

DUTCH – The Most Informative Hormone Test Out There

Analysis by [Dr. Joseph Mercola](#)

February 18, 2024

STORY AT-A-GLANCE

- › The DUTCH test, which uses dried urine, is the simplest, most elegant and informative test for anyone considering bioidentical hormone therapy, or suspects they might have a hormone problem
- › The test is done four times in a day, and the strips are then used to give you a complete hormone panel, including metabolites, effectively replacing multiple testing methods
- › If you're going to use hormones, they should be bioidentical and natural. Avoid sublingual or oral hormones. Ideal application methods include intradermal or transmucosal (rectal or vaginal application)

Editor's Note: This article is a reprint. It was originally published May 8, 2016.

Understanding what your hormones are doing is highly useful information. The challenge lies in accurately measuring your hormone levels and interpreting the test results. Mark Newman, is the founder of Precision Analytical Laboratory in Oregon, makers of the DUTCH test, which stands for Dried Urine Test for Comprehensive Hormones.

"I've had a really narrow focus my whole career, in that of hormone testing," Newman says. "I've built and directed 24-hour urine testing, then some blood testing, and a whole lot of saliva testing, and over the years looked at the pros and cons of the three main tests."

The DUTCH test, which uses dried urine, is innovative in a number of respects, and offers several benefits over other hormone tests – all of which have their drawbacks and limitations. For example, a conventional (liquid sample) urine test gives you metabolites you simply can't get in a blood or saliva test, but the collection method can be quite messy and inconvenient.

The DUTCH test has been commercially available for ten years, and I believe it's the simplest, most elegant and informative go-to test for anyone considering bioidentical hormone therapy.

DUTCH Captures More Information in One Simple Test

One of the biggest problems is that some hormones fluctuate throughout the day. Cortisol, for example, rises as soon as you get out of bed and then declines as the day wears on. If your diurnal pattern is dysfunctional, meaning you're low in the morning and high at night, you have a serious problem. But a single measurement like a blood draw, or even a 24-hour urine test, cannot show you this.

That's really the advantage of the DUTCH test, which is done several times over the course of a day. By taking multiple samples throughout the day, you can get a more accurate measure of your cortisol pattern. The DUTCH test collection is also very easy – simply urinate on the filter paper on the collection device and let it dry.

Those test strips are then used to give you a complete hormone panel, including metabolites of hormones, (which can't be measured in blood or saliva), effectively replacing multiple testing methods.

"We take an aggregate of those samples and report a correlation to a 24-hour collection for the hormones that don't have that circadian rhythm, where we just want to know, 'How much do you make?' Estrogen, progesterone and testosterone; those types of hormones.

What you get is this uniquely comprehensive look at the hormones, their metabolites and the cortisol picture as it changes throughout the day, giving you

a tremendous amount of information to help you understand the complete picture," Newman explains.

Limitations of Standard Hormone Tests

Blood testing is the most common hormone test method, and it's a good test for reproductive hormones like estrogen, progesterone and testosterone, as there's no major diurnal variation in these hormones (testosterone does have a slight drop throughout the day). The drawback is that it will not show you the metabolites of those hormones.

The blood test also falls short when testing adrenal hormones like cortisol, as it can only show you total cortisol at that moment in time. Using saliva or DUTCH, you can check the free cortisol, which is a better marker. Even saliva, a commonly available testing option, still won't show you the metabolites of cortisol. DUTCH, on the other hand, shows both.

The advantage of the urine test is being able to measure both parent hormones and metabolites. In the example below, the female patient complained of estrogen-dominant symptoms, so we might expect estrogens and their metabolites in her urine to be elevated.

