

Rheumatology Laboratory and X-Ray Tests

Children who come to Gillette for rheumatology care may need laboratory and X-ray tests done for one of the following reasons:

- To monitor how “active” or severe your child’s disease is, which helps us decide the best way to treat the disease.
- To watch for and avoid side effects from medicines before they become noticeable or cause a problem.

Here are some of the most common diagnostic and monitoring tests. The numbers listed as “normal values” are only guidelines; other laboratories might do the tests differently and use different numbers to define what is “normal.”

Diagnostic Tests

ANA Titer (Antinuclear Antibodies)

The ANA titer is a blood test that measures whether the immune system is making proteins (antibodies) that are directed against the body’s own cells nuclei. An elevated titer (1:40 or more) may occur for a short time after an infection, or may persist and be a sign of juvenile rheumatoid arthritis (JRA), systemic lupus erythematosus, or other related diseases. If these problems are suspected, then an ANA titer will be checked. Children with JRA who have a positive ANA test are at higher risk for an eye disease called iridocyclitis, and will be sent for frequent eye exams to detect and treat this problem.

Normal result = Reported as “less than 1:40 (one to forty)” and means that your child isn’t making ANA proteins.

ASO Titer, DNase B Titer

The ASO and DNase B titers are blood tests that check whether the immune system is making proteins (antibodies) that are directed against parts of the streptococcus (strep) bacterium. If your child has been infected with strep recently, then the ASO or DNase B titer (or both) will begin to rise one week after the strep infection, peak by four weeks, and return to normal in six to 12 months (unless another infection or complication develops). Strep infections may lead to joint pains (arthralgias) or inflammation (arthritis), rheumatic fever, or nephritis (kidney disease). If these problems are suspected, then an ASO or DNase B titer will be checked. If abnormal, then additional tests and treatments might be recommended, and the ASO or DNase B titer might be repeated later to see whether results have returned to normal.

Normal result = The titer will be less than 170 if your child has not been infected with strep recently.

HLA-B27 (Human Leukocyte Antigen-B27) Tissue Typing

The HLA-B27 test is a blood test that checks whether your child inherited a particular form of the HLA-B gene (B27). The test reports whether your child has HLA-B27 (“antigen detected”) or doesn’t have HLA-B27 (“not detected”). Six

to 8 percent of people have the B27 form of the HLA-B gene, and most of them are perfectly healthy. However, in patients with some types of arthritis known as the spondyloarthropathies—especially those at higher risk for lower back arthritis—this gene is very common. (Up to 90 percent might have it.) If one of these types of arthritis is suspected, then an HLA-B27 test might be checked to see whether this gene has been inherited.

Lyme Test

The Lyme test is a blood test that measures whether the immune system is making a protein (antibody) that is directed against the bacterium that causes Lyme disease. An abnormal result may occur with Lyme disease, including those patients who get Lyme arthritis. If Lyme disease is the suspected cause of your child's joint problems, then a Lyme test will be checked. If your child's illness or test suggests Lyme disease is likely, then treatment with antibiotics will be recommended to get rid of the bacterium that causes Lyme disease.

Normal result = The test will be negative if your child has not been infected with this bacterium.

Rheumatoid Factor (RF)

The RF test is a blood test that measures whether the immune system is making proteins (antibodies) that are directed against other antibodies in the blood. RF may be seen in children with a subtype of juvenile rheumatoid arthritis (JRA) that is similar to adult rheumatoid arthritis. If RF is detected in someone with JRA, then stronger medicines that can prevent damage to joints might be recommended earlier.

Normal result = Often reported as "less than 20" and means that your child's body doesn't make RF proteins.

X-Rays

X-rays may help identify whether your child has a form of arthritis or another disease or injury that causes problems resembling arthritis. With arthritis, X-rays may be normal or show extra fluid in a joint, weakening of the bones, or destruction of the bones or cartilage. If arthritis is suspected, then X-rays of the involved joints will be done. If your child has arthritis, X-rays of the involved joints will be recommended periodically to monitor whether any damage has occurred and to determine what treatment might be helpful.

