TEST

Quantitative immunoglobulins

A blood test that measures the amounts of several antibody types.

WHAT IT MEASURES
Blood levels of IgG, IgA, and IgM antibodies

SAMPLE
Blood

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually less than ten minutes

RESULTS IN
Usually one to three days, varying by laboratory

USED FOR
Diagnosis and monitoring

MAIN LIMITATION
Normal amounts do not prove antibodies work normally

Overview

Quantitative immunoglobulins is a blood test that measures the amounts of certain antibodies in your blood. Antibodies are proteins made by the immune system. They help recognize and respond to infections and other substances.

The usual panel measures three antibody classes:

Some laboratories may measure other immunoglobulins separately, such as IgE. IgE testing usually answers different questions, including questions about allergies. Check your report to see which types were measured.

This test measures the total amount of each antibody class. It does not show whether those antibodies recognize a particular infection, work properly, or come from one abnormal group of cells.

- Immunoglobulin G (IgG): the most abundant antibody in blood, important for longer-term protection
- Immunoglobulin A (IgA): found in blood and on moist surfaces such as the airways and gut

- Immunoglobulin M (IgM): often produced early in an immune response

Why the test is ordered

Quantitative immunoglobulins may be ordered when a healthcare professional wants to assess part of your immune system. Possible reasons include repeated, unusually severe, or hard-to-clear infections.

The test may also help investigate:

It is commonly combined with other tests. These may include a full blood count, kidney and liver tests, serum protein electrophoresis, immunofixation, serum free light chains, or tests of antibody responses to vaccines.

- A suspected immune deficiency
- An unexpectedly high total protein level
- Some blood or bone marrow disorders
- Long-term inflammation, autoimmune disease, or liver disease
- Loss of protein through the kidneys or digestive system
- The effects of medicines that alter immune cells
- Changes in a previously diagnosed immune or blood disorder

Who should have the test

This is not usually a routine screening test for people who feel well. You may be offered it if your symptoms, medical history, examination, or other blood results suggest that antibody levels could be relevant.

For example, testing may be considered after repeated bacterial infections, particularly infections affecting the sinuses, ears, or lungs. However, common infections alone do not necessarily mean that there is an immune problem.

People taking medicines that affect antibody-producing B cells may have testing before treatment and during follow-up. Testing may also be used to monitor people receiving immunoglobulin replacement therapy.

A single result cannot decide whether you have an immune deficiency or a blood disorder. Your infection history, medicines, age, and other test results are essential to interpretation.

How to prepare

You usually do not need to fast. You can generally eat, drink water, and have coffee before the test unless you are having another blood test that requires fasting.

Tell the healthcare professional interpreting the result about your medicines and supplements. This is particularly important if you receive immunoglobulin replacement, immune-suppressing treatment, or medicines that target B cells.

Also mention recent infections, vaccinations, pregnancy, and any recent blood or plasma transfusion. Do not stop prescribed medicine because of this test unless the prescriber tells you to do so.

Being well hydrated can make the blood draw easier. There is usually no need to avoid normal activity beforehand.

What happens during the test

A healthcare professional places a band around your upper arm and cleans a small area of skin. A needle is inserted into a vein, usually at the inside of your elbow, and a small tube of blood is collected.

You may feel a brief scratch or sting. The needle is then removed, and pressure is placed over the area. The blood collection itself usually takes only a few minutes.

The laboratory measures how much IgG, IgA, and IgM is present. Common methods use the way these proteins scatter light in a prepared sample.

Understanding your results

Your report will usually list each immunoglobulin result beside the laboratory's reference range. Units may be grams per litre or milligrams per decilitre.

Reference ranges vary by laboratory and testing method. Interpretation also varies with age, sex, pregnancy status, medicines, and clinical context. Children need age-specific ranges because immunoglobulin levels change as the immune system develops.

A low result means less of that immunoglobulin was detected than expected for the laboratory's comparison group. Possible explanations include reduced antibody production, medicine effects, or loss of protein through the kidneys or gut. One class may be low while the others are normal.

A high result means more was detected than expected. Several immunoglobulin classes may rise during infection, inflammation, autoimmune illness, or liver disease. An increase may also come mainly from one group of antibody-producing cells.

Quantitative testing cannot reliably tell whether a high level is a broad immune response or a single abnormal protein. Protein electrophoresis, immunofixation, and serum free light-chain testing may be more useful for that question.