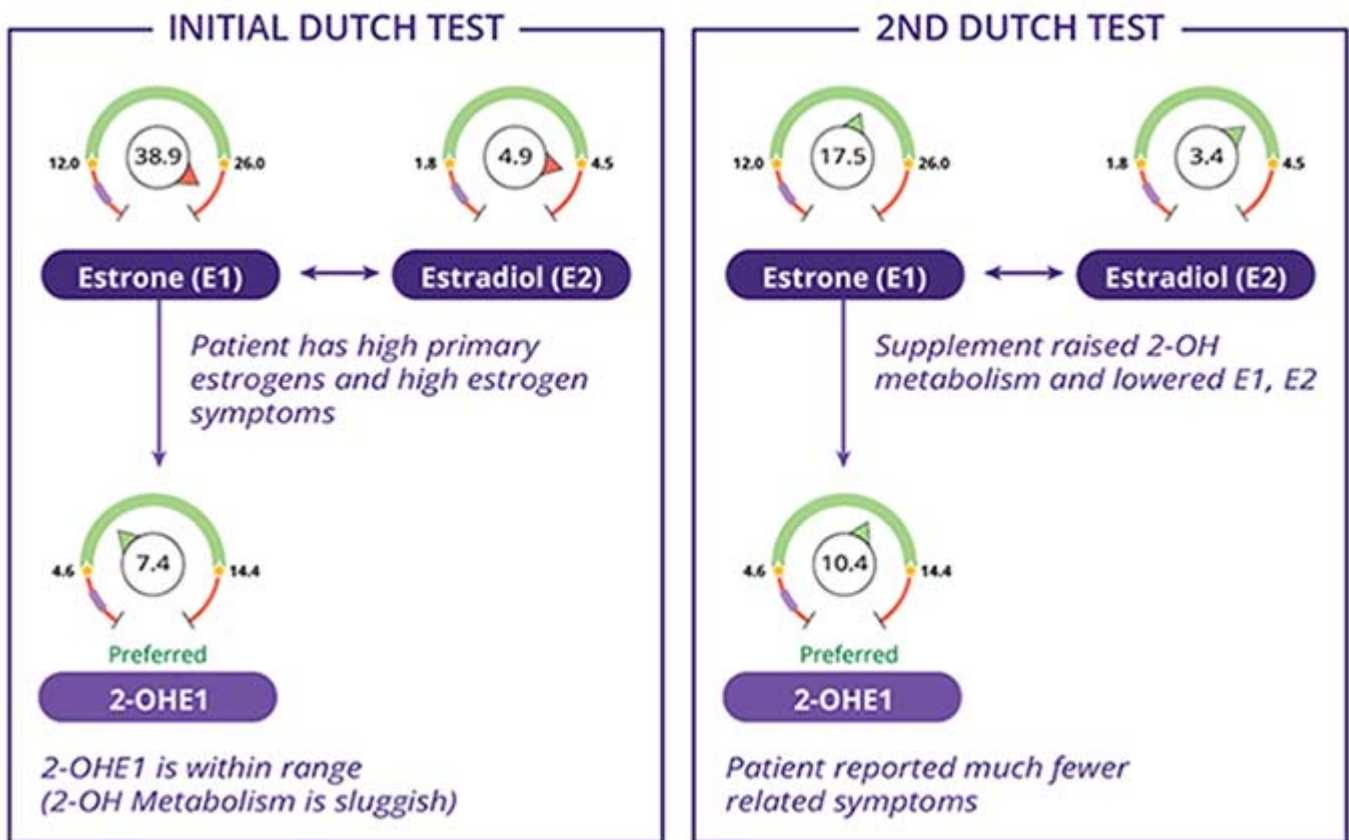
As we look at the entire family of estrogens, we see a more complex picture. Looking at 2-OH-E1 (a downstream metabolite) we see that it is not high – a picture of sluggish estrogen clearance.

"In the particular case I'm thinking of, we were able to give her some supplements to speed up that specific enzyme that clears estrogen," Newman says. "Her estrogen levels ... come down as the clearance speeds up like it's supposed to.

But that's information we only knew because we were able to look at all these metabolites, the whole family of estrogens, and say, OK, we can get a more

precise picture of what's going on. You're getting added information on the reproductive hormones."

In the follow-up test, you can see the increase in 2-OH-metabolism (other estrogen metabolites are not shown for simplicity). The most potent estrogens (E1, E2) were decreased by this increased metabolism. The problem, in this case, was predominantly a metabolism problem, not what you might assume – that she was making too much estrogen.



