SUMMER/2025

Laboratory Services

IN THIS ISSUE

NATIONWIDE CHILDREN'S®
When your child needs a hospital, everything matters.

Tick and Mosquito-Borne Diseases in Children

(Enlarged to show detail)

A. Lone star tick, female
B. American dog tick, female
C. Blacklegged tick, female
D. Blacklegged tick, nymph

Ohio's most common tick types.

Lyme disease and other tick- and mosquito-borne illnesses continue to increase and cause significant morbidity in Ohio. This is particularly true for children, who spend a lot to time outdoors during the spring and summer. Please consider Lyme disease and other arthropod borne diseases in the differential diagnosis for patients that present with appropriate symptoms.

Some of the primary concerns in the Midwest include Lyme disease (Borrelia burgdorferi), West Nile virus, and La Crosse virus. Other less common infections include those with Babesia, Anaplasma, Ehrlichia and Rocky Mountain Spotted Fever (Rickettsia rickettsii).

Lyme Disease

Lyme disease is caused by a spirochete-shaped bacterium called Borrelia burgdorferi. The bacteria is commonly found in mice and is transmitted to humans by the bite of an infected blacklegged tick, Ixodes scapularis, also known as the deer tick. Incidence of Lyme disease has increased steadily, with more than 468 reported cases in Ohio in 2019. The onset of most Lyme disease cases is in late spring and summer.

Early Signs and Symptoms

Signs and symptoms of Lyme disease may begin to manifest 3 to 30 days after a tick bite. In addition to flu-like symptoms of fever, chills, headache, fatigue, swollen lymph nodes and muscle and joint aches, the classic erythema migrans (EM) rash may appear.

The rash occurs in approximately 70-80 percent of infections. It begins at the site of the tick bite an average of 7 days after the bite but may appear 3 to 30 days later. The rash expands gradually over a period of days, reaching up 12 inches across. Sometimes the inner ring begins to clear, resulting in the target or "bullseye" appearance. The rash may feel warm to the touch, but it is rarely itchy or painful.

Later Signs and Symptoms

Additional signs and symptoms may not appear until days to months after the tick bite:

- Severe headaches and neck stiffness
- Additional EM rashes on other areas of the body
- Arthritis with severe joint pain and swelling, particularly the knees and other large joints
- Facial palsy (loss of muscle tone or droop on one or both sides of the face)
- Intermittent pain in tendons, muscles, joints and bones
- Heart palpitations or an irregular heartbeat
- Episodes of dizziness or shortness of breath
- Shooting pains, numbness or tingling in the hands or feet
- Problems with short-term memory

Testing

Lyme serology should be conducted if the epidemiology as well as signs and symptoms are consistent with possible Lyme disease. The test screens for antibodies to B. burgdorferi with two separate enzyme-linked immunoassays (EIA), one for IgG antibody and another for IgM antibody. It is intended for use as an aid in diagnosis of Lyme disease.

Testing is not intended or indicated as a screening procedure for the general population, and it should be done only when exposure history or symptoms suggest Lyme disease.

Negative Results

Negative results do not rule out a diagnosis of Lyme disease. Patients in early stages of infection may not produce detectable levels of antibody. Antibiotic therapy in early stages may prevent antibody production from reaching diagnostic levels. Patients with clinical history or symptoms or both suggestive of Lyme disease but with negative results should be retested in 4-6 weeks. A single positive result only indicates prior infection.

Positive Results

Positive results must be interpreted with caution. Clinical symptoms, epidemiological information and other laboratory test results must all be considered. Following CDC recommendations, Western Blot testing is performed to confirm all positive EIA results.

Confirmation by Western Blot

This method is used to confirm positive total antibody screens. The Western Blot method identifies the proteins of the bacteria to which the antibody response is directed, both IgM and IgG. This test should only be used to confirm positives, and it should not be ordered as a stand-alone diagnostic test.