Monitoring Tests

Values vary for children at different ages and differ for boys and girls. The values presented here should only be used as guidelines because laboratories vary in how they define normal ranges. Labs are done to monitor the side effects of medicines (CBC, BUN, creatinine, urinalysis, AST) one month after starting or significantly increasing the dose of a medicine, and then every three to four months after that. For some drugs, such as methotrexate and azathioprine, more frequent monitoring is done.

Complete Blood Count (CBC)

The CBC is a blood test that measures whether your child has the correct numbers of red blood cells, white blood cells, and platelets. This test is done periodically to monitor the activity of the disease and to check for any side effects of your medicines.

Hemoglobin

The hemoglobin test measures whether your child has the correct number and quality of red blood cells. Some common reasons why the hemoglobin might be abnormally low are because red blood cells are not being made due to a lack of iron (iron deficiency anemia), or because of illness (anemia of chronic disease), or because red blood cells are being lost (bleeding) or destroyed (hemolytic anemia). If your child's hemoglobin is abnormal, further testing to determine the cause might be recommended.

Normal result = Values vary for children at different ages and differ for boys and girls, but usually the hemoglobin should be over 11 for young children and closer to the 13 to 15 range for teenagers.

White Blood Cells (WBC)

The WBC count measures the number and subtypes of white blood cells (leukocytes) in the blood. These cells are part of the immune system, the system that protects your child from infections, but sometimes is mistakenly directed against the body (as in arthritis). Abnormally high or low numbers may occur with infections or with arthritis, and certain medicines may also cause abnormally low numbers. If your child's WBC count is abnormal, further testing or temporarily stopping certain medicines may be recommended.

Normal result = WBC counts are different values for children at different ages, but are generally 4,500 to 12,000.

Platelets

The platelet count measures the number of platelets in the blood. Inflammation (from infection or arthritis) and iron deficiency can make the number go up, and certain diseases and medicines can make the number go down. Because these cells help the blood to clot, abnormally low numbers can make your child bruise or bleed easily, and extremely high numbers can cause unwanted clots. If your child's platelet count is abnormal, further testing to determine the cause might be recommended.

Normal result = From 150,000 to 450,000.

Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP)

The ESR and CRP are blood tests that measure how much inflammation is present in the body. With inflammation (from arthritis or infection), the ESR and CRP will typically be unusually high, although some people with arthritis will have a normal ESR and CRP. One of these tests will be checked periodically to help assess how much inflammation is present and indicate what treatment is needed to keep it under control.

Normal results = Normal ESR is less than 20, and a normal CRP is less than 0.8.

Blood Urea Nitrogen (BUN) and Creatinine

The BUN and creatinine are blood tests that measure how well the kidneys are working. If the kidneys are not working normally, then the BUN and creatinine will be unusually high. These tests are done periodically to check for any side effects from your child's medicines or, in some cases, to check for any damage to the kidneys from your child's disease (as may happen in systemic lupus erythematosus). If the BUN or creatinine is abnormally high, further testing or temporarily stopping certain medicines might be recommended.

Normal results = Values for the BUN and creatinine vary with the size of an individual, but are generally 10 to 26 for the BUN, and 0.3 to 1.5 for the creatinine.

Urinalysis

A urinalysis consists of several urine tests that measure how well the kidneys are working. A urinalysis is done periodically to check for any side effects from your child's medicines or, in some cases, to check for any damage to the kidneys from your child's disease (as may happen in systemic lupus erythematosus). Abnormal results may also occur with infections. If the urinalysis is abnormal, further testing or temporarily stopping certain medicines might be recommended.

Liver Enzyme Tests (AST, ALT)

Liver enzyme tests are blood tests that tell whether there has been any damage to the liver. An abnormal result may be caused by your child's disease or as a side effect of certain medicines. Abnormal results may also occur with infections. If one of these tests is three or more times the upper limit of normal, further testing or temporarily stopping certain medicines might be recommended.

Normal results = Depend on the laboratory where the tests are completed, but are commonly less than 40 to 80.

Make An Appointment **651-290-8707** Refer a Patient **651-325-2200**

This information is for educational purposes only. It is not intended to replace the advice of your health care providers. If you have any questions, talk with your doctor or others on your health care team.

If you are a Gillette patient with urgent questions or concerns, please contact Telehealth Nursing at **651-229-3890**.