

# Thyroid Hypofunction II - Part Four

Okay, let's talk a little bit about options for thyroid hormone replacement. The first thing to understand is that monotherapy with T4, levothyroxine, is rarely the best choice despite the fact that it is the standard of care in most countries. T4 is the storage hormone. It needs to be converted to T3 and other thyroid hormones to have an effect. The thinking behind T4 monotherapy is that it is best to allow the body to do that conversion, which minimizes the risk of overdosing with T3.

While in principle I do agree with this, in general it is better to give precursors than downstream hormones, in practice it is somewhat problematic. We know that 90 percent of patients with hypothyroidism have Hashimoto's, which is an autoimmune inflammatory condition, and we know that inflammation inhibits the conversion of T4 to T3.

## Why monotherapy with T4 rarely works

### Factors that impair T4 to T3 conversion

Inflammation

HPA-D

GI dysfunction

Aging

Iron excess or deficiency

Fasting

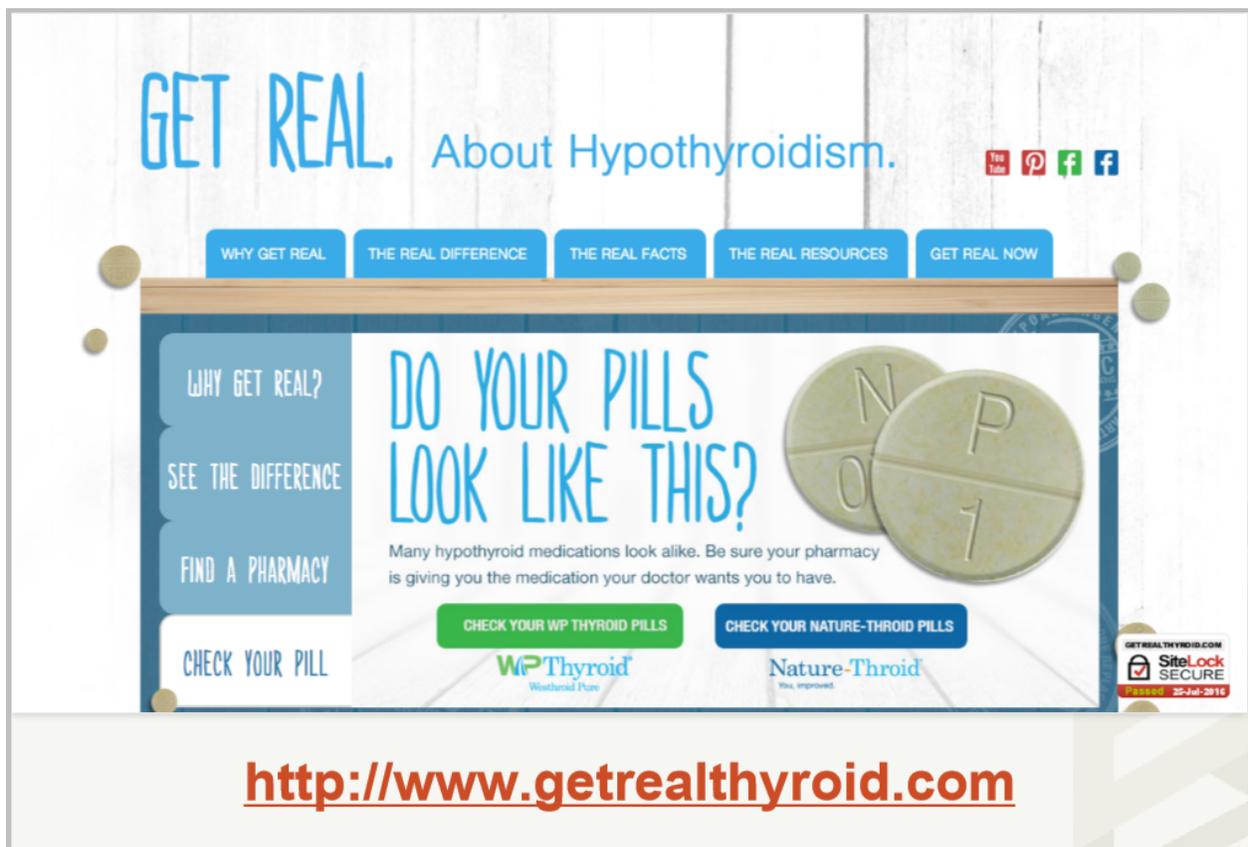
Nutrient deficiency

Low testosterone

Genetics

There are several other factors that reduce T4-to-T3 conversion, which I have listed on this slide, so above and beyond inflammation, we have HPA axis dysregulation, GI dysfunction, aging, iron excess or deficiency, fasting, nutrient deficiency, low testosterone, and genetics. Virtually every patient I've ever treated with thyroid dysfunction has at least one of these factors present, and many have several. For this reason, in the majority of cases, Hashimoto's patients do better with a T4-to-T3 combo.

Tirosint, which is a liquid version of T4, does seem to work better than levothyroxine, but it still doesn't address the conversion issues. The best option for T4-T3 combo for most patients is natural desiccated thyroid, or NDT for short. Desiccated thyroid by prescription is real thyroid hormone that is isolated from pigs, so it's just powdered thyroid hormone from pigs, and it is mixed from several pigs, not one.



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Contrary to what some T4-favoring doctors suggest, NDT does meet the stringent guidelines of the U.S. Pharmacopeia, so it is made according to the quality standards that have been laid out, and it has been used successfully by patients for over 115 years, and it is still in active current use. Unlike synthetic T4, desiccated thyroid gives you exactly what your own thyroid would be giving you: T4, T3, T2, T1, and calcitonin. Both prescription and nonprescription options for NDT are available, and there is a great page on the Stop the Thyroid Madness website that includes all of the various NDT options, including their active and inactive ingredients, so I'm going to put a link to that page in the resources section, but we will review a few here.

