TEST

Rheumatoid factor (RF)

A rheumatoid factor test measures an antibody that can support, but not confirm, a diagnosis of rheumatoid arthritis.

WHAT IT MEASURES
Antibodies that bind to other antibodies

SAMPLE
Blood

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually less than five minutes

RESULTS IN
Often one to three days, varying by laboratory

USED FOR
Supporting diagnosis and assessing rheumatoid arthritis outlook

MAIN LIMITATION
Positive results occur without rheumatoid arthritis

Overview

Rheumatoid factor, usually shortened to RF, is an antibody made by the immune system. Antibodies normally help defend you from infection. RF is unusual because it binds to other antibodies.

An RF test measures this antibody in a blood sample. It is mainly used when symptoms suggest rheumatoid arthritis, an inflammatory condition that can cause painful, swollen and stiff joints. It may also help investigate other autoimmune conditions, including Sjögren disease.

RF cannot confirm or rule out rheumatoid arthritis by itself. Some people with rheumatoid arthritis have a negative result. Some people without rheumatoid arthritis have a positive result.

Why the test is ordered

The test may be ordered if you have ongoing symptoms that could come from inflammatory

arthritis, such as:

RF may be tested alongside anti-cyclic citrullinated peptide antibodies, usually called anti-CCP antibodies. Anti-CCP is more closely linked with rheumatoid arthritis than RF, although neither test provides a diagnosis on its own.

Your symptoms, joint examination, inflammation blood tests and sometimes imaging are also important.

- Swelling in more than one joint
- Joint stiffness that is worse after rest or in the morning
- Pain affecting similar joints on both sides of the body
- Reduced movement or function in affected joints

Who should have the test

RF testing is most useful when there is a clinical reason to suspect rheumatoid arthritis or another condition associated with RF.

It is not generally used to screen people who have no relevant symptoms. Testing people with a low chance of rheumatoid arthritis increases the likelihood that a positive result will be misleading.

A negative RF result should not delay further assessment if you have persistent joint swelling. Rheumatoid arthritis without detectable RF is sometimes called seronegative rheumatoid arthritis.

How to prepare

You do not usually need to fast. You can eat, drink water and take your usual medicines unless you have been given different instructions for another test being collected at the same time.

Tell the person arranging the test about prescription medicines, over-the-counter products and supplements. Do not stop a medicine because of an RF test unless the clinician who prescribed it tells you to.

Being well hydrated may make the blood draw easier.

What happens during the test

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

You may feel a brief scratch or sting. The needle is then removed, and pressure or a small dressing is applied. The blood draw usually takes less than five minutes.

The sample is sent to a laboratory, where the amount of RF is measured.

Understanding your results

Your report may describe RF as negative, within the laboratory's expected range, or positive. A positive result may also be reported as a number, commonly in international units per millilitre, written as IU/mL.

Use the range printed on your own report. Ranges and interpretation vary by laboratory, testing method, age, sex, pregnancy status, medicines and clinical context.

A positive result means that RF was detected above the laboratory's threshold. It does not mean that you definitely have rheumatoid arthritis. RF can occur with other autoimmune conditions, long-lasting infections and some lung or liver conditions. It can also be present in otherwise healthy people, particularly at older ages.

A negative result makes RF-positive rheumatoid arthritis less likely, but it does not exclude rheumatoid arthritis. Some people with the condition never develop detectable RF.

Higher RF levels are more strongly associated with rheumatoid arthritis than results just above the threshold. In someone already diagnosed, a high level may be associated with a greater risk of disease outside the joints or more severe disease. It cannot predict what will happen to one person with certainty.

What affects the results

RF is not meaningfully changed by eating, coffee, exercise or the time of day. These activities do not usually require special preparation.

Important influences include:

Pregnancy and a recent blood transfusion are not usually major direct causes of misleading RF results, but they remain part of the clinical context. Tell your healthcare team about them when reviewing any blood test.

RF often stays positive even when rheumatoid arthritis is well controlled. For this reason, repeating RF is usually less useful for monitoring day-to-day disease activity than reviewing

symptoms, joints and inflammation markers.