A result close to the edge of the range is not automatically abnormal in a meaningful way. Small differences can occur between samples and laboratories.

What affects the results

Several factors can change immunoglobulin levels without a laboratory error.

Age is especially important. Babies receive IgG across the placenta before birth, and their own antibody production develops over time. Adult reference ranges should not be applied to young children.

A recent infection or vaccination can temporarily increase antibody production. The timing and size of the change vary, and total immunoglobulin testing cannot identify which infection or vaccine caused it.

Pregnancy can alter measured concentrations through changes in blood volume and the transfer of IgG across the placenta. Pregnancy-specific context may therefore be needed.

Medicines that suppress the immune system or reduce B cells can lower immunoglobulin levels. Immunoglobulin replacement therapy can raise IgG and may affect additional antibody tests for weeks or longer.

A recent plasma-containing transfusion can temporarily add donor antibodies. Red-cell transfusions contain much less plasma, but you should still report a recent transfusion when results are being interpreted.

Dehydration can make blood proteins appear more concentrated. Large fluid shifts may have the opposite effect. Kidney or intestinal protein loss can produce genuinely low blood levels even when antibody production is not the main problem.

Different laboratories may use different instruments, reagents, and reference populations. For follow-up, results from the same laboratory are often easier to compare.

Accuracy and limitations

Modern laboratory methods usually measure the concentration of IgG, IgA, and IgM reliably. There is no single useful "miss rate" for the test because accuracy differs by immunoglobulin, instrument, concentration, and the condition being investigated.

The main limitation is that quantity is not the same as function. You can have immunoglobulin levels within the laboratory range but still make a weak response to particular infections or vaccines. The test can therefore miss some functional antibody problems.

Low levels can also be temporary, especially around illness or medicine changes. Repeating the test when you are well may show whether a finding persists.

A high result does not prove that there is an abnormal clone of antibody-producing cells. In this situation, quantitative testing may appear positive for "too much antibody" even though the cause is a broad, non-cancerous immune response. Protein electrophoresis and immunofixation are better at identifying whether one particular antibody protein is present.

Very high or unusual protein concentrations can occasionally interfere with measurement. The laboratory may dilute and retest the sample or use another method if the result does not fit the rest of the findings.

Risks and complications

The risks are those of an ordinary blood draw. You may develop a small bruise or feel briefly light-headed.

Ongoing bleeding, infection at the needle site, or significant swelling is uncommon. Seek advice if the area becomes increasingly painful, red, or swollen.

What happens next

Results are usually reviewed alongside your symptoms, infection history, medicines, and other blood tests. A mildly abnormal result often leads to routine follow-up rather than urgent treatment.

Possible next steps include:

The blood result itself is rarely an emergency. Do not wait for a test review if you become seriously unwell with an infection. Seek urgent medical care for worsening breathlessness, marked drowsiness, confusion, severe dehydration, or a rapidly worsening condition. Call emergency services for severe difficulty breathing, blue or grey lips, collapse, or difficulty waking.

- Repeating the test to confirm a persistent change
- Checking blood count, kidney function, liver function, or urine protein
- Measuring antibody responses to previous vaccines
- Testing lymphocyte types, including B cells
- Ordering protein electrophoresis, immunofixation, or free light chains
- Referral to immunology, haematology, or another relevant specialty

Common questions

Can I drink coffee before the test?

Usually, yes. Quantitative immunoglobulins does not require fasting. Avoid milk or sugar only if another test ordered at the same time requires fasting.

Does the time of day matter?

Usually not. There is no standard requirement to collect this test at a particular time. For monitoring, using similar conditions can make small changes easier to compare.

Can I exercise beforehand?

Normal activity is unlikely to have an important direct effect. Strenuous exercise with dehydration may temporarily concentrate blood proteins, so drink normally and mention unusually intense activity if a result is unexpected.

Will a cold affect the result?

It can. An infection may temporarily increase one or more immunoglobulin levels. It may still be appropriate to test during illness, depending on why the test was requested.

Should I take my medicines as usual?

Usually, yes. Do not stop prescribed medicines without instructions. Make sure the person interpreting the result knows about immune-suppressing medicines, B-cell treatments, and immunoglobulin therapy.

How often will I need the test repeated?

Some people need only one measurement. Repeat testing may be used to confirm an unexpected result or monitor a known condition or treatment. The timing should reflect the reason for testing.

Sources

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