## Natural desiccated thyroid (NDT) options

| Intervention                           | Comments  |
|--|---|
| <b>N.P. Thyroid</b> (Acella)           | Generic NDT; works well for most patients; similar to Armour prior to 2009/2015 reformulations; can be taken sublingually |
| <b>Naturethroid</b> (RLC Labs)         | In use for ~80 years; gluten- & corn-free; hard to do sublingually, but can be chewed before swallowing                   |
| <b>Westhroid/WP-Thyroid</b> (RLC Labs) | Has only porcine thyroid + 3 fillers (inulin, lactose monohydrate, MCT in minuscule amounts); gluten- & corn-free         |
| <b>Armour</b> (Activas)                | Reformulated in 2015, doesn't seem to work as well; also tripled in price; better options now available                   |
| <b>ERFA</b> (Erfa Canada)              | NDT with effects similar to Armour prior to 2009/2015 reformulations; can be taken sublingually                           |
| <b>Nutri-meds</b>                      | OTC NDT; previously porcine & bovine sources, now only bovine; not as strong as Rx. NDT, patients need to take more       |
| <b>Thyro-Gold</b>                      | OTC NDT; formulated by Dr. John C. Lowe; some patients claim it works as well as Rx. NDT                                  |

NP Thyroid, also referred to as Acella, this is a generic NDT that works well for most patients. It is similar to what Armour was like prior to the 2009 and 2015 reformulations, which many patients feel were negative in their impact. It can be taken sublingually. Nature-Throid from RLC Labs has been in use for over 80 years. It is gluten- and corn-free. It is hard to do sublingually, but it can be chewed before swallowing to increase absorption. Then we have Westhroid, also known as WP Thyroid, from RLC Labs as well. That has only porcine thyroid plus three fillers, so it is perhaps the simplest option with the least amount of fillers, and those fillers are inulin, lactose monohydrate, and MCT in minuscule amounts. It's also gluten- and corn-free, very well tolerated by patients. Then we have Armour, which is probably the most well-known NDT, but it was recently reformulated in 2009 and then again in 2015, and many patients who were having success with Armour basically overnight found that it didn't work as well, and it also tripled in price, so I think there are better options for NDT now such as WP Thyroid, Nature-Throid, or Acella.