La Crosse and West Nile, Arboviruses

The arboviruses are a of viruses transmitted by arthropod vectors, particularly mosquitoes and ticks. The most commonly detected arb group oviruses in the United States belong to the following families: Alphavirus (Eastern equine encephalitis virus, Western equine encephalitis virus), Flavivirus (St. Louis encephalitis virus, West Nile Virus) and Bunyavirus (La Crosse encephalitis virus). In the Midwest, most cases of arboviral infection occur from June through October, when arthropods are most active.

Symptoms

The severity of symptoms of La Crosse virus and West Nile virus infection in humans ranges from asymptomatic to severe and requiring hospitalization. While both occur in people of all ages, La Crosse is more common than West Nile in children in the Midwest. Symptoms of La Crosse generally appear 5-15 days after infection and include fever, headache, nausea, vomiting, fatigue and lethargy. In severe cases, neurological symptoms, including seizures, hemiparesis and cognitive abnormalities may occur.

Most people (70-80 percent) who become infected with West Nile virus do not develop any symptoms. About 1 in 5 people who are infected will develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea or rash. Most people with this type of West Nile virus disease recover completely, but fatigue and weakness can last for weeks or months. Less than 1 percent of people who are infected will develop a serious neurologic illness such as encephalitis or meningitis with symptoms including headache, high fever, neck stiffness, disorientation, coma, tremors, seizures or paralysis.

People with certain medical conditions, such as cancer, diabetes, hypertension or kidney disease, as well as people who have received organ transplants, are also at greater risk for serious illness from arboviruses. Recovery from severe disease may take several weeks or months, and some of the neurologic effects may be permanent.

Testing

La Crosse Virus or West Nile Virus Antibodies, IgG and IgM
These tests are intended to be used as a means of detecting La Crosse virus- or West Nile virus-specific IgG and IgM in serum or spinal fluid specimens in which there is a clinical suspicion of infection. Because other members of the Flaviviridae family, such as St. Louis encephalitis virus, show extensive cross-reactivity with West Nile virus, serologic testing specific for all of these viruses should be considered.

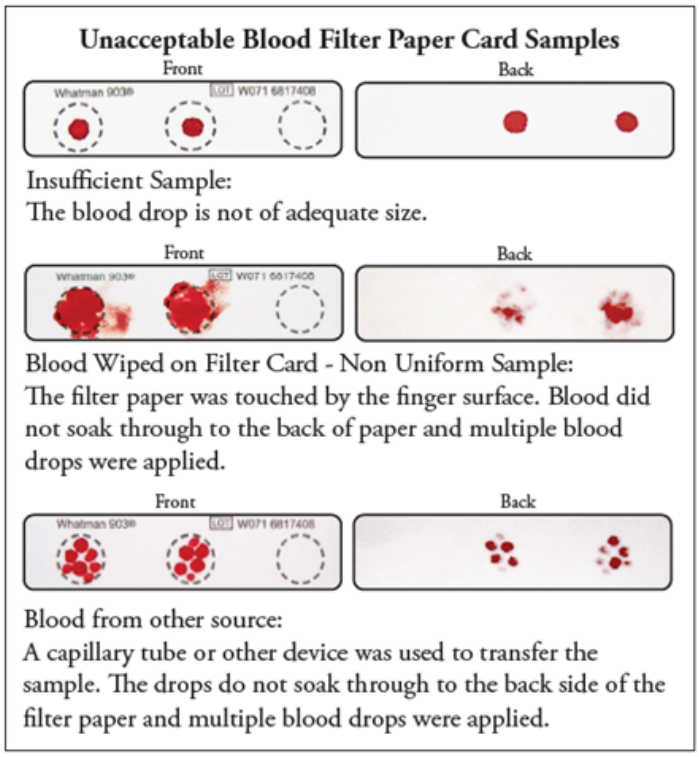
For more information regarding test availability or specimen requirements, please call (800) 934-6575 or visit **NationwideChildrens.org/Lab.**

