



Anti-tumor Necrosis Factor Drugs (Anti-TNF)

Anti-tumor necrosis factor drugs are a class of drugs that have been used for more than 10 years. They are used worldwide to treat inflammatory conditions such as rheumatoid arthritis, psoriatic arthritis, juvenile arthritis, Crohn's colitis, ankylosing spondylitis and psoriasis. These drugs are able to reduce inflammation and stop disease progression.

Fast Facts

- Anti-TNF agents target an inflammation-causing substance called TNF.
- These drugs can be used to treat several diseases, including RA, Crohn's and psoriasis.
- They can alter the disease's effect on the body by controlling inflammation in joints, gastrointestinal tract and skin.

Uses

There are five anti-TNF drugs that have been approved by the U.S. Food and Drug Administration to treat moderate to severe RA that has not responded to one or more of the traditional disease-modifying anti-rheumatic drugs. To decrease side effects and costs, most patients with mild or moderate disease are treated with methotrexate before adding or switching to an anti-TNF agent.

Anti-TNFs can be used by themselves or in combination with methotrexate, hydroxychloroquine, leflunomide or sulfasalazine. Most clinical trials that had positive results in RA were done in patients taking methotrexate and an anti-TNF agent.

How it works

TNF is a chemical produced by the immune system that causes inflammation in the body. In healthy individuals, excess TNF in the blood is blocked naturally, but in those who have conditions like RA, higher levels of TNF in the blood lead to more inflammation, joint destruction and persistent symptoms.

Dosing

The starting doses for RA are shown in **Table 1**. Anti-TNF medications may be given by injection under the skin (e.g., etanercept, adalimumab, certolizumab and golimumab) or by vein (e.g., infliximab). These medications must be kept in the refrigerator and warmed to room temperature before being injected. There are pamphlets and videos that can teach you how to give yourself an injection under the skin. Physicians, nurses, and pharmacists also are able to teach you.

The medicine can be injected into the thigh or abdomen. The site of injection should be rotated so the same site is not used multiple times. In the case of infliximab, the infusions are administered at a doctor's office or at an infusion center. These treatments could take up to 3 hours.

TABLE 1: Comparison of anti-TNF drugs in RA

Drug	Usual Dosing Regimen	When to expect results	Methotrexate needed?
Infliximab (<i>Remicade</i> ®)	<p>Initially: Given at the clinic or at an infusion center as an intravenous infusion (IV) at a dose of 3-5 mg/kg (according to body weight) at weeks 0, 2, and 6.</p> <p>Maintenance: IV infusions every 4-8 weeks. Dose may be increased to 5-10 mg/kg.</p>	2-3 weeks	Yes
Etanercept (<i>Enbrel</i> ®)	<p>Initially: 50 mg once a week or 25 mg twice a week as a self-administered subcutaneous injection.</p> <p>Maintenance: Same</p>	1-2 weeks	No
Adalimumab (<i>Humira</i> ®)	<p>Initially: 40 mg every other week as a self-administered subcutaneous injection.</p> <p>Maintenance: Same</p>	2-3 weeks	Suggested, not required
Certolizumab (<i>Cimzia</i> ®)	<p>Initially: 400 mg on week 0, 2 and 4 as a self-administered subcutaneous injection.</p> <p>Maintenance: 200 mg every other week.</p> <p>Note: Each 400 mg dose should be administered as 2 injections of 200 mg each.</p>	1-2 weeks	No
Golimumab (<i>Simponi</i> ®)	<p>Initially: 50 mg once per month as a self-administered subcutaneous injection.</p> <p>Maintenance: Same</p>	1-2 weeks	Yes

Time to effect

The time that it takes for the medication to have an effect may vary by patient. Most RA patients have reported a change in their symptoms after 2 or 3 doses.

Side effects

The most common side effect seen with the injectable drugs are skin reactions, commonly referred to as "injection site reactions." The patients usually complain of a localized rash with burning or itching. These reactions can last up to a week. Infliximab has been associated with a severe allergic reaction with swelling of the lips, difficulty breathing and low blood pressure.

The most significant side effect is an increased risk for all types of infections, including tuberculosis (TB) and fungal infections. Some of these infections may be severe.

Patients should be tested for TB before starting therapy. The usual way of testing is with a skin test, but a blood test is also available. Hepatitis B testing may be recommended because unrecognized hepatitis B infection may worsen during treatment.

Anti-TNF medications should be stopped if the patient has high fever or is being treated with antibiotics for an infection. Once the medication is stopped, it should not be restarted until the patient has discussed it with his or her doctor.

Long-term use of anti-TNF agents may increase the risk of cancers such as lymphoma and skin cancer. There are rare neurologic complications from the use of these medications. People who have a history of multiple sclerosis should not use them. People with significant heart failure should not be on anti-TNF therapy because of their heart disease could worsen.

Patients should talk to their doctors before getting any vaccines. Using these medications may make the vaccination less effective.

Refer to the package insert for more information.

Points to remember

- Anti-TNF drugs are a new type of medication used to treat patients with inflammatory arthritis such as RA.
- These therapies will not cure the disease, but they will make symptoms better and decrease further damage to joints.
- Although they increase the risk for infections, proper screening techniques and frequent doctor visits can minimize this risk.

Information to discuss with other health care providers

These medications are expensive (more than \$10,000 per year) but they are covered by most health care insurance plans. Ask your doctor about prescription assistance plans that can help you to get the medication at a lower price or free of charge.

To find a rheumatologist

[View a listing of rheumatologists in your area](#)

Learn more information about [rheumatologists](#) and [rheumatology health professionals](#)

For additional Information

Your physician may have patient education material on anti-TNF drugs. The American College of Rheumatology has compiled this list to give you a starting point for your own additional research. The ACR does not endorse or maintain these Websites, and is not responsible for any information or claims provided on them. It is always best to talk with your rheumatologist for more information and before making any decisions about your care.

ACR Factsheet on Rheumatoid Arthritis, Psoriatic Arthritis, and Spondyloarthritis

www.rheumatology.org/practice/clinical/patients/diseases_and_conditions/index.asp

The Arthritis Foundation

www.arthritis.org

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Written by Tania C. González-Rivera, MD, and reviewed by the American College of Rheumatology Communications and Marketing Committee.

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