Then we have ERFA. This may be referred to as Erfa. I'm not sure because this is a Canadian medication, so I'm not sure how you Canadians refer to it, but it is NDT with effects that are similar to Armour prior to the 2009 and 2015 reformulations, and it can be taken sublingually.

Then there are a couple of over-the-counter options. One is from Nutri-Meds.com. This previously offered porcine and bovine sources, but now they only offer bovine desiccated thyroid. Apparently their porcine source is no longer available. It's not as strong as prescription NDT, and patients need to take more of it to get similar effects, but many patients do quite well with it, and it is available over the counter.

There is Thyro-Gold, which is another over-the-counter NDT. This was formulated by Dr. John C. Lowe, and some patients claim that it works as well as prescription NDT for them.

If you live outside the U.S. and Canada, check the Stop the Thyroid Madness site. They list NDT options that are available all around the world. Another option is combining synthetic T4 such as levothyroxine or Synthroid with synthetic T3 such as Cytomel. In my opinion, NDT is better because it contains the naturally occurring ratio of thyroid hormones found in animals with similar physiology to us, and I think there is a higher risk of overdosing with T3 using Cytomel, but synthetic T4 and T3 combo is probably better than just T4 monotherapy.

**NDT dosage: 1-3 grains;  
start at 1/2 grain**

For a starting dose of natural desiccated thyroid prescription, a half-grain, somewhere between 30 to 32.5 mg, is a good choice for most people, then increase by one half-grain a week until symptoms improve, and then retest after about four to six weeks. Starting dose of Nutri-Meds and Thyro-Gold, they both have detailed instructions on their respective websites, so you can check there. In each case, the goal is to normalize TSH and free T3. Remember that when the patient is taking a T4-to-T3 combo such as NDT, it is not unusual to see a reduction in free T4 levels. This is normal and expected, and it is just how the negative feedback system works. What you don't want to see is TSH suppressed to zero and T3 that is very high. This is a condition called facetious hyperthyroidism where the patient has too much thyroid hormone, and there is some research that suggests that it is associated with poor bone health and other issues that hyperthyroidism causes, but this isn't so much true when only TSH is suppressed and T3 and T4 are normal. It is more true when T3 is high-normal or even out of the lab range, but we'll talk more about that in the hyperthyroidism presentation.

If T4 and T3 aren't in the proper range, meaning they are still low, and TSH is very low, it's likely that immune dysregulation has not been sufficiently addressed in that patient, or you may need to try another medication. It's often worth experimenting with different medications, both prescription and nonprescription, because many patients find that one works better than others, and it's not entirely clear why.

## When NDT doesn't work

1

Dose is too low

2

Nutrient  
imbalance

3

HPA-D

4

Immune triggers  
still present

5

Diet/food intolerances/  
goitrogens

6

High-dose  
L-carnitine?

What if the patient doesn't do well on NDT? There are several possible causes, which I've listed here on this slide. First is that the dose is too low, so the starting dose is half a grain, and then you increase slowly by a half a grain every couple of weeks until you reach 2 grains, then increase every four weeks until you reach 3 grains. If there is still no improvement at 3 grains, it's almost certain that other factors need to be addressed. You would look at nutrient balance, iron, iodine, zinc, selenium, magnesium, and vitamin A in particular; HPA axis dysfunction. Look at cortisol, either high, low, or disrupted rhythm. Look at immune triggers that haven't been adequately addressed, particularly diet but also environmental toxins. Look at food intolerances and goitrogens, and then look at potential for high doses of carnitine. If the patient is taking high doses of L-carnitine, that can inhibit entry of T4 and T3 into the cell nucleus and cause hypothyroidism and reduce the effectiveness of therapy. Actually, as you'll see in the hyperthyroid presentation, we can use that to our advantage in patients who are hyperthyroid.

Okay, that's it for now. In the next presentation, we'll talk about hyperthyroidism. It is far less common than hypothyroidism, and many of the things we've discussed in this presentation apply there, so we won't be spending as much time with it, but we'll cover the key points, as always, from a practical perspective. All right. See you then.