Why Metabolites Are Important

Metabolites can help you understand what the underlying pathology is. For example, one of the primary metabolites of testosterone is dihydrotestosterone (DHT), which is believed to be one of the primary risk factors for prostate cancer.

You want high levels of natural testosterone, but you don't want to have too much conversion to DHT, so you don't have excessive amounts of that metabolite. A blood,

urine or saliva test can tell you if you're making too much testosterone. But if those levels are normal, yet you're still experiencing symptoms of high testosterone, such as acne or hirsutism, it suggests testosterone is being metabolized into DHT, and that the metabolite may be responsible for your symptoms.

To evaluate where the testosterone is going, you need to check the metabolites. Moreover, if metabolites are not the problem, you won't end up treating a problem you do not have. If it is part of the problem causing these symptoms, then there are natural ways to intercede.

Patient Case No. 1: Depression From Sluggish Clearance of Cortisol

To help you better understand the testing process, Newman shares a few specific cases to illustrate the advantages of the DUTCH system.

"Let's take a particular example of someone who struggled with depression and anxiety. We tested her cortisol. What do we find? Her results are high. We say, 'AHA! We've got something here.'

The free cortisol is elevated. We know there's more depression in people who have elevated free cortisol, so we want to address this and we say, 'You are making too much cortisol.' But then we look downstream at those metabolites, we notice they're actually low.

We say, 'Hold on, what's going on here is you have high free cortisol but the reason for that may be largely because you have sluggish clearance of this cortisol. You make it but you're not getting rid of it.' The liver's not processing it properly to get rid of that cortisol, so the free cortisol is high.

This is not because your adrenal glands are pumping out lots of cortisol. In fact, they're not pumping out that much cortisol at all. That specific pattern can

happen when your thyroid is low. For a patient like that, as she deals with her thyroid issue there's going to be a response on the cortisol side.

What we can do incorrectly is we can go chase that high cortisol and give people phosphatidylserine and all of these things to lower the adrenal output of cortisol. But that's not her issue. Her issue is more nuanced and complex. When we look at all three dimensions of the cortisol, we get a fuller understanding."

Patient Case No. 2: Inflammation Blocking DHEA Sulfation

Another example would be low dehydroepiandrosterone (DHEA). What if you also have an inflammatory condition? DHEA is made by your adrenal gland, which turns into DHEA sulfate (DHEA-S) through a sulfation process (DHEA-S is the more common lab test).

Research shows that people make less of the sulfated forms of androgens (like DHEA-S) when inflammation is present. If you have low DHEA-S, you may have normal DHEA but the inflammation is blocking sulfation into DHEA-S, or you may not make enough DHEA. How can you tell which scenario is at play?

"In the urine test, you can look at these other DHEA metabolites (that are even more abundant than DHEA-S) that well reflect the amount of DHEA you're making. Now we get the fuller picture where we say, 'AHA, you've got inflammation. That may be contributing to the lower DHEA-S.'"

Then we move on and see that inflammation also promotes estrogen production from androgens because it upregulates aromatase (which converts androgens to estrogens). We can see that picture. But then are you clearing that estrogen? We can take a step further and look at that.

Inflammation is also going to play into the cortisol, in how it's metabolized. Again you need the metabolites of cortisol to look at that. This whole picture really starts to emerge when you get this more nuanced, complex and more comprehensive look at all of the hormones – the androgens and their

metabolites, the estrogens and their metabolites, as well as cortisol – to try to make better decisions and go in the right direction."

Understanding HPA-Axis Dysfunction

Evaluating adrenal function has been a notoriously confusing issue. For a long time it's been assumed that when people have low cortisol, they're suffering from "adrenal fatigue," but we now know that this is not an accurate term or concept. When adrenal function changes, research is clear that what's really going on has to do with the signaling between your brain and your adrenal gland in response to stress, and not to adrenal gland function alone.