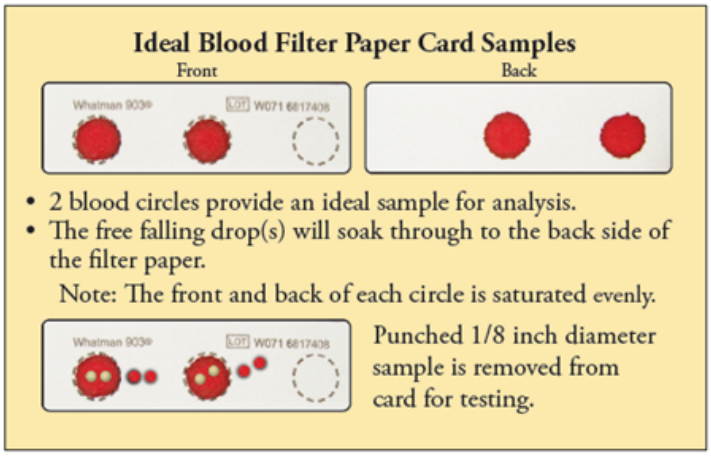
Lead and Hemoglobin Screening by Finger Stick

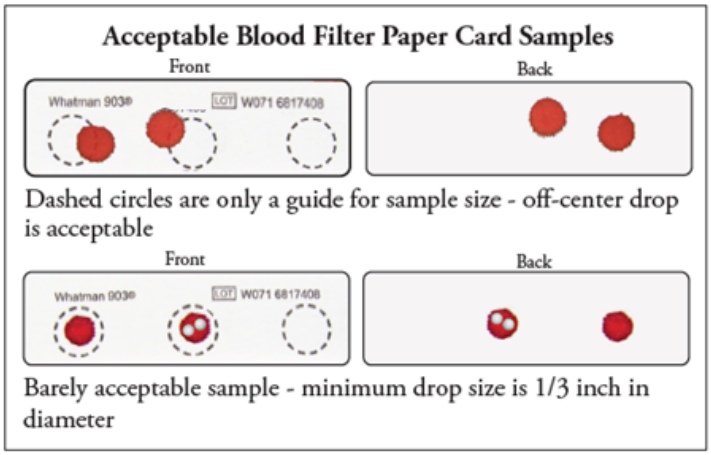
With provider offices currently scheduling school physicals for the 2025 – 2026 school year, Nationwide Children's Laboratory Services would like to help you by providing a blood lead and hemoglobin* screening test using a filter card. Both tests ordered together only requires three circles filled with blood on the filter card. Collecting these tests on the same card reduces patient distress, provides a quick collection, gains a higher patient compliance, and is very easy to transport.

Collection using the Lead and Hemoglobin Filter Card has these benefits:

- Improves patient compliance
- Simple finger stick collection method
- Specimens can be mailed to our laboratory
- Quick turn-around time is usually 2 to 3 days upon receipt in the lab







Required Information for Lead Level Testing

As a reminder, the Ohio Revised Code 3701-30-05 states that the Ohio Department (ODH) of Health requires the following demographic information to be provided to ODH on any child who is tested for lead levels and resides in the state of Ohio:

- Child's full legal name
- Child's street and mailing address, including the city, state, and zip code
- Child's date of birth, sex, race and ethnicity
- Child's parent's or guardian's name
- Telephone number, with area code, where the parent or guardian can be reached
- Physician's or healthcare provider's first name, last name, address, telephone number, and national provider identifier, if applicable.

If demographics are missing, Laboratory Services will attempt to reach out to you. If all information cannot be collect in a timely manner testing will not be performed. We will accept patient demographic sheets providing all information required is complete.

Laboratory Services Important Test Announcements

PHENYLALANINE/TYROSINE, PLASMA AND PHENYLALANINE/TYROSINE, DRIED BLOOD SPOT

Effective 5/27/2025, we began offering Phenylalanine/Tyrosine, Plasma **(PATYP)** and Phenylalanine/Tyrosine, Dried Blood Spot **(PATYDB)**. These tests (**PATYP** and **PATYDB**) will replace the current Phenylalanine/Tyrosine(**PATY**) assay. Updated reference ranges are shown below. Please note **the reporting units for Phenylalanine are changing from mg/dL to µmol/L**. Due to the change in units, the alert range for Phenylalanine in the Phenylalanine/Tyrosine, Dried Blood Spot (**PATYDB**) will also be updated from ≥20 mg/dL to >1200 µmol/L.