- Age: RF becomes more common in people without rheumatoid arthritis as age increases.
- Other conditions: Sjögren disease, other autoimmune conditions, some chronic infections, and certain lung or liver conditions can produce genuine RF positivity.
- Recent infection: RF may occasionally appear temporarily during or after an infection.
- Medicines and treatment: Treatment that changes immune activity may lower RF over time. This does not necessarily match current joint inflammation.
- Testing method: Laboratories use different methods and thresholds, so results from separate laboratories may not be directly comparable.
- Sample quality: Marked cloudiness from fat or damage to blood cells can interfere with some laboratory methods. The laboratory may repeat or reject an unsuitable sample.

Accuracy and limitations

RF misses a meaningful number of people who have rheumatoid arthritis. In a large published review, about 69 in 100 people with rheumatoid arthritis had a positive RF result. This means roughly 31 in 100 were missed by RF alone. Performance differs between testing methods, stages of disease and study populations.

The same review found that RF was negative in about 85 in 100 people without rheumatoid arthritis in the comparison groups. In other words, around 15 in 100 had a positive result even though they did not have the condition. The chance that a positive result is misleading is higher when testing someone without typical symptoms.

Anti-CCP testing is generally less likely than RF to be positive in someone who does not have rheumatoid arthritis. It may therefore be the more informative antibody test in some situations. However, anti-CCP can also miss rheumatoid arthritis.

Neither test replaces an assessment of your joints. Ultrasound or X-rays may be more useful when the main question is whether inflammation or joint damage is present.

Risks and complications

A blood draw may cause brief discomfort, a small bruise or minor bleeding. Some people feel light-headed or faint, but serious complications are uncommon.

What happens next

Your result should be reviewed alongside your symptoms and other findings.

If RF is positive, routine follow-up may include an anti-CCP test, inflammation blood tests, a joint examination or imaging. A positive result without symptoms may need no treatment, although the reason for testing still needs to be considered.

If RF is negative but you have persistent joint swelling or prolonged morning stiffness, further assessment may still be appropriate. Early inflammatory arthritis can be present before antibody tests become positive, and some people remain antibody-negative.

Seek urgent medical assessment for a joint that becomes suddenly very painful, hot and swollen, especially with fever or feeling unwell. This can have causes other than rheumatoid arthritis, including joint infection. Call emergency services for severe breathing difficulty, chest pain, collapse or another life-threatening symptom; an RF result itself is not an emergency.

Common questions

Can I drink coffee before an RF test?

Yes. Coffee does not usually affect RF. If other blood tests are being collected, check whether those require fasting.

Does the time of day matter?

No. RF does not have a standard time-of-day requirement, so the sample can usually be collected whenever the laboratory is open.

Can I exercise beforehand?

Yes. Ordinary exercise is not known to meaningfully alter RF. Very strenuous exercise can affect some other blood tests, so follow any instructions given for the full set of tests.

Does a positive RF result mean I have rheumatoid arthritis?

No. It supports the diagnosis only when your symptoms and examination fit. RF can be positive in other conditions and in some healthy people.

Can my RF result change over time?

Yes. RF may appear later in an illness or fall with immune-modifying treatment, although it often remains positive. Changes do not reliably show whether joint inflammation is improving or worsening.

What is the difference between RF and anti-CCP?

Both are antibody tests used when rheumatoid arthritis is suspected. Anti-CCP is less often

positive in people without rheumatoid arthritis, while RF can also be associated with several other conditions. The tests are often interpreted together.

Sources

- MedlinePlus Medical Test: Rheumatoid Factor , US National Library of Medicine
- NICE guideline NG100: Rheumatoid arthritis in adults-diagnosis and management , National Institute for Health and Care Excellence
- Nishimura K, et al. Meta-analysis: diagnostic accuracy of anti-cyclic citrullinated peptide antibody and rheumatoid factor for rheumatoid arthritis , Annals of Internal Medicine , 2007
- Aletaha D, et al. 2010 Rheumatoid arthritis classification criteria , American College of Rheumatology and European League Against Rheumatism, Annals of the Rheumatic Diseases , 2010