

Thyroid Hormone Replacement

Name:

Levothyroxine is the generic name for all thyroid hormone that replaces T4. Recommended Brand names are Synthroid and Levoxyl

What is levothyroxine?

Levothyroxine is synthetic T4, and is exactly the same as the T4 made by the human body. T4 is the primary hormone released by your thyroid gland, which also releases a very small amount of T3. Research supports that a person only needs to take T4 (levothyroxine) and most people do very well on daily T4. T4 converts into T3, and your body will handle this conversion for you.

Storage

Store at room temperature and away from heat and direct sunlight. A pill box is a very useful tool to help you know if you missed any pills. Store in a cool, dry place—not in a humid area such as a bathroom.

Why do I have to take thyroid hormone?

- a. Sometimes due to medical reasons, the thyroid needs to be removed or does not work properly. If this is the case, you need to take thyroid hormone to replace what you cannot make on your own. It will be necessary to take this medication the rest of your life. You can get very sick without thyroid hormone, will feel very poor without it, and in severe cases, some people may eventually die without thyroid hormone supplementation.
- b. Because you will be taking a hormone identical to one your own body makes, there are virtually no side effects unless you are on too much or too little of this hormone. It is safe to take during pregnancy and/or breastfeeding. If you become pregnant, your dose will likely need to be increased at the beginning of your pregnancy and possibly throughout your pregnancy as well.
- c. If you have thyroid cancer, the thyroid hormone helps to prevent your thyroid cancer from growing and spreading.
- d. Inadequate doses of thyroid hormone may fail to relieve the symptoms of hypothyroidism. In addition, heart function is decreased, and serum cholesterol levels may be elevated in patients with insufficient thyroid hormone replacement.

How do I know if I am on enough, too much or too little?

A blood test called a TSH (thyroid stimulating hormone) is run 6-8 weeks after starting your medication or after any dose change. The normal range of TSH is 0.5 – 5.0. If you do not have thyroid cancer, an ideal range is 0.5-2.5 for younger people and higher than this if you are older. If you have thyroid cancer, the goal is to have your

TSH less than 0.5 (a little higher dose of hormone than your body would normally make) as this helps to prevent thyroid cancer growth. Your provider will go over your specific TSH goal with you.

Will I feel different taking thyroid hormone than I did before?

As long as your labs are in target range, you should feel like you typically did before you had surgery or developed thyroid failure. Your energy, weight, thought processes and level of happiness should be similar. Symptoms due to low serum thyroid hormone levels will generally resolve once the serum TSH has returned to the normal range. However, many of the symptoms of hypothyroidism are non-specific. Other conditions may also cause the same symptoms. Therefore some symptoms of hypothyroidism, such as fatigue, may persist despite adequate thyroid hormone replacement therapy. If your labs are normal and you are not feeling well, there may be another cause for why you are feeling poorly (lack of sleep, change in activity, eating habits, menopause, sleep apnea, stress, depression, low iron, low vitamin B12, digestive disorders, etc.) and these may warrant further investigation.

If I take a little more, will I lose weight or have more energy?

No. Many people have an increased appetite when they are on too much thyroid hormone. People often feel tired and may have difficulty concentrating and sleeping when they are on too much thyroid hormone. Taking excessive doses of thyroid hormone is very dangerous and **should be avoided**. Excessive thyroid hormone can lead to osteoporosis (bone loss) and irregular heartbeats that can cause blood clots. Blood clots can cause other serious health issues (like stroke or death).

How do I take thyroid hormone?

- a. Take once a day around the same time each day. The most important issue is that you are consistent with the timing of your meal and other supplements from day to day. If you change your habits or how you take your supplements, your dose may absorb differently, resulting in different blood levels and effects.
- b. For optimal absorption of your hormone, it is best to take it 30 minutes prior to or 4 hours after any food intake. It is okay to have coffee, tea, water, milk or juice during this time.
- c. Calcium supplements, iron or a multivitamin with iron, sucralfate (carafate), antacids that contain aluminum (amphojel, Gaviscon, Maalox, Mylanta, Riopan, Rulox, Tums), cholestyramine (questran), Colestipol (colestid) or Welchol should be taken about 4 hours before or after your thyroid hormone. Calcium citrate is fairly well absorbed at meals and this would likely be a better choice than calcium carbonate that should be taken between meals.
- d. Excessive soy intake can interfere with absorption. The important issue is to be consistent with your soy intake, and your dose can get adjusted appropriately.
- e. Other medications such as seizure medications, estrogens, and iodine-based therapy such as amiodarone or IV contrast dye may also change your thyroid

dosing needs. Notify your health care provider if you have recently taken these medications.

- f. An easy regimen for most people is to take their thyroid hormone in the morning 30 minutes prior to breakfast. If any medication listed in “c” (above) is taken, then take them at lunch, supper and/or bedtime.
- g. If you take your thyroid hormone at night, it should be 4 hours after eating. If any medication listed in “c” (above) is taken, then take them at breakfast, lunch and possibly supper if 4 hours prior to the evening dose.

