serologic test for pertussis IgA/IgG antibodies can assess immunity</p> <p>Pertussis IgM should NOT be used to assess immunity due to false positives</p>

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<p>Acute Flaccid Paralysis (AFP): Poliomyelitis or Acute Flaccid Myelitis (AFM)*</p> <p>*AFM is not vaccine-preventable</p>	<p>Endemic wild-type polio is eliminated in the U.S. Vaccine-derived polioviruses (VDPVs) may circulate in areas with low vaccination rates and persons recently vaccinated abroad with OPV.</p>	<p>All specimens collected ASAP, unless otherwise specified:</p> <ul style="list-style-type: none"> • 2 stool samples, collected at least 24 hours apart (min. 1 gram, freeze) • CSF (min 1 mL, freeze) • Nasopharyngeal swab (min. 0.5 mL viral transport medium, freeze) • Oropharyngeal swab (min. 0.5 mL viral transport medium, freeze) <p>All specimens must be sent to UPHL for testing at CDC</p>	<p>Serologic testing not recommended to assess immunity</p>
<p style="text-align: center;">Rubella</p>	<p>Fewer than 10 imported cases per year, all from travel outside the U.S. Endemic rubella is eliminated in the U.S.</p>	<p>For unvaccinated patients with febrile rash or other rubella symptoms, <i>especially</i> with recent international travel or exposure to a person with confirmed rubella:</p> <p>Rubella IgG and IgM serologies AND nasopharyngeal swab, oropharyngeal swab, or urine specimen(s) for PCR</p>	<p>Serologic test for rubella IgG antibodies can assess immunity</p> <p>Rubella IgM should NOT be used to assess immunity due to false positives</p>
<p><i>Streptococcus pneumoniae</i>, invasive disease</p>	<p>Varies largely by age. Incidence in people <5yo is 8/100k and in people >65yo is >24/100k</p>	<p>Culture or PCR from a normally sterile site (e.g. blood, CSF, etc.)</p>	<p>N/A—vaccination prevents 13 to 23 emm types</p>
<p style="text-align: center;">Tetanus</p>	<p>About 30 cases per year</p>	<p>Diagnosis is clinical and based on symptomology</p>	<p>N/A—adults should receive Td/Tdap booster every 10 years</p>

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Some tests can be performed at, or referred through, the Utah Public Health Laboratory. Refer to their [website](#) for the full menu of [tests and specimen collection](#) information.

When performing serologic testing, refer carefully to the type of antibody being tested and reported, as well as the laboratory guidance on how to interpret quantitative or qualitative results. Immunoglobulin G (IgG) is the antibody type that refers to future protection against disease challenge. As with all medical recommendations, neither vaccination nor immunity testing can predict an outcome with 100% confidence but is based on the best evidence available.

National estimates retrieved from the Centers for Disease Control and Prevention (CDC).

For more information on diseases and disease trends, visit the Utah DHHS Office of Communicable Diseases [website](#) or call Utah DHHS Office of Communicable Diseases at 801-538-6191.