MAPLE SYRUP URINE DISEASE (MSUD) MONITOR, DRIED BLOOD SPOT

Effective 5/27/25, we began offering Maple Syrup Urine

Disease (MSUD) Monitor, Dried Blood Spot **(MSUDDB),** which will include Alloisoleucine, Isoleucine, Leucine, and Valine.

INFLUENZA A H5, AVIAN BY PCR

Effective 6/30/2025, we began offering Infuenza AH5, Avian testing **(H5N1).** This assay is designed to detect the Influenza A H5 variant in nasopharyngeal or conjunctival samples for screening purposes. Standard nasopharyngeal or conjunctival collection samples transported in Viral Transport Media are required.

UPDATES TO RETICULOCYTE COUNT

Effective July 8, 2025, the Reticulocyte **(RETIC)** normal range has been updated. In addition to the updated Reticulocyte normal range, all **RETIC** orders will be reported with an Absolute Retic and Immature Reticulocyte Fraction value. There is no change to ordering or collection related to this test.

If you have additional questions about **PATYP, PATYDB, OSUDDB, H5N1 or RETIC,** please refer to the Laboratory Test Directory or call Client Services at 614-722-5477.

Spotlight on Pathology:

Dr. Jahnavi Aluri earned her Ph.D. in Applied Biology from the National Institute of Immunohematology (NIIH), India, where she had the opportunity to learn about primary immunodeficiency disorders. Her passion for immunology began during her undergraduate studies and deepened as she pursued research at NIIH. Following her Ph.D., she continued her academic journey with postdoctoral studies at Washington University in St. Louis, known for its exceptional immunology research environment. There, she explored novel mechanisms of immune dysregulation and contributed to understanding the role of somatic mosaicism in primary immunodeficiency disorders.

Dr. Aluri is presently working in the Diagnostic Immunology Laboratory, focusing on advancing diagnostic approaches and translational research in immunology. Beyond her professional endeavors, she enjoys listening to music, savoring meals prepared by her husband, and aspires to master the art of crocheting.

Warm Weather Reminder

Now that summer has arrived, it is important that samples placed in a lockbox prior to transport to the laboratory be maintained at the appropriate temperature. *If refrigerated samples are stored in the lockbox, then a refrigerated cold pack should be placed in the lockbox to maintain the samples at the refrigerated temperature. The cold pack should not be frozen, since you do not want refrigerated whole blood samples to freeze.*

Temperature Documentation for Sample Transport

To ensure the integrity of lab specimens transported by the courier to our lab, it is important that one of the storage temperature boxes on the biohazard specimen bag is marked appropriately according to specimen guidelines. Please refer to our Laboratory Test Directory for specimen storage requirements.

Leaking Urine Containers

We have recently seen an increase in urine samples needing to be recollected due to leaks that have occurred during transport. Please be mindful when securing lids on urine canisters and ensure they are threaded and tightened appropriately.

NATIONWIDE CHILDREN'S®
When your child needs a hospital, everything matters.

Nationwide Children's Hospital
700 Children's Drive
Columbus, OH 43205

How can Nationwide Children's Laboratory Services help your practice?

If you would like to become a client or learn more information about Nationwide Children's Laboratory Services, contact us at (800) 934-6575 or visit our website at **NationwideChildrens.org/Lab.** Would you like to receive the Nationwide Children's Laboratory Services Newsletter electronically? Please e-mail us at **LaboratoryServices@NationwideChildrens.org** and let us know!

Lab Account Representatives are available via email to assist with any questions or concerns.

Stacy Burrier	**Stacy.Burrier@nationwidechildrens.org**
Larry Thompson	**Larry.Thompson@nationwidechildrens.org**
Jessica Walters	**Jessica.Walters2@nationwidechildrens.org**

NATIONWIDE CHILDREN'S®
When your child needs a hospital, everything matters.

635295-183219