What if I miss a pill or run out of my prescription?

Thyroid hormone is very long acting and slowly leaves your body. You will not feel differently for probably 3-5 days after you stop or run out. However, missing hormone doses is never a good idea, and should be avoided. Skipping days will not optimally control your thyroid levels. If you miss a pill, take 2 the next day. Take 2 pills each day for every day that you have missed. For example, if you miss 3 days of pills, you would take 2 pills for 3 days. It is best if you take 1 pill every day, but it is encouraged for you to make up any missed pills.

Is there anything “natural” I can take? Also, don’t I need to take T3?

Levothyroxine is synthetic T4 and is identical to natural thyroid hormone for humans. There are other products on the market that are not synthetic, but they do not mimic natural thyroid hormone needs for humans. They are derived mostly from slaughterhouse pig thyroid (Armour, Natural Thyroid). These are called desiccated thyroid hormone, which is dried and ground and made into capsules. These capsules contain T4 and T3. It is important to recognize that the pig thyroid hormone ratios can be much different than what a human needs. There can also be a big difference in these ratios in each Armour thyroid prescription bottle. Naturally, a pig’s thyroid makes much more T3 than a human. T3 is short acting and T4 is very long acting. Because of the excessive T3, this creates a period in the day where the person may have too much active thyroid and may get side effects, followed by a “crash” where the T3 wears off and the person does not have enough T4 around to compensate, putting them at a low thyroid level. Even if you take this medication twice it day, it still causes this “roller coaster” approach to thyroid hormone management. This medication is a natural product, but it is not natural for humans and does not meet our needs. Most endocrinologists do not recommend “natural” thyroid products or synthetic pre-combined thyroid hormone (Thyrolar) which also has a much higher ratio of T3 to T4 than the human makes. Synthetic T3 is available and can be given in low dose (2.5 to 7.5 mcg a day). Research shows that this is not needed as patients do not feel differently if prescribed at the appropriate doses. T3 preparations (natural or synthetic) should not be used during pregnancy as the T3 does not cross the placenta and should not be used during thyroid cancer therapy as it is difficult to control levels to the tight range that is necessary.

Are compounded thyroid products better for me?

Some people believe that having a customized compounded T3/T4 product may be better than taking a pill. The danger in this approach is that the amounts of these hormones in a product are very small and require extremely precise measuring and preparing. Many compounding pharmacies use dilutions to get to the proper microgram dose, and it is absolutely critical that these dilutions are made precisely, or the final product can be the wrong dose, sometimes substantially. If a compounded thyroid product is used, it should be prepared by a professional pharmacy that has precise closed-air scales and has documented analysis of their thyroid products from an independent lab. Keep in mind that compounded thyroid products can be very expensive, and that there is no strong evidence suggesting this is any better than simply taking levothyroxine.

Are there any supplements I should take?

There are no supplements that will bring back your body's ability to make thyroid hormone. A person needs 150 mcg of iodine a day. We often get iodine in salt, preserved foods, dairy and bread. Taking more or less iodine is not helpful, nor is taking supplements high in iodine, such as kelp. If you choose to take other supplements, please make sure you tell your healthcare provider about them and know if you can take these with your thyroid hormone, or if you need to separate them.

Should I be on brand-name or generic?

Thyroid hormone is a very old medication, and there are many generic forms of this medication. Three months of generic thyroid hormone (levothyroxine) can be generally purchased for \$10. Generic medications are fine for most purposes. Generic medications have to meet specific criteria to become approved by the FDA, but all of them are allowed small differences in the dose that are considered acceptable. The most important point is consistency. A dose of 100 mcg can vary quite a bit from one manufacturer to another when you compare several different companies that make levothyroxine. This dose can even be slightly different if you compare Synthroid to Levoxyl (two different brand names). Dosing of thyroid hormone is so small that this slight variation could change your TSH. For simplicity, it is recommended you stick with one brand of thyroid hormone. If you need to be on a generic for financial reasons, the following are important:

- a. Note the manufacturer on your generic prescription label (Sandoz, Wyeth, Lanett, etc). Check this every time you fill your prescription.
- b. If you get your generic from the same manufacturer each month, you can achieve stable labs (just like a brand).
- c. If you change pharmacies, you may not be given the same generic medication.
- d. Pharmacies can change generic manufacturers and may not necessarily inform you.
- e. If you switch brands of thyroid hormone, or if your manufacturer of the generic is changed (which you have no control over), you will need to get blood work done to check your levels in 6-8 weeks.

For patients in the hospital

If you do not have Thyroid Cancer, please follow up with your primary care provider in 6-8 weeks to have your thyroid function tested. If you do have Thyroid Cancer, you should also be seen in 6-8 weeks to check your thyroid function. If you do not have an endocrinologist, please call our Thyroid Tumor Coordinator, Bev McLaughlin, at 303-724-1026 to arrange for an appointment.

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