So are your adrenals really fatigued? Or is something else going on? We know that the adrenal glands do not "give out" the way that the ovaries do during menopause. To better describe where symptoms come from after prolonged exposure to stress, we really need to look at the bigger picture of hypothalamic-pituitary-adrenal axis (HPA axis) dysfunction. This is the more accurate term describing what is happening here.

"If a patient has low cortisol, we see many providers label that as 'adrenal fatigue' and work to try to increase cortisol. What we find when we look at the metabolites of cortisol in these patients (which is a better marker for overall cortisol production), is that about half of the patients with low free cortisol are making more than average amounts of cortisol.

They may be processing it more quickly. As in obesity, you get these huge productions of cortisol (metabolites), but when you only focus on the free cortisol, you can call someone 'stage 3 adrenal fatigue' who is literally making more cortisol than 90%, 95%, or 99% of the population in some situations (because obesity results in more cortisol production, but not more free cortisol). So it's a more complex situation than that."

Evaluation of free hormone plus metabolites gives a more complete picture and can prevent practitioners from misunderstanding what is wrong with a patient.

Considerations for Menstruating Women Using the DUTCH Test

The timing of a hormone test can make a big difference. The samples for the DUTCH test are collected four times throughout the day. If you're a woman, you need to be mindful of your menstruation cycle. There's only a few days in a month when a menstruating woman can take the test if she's looking at female hormones. Typically, you'll want to collect your sample between days 19 and 22 after the first day of your period.

"You just have to pick one of those days, collect your samples, and then you're good. The reason for this is that the middle of the luteal phase (between ovulation and menstruation), is when we'll see progesterone peak and also can measure estrogen. That's the window that we want to evaluate to get the most complete picture," Newman says.

"If your only question is, 'How's my cortisol production?' then you can test any day. You can test those four times, and you can get a really detailed look at how those hormones are doing."

Speaking of hormones, I opened with the comment that the DUTCH test is a useful strategy if you're going to use bioidentical hormones. But in many cases, bioidentical hormones are inappropriate. There may be simpler strategies to normalize the abnormal patterns found under the DUTCH testing system. So it could also be used to ascertain whether bioidentical hormones are the ideal approach to your symptoms in the first place.

On the topic of hormone replacement, I think it's important to reemphasize that if you're going to use hormones, they should be bioidentical and natural. The most commonly prescribed are transdermally (topically through the skin), or transmucosally (rectal or vaginal application).

Generally, these routes of administration bypass the liver metabolites, which is a profoundly useful strategy. Research is clear that oral micronized progesterone is best if you are postmenopausal, on estrogen and need to protect your uterus.

How to Monitor Bioidentical Hormones

Once you're on bioidentical hormones, you need to monitor them on a regular basis, and this too can be a rather complex affair. While transmucosal application is ideal, there's no easy way to determine peak absorption. In one study, two women receiving vaginal hormones (in this case testosterone) showed wildly fluctuating peaks.

One peaked at eight hours; the other at two to three hours. By the eighth hour, she was at baseline. So if you were to test her at eight hours, you might think she needed more [hormones](#).

"Here's where urine testing enters," Newman says. "We're going to collect over time. That's an improvement. But then you still have this issue of, 'If I put testosterone in an area where my sample's coming from, and the amount of hormone in that supplement is literally a million times higher than what's in a biological sample, I could contaminate it.'

We spent months trying to come up with a creative solution to this, and we did. We said, 'Look, I don't test testosterone in urine.' In urine, it's in a different form. It's what we call a conjugate: testosterone glucuronide or testosterone sulfate. If it's there as just testosterone, it's not supposed to be there. That would be a contamination.

We created a special method that would remove and separate these different types of hormones to give you an average over time (because urine is better for that), and a noncontaminated sample to give us a better option to monitor the hormones ..."

Testing Matrix

It's important to realize that the best lab testing option is different, depending on the hormone you are testing for and your method of application. On the [DUTCH test website](#),

they have an interactive [Testing Matrix](#) you can download that can be quite helpful for this.

Simply select your particular hormone therapy of interest, and it will guide you through the pros and cons and any special considerations you need to take into account. The matrix also contains embedded links to their [video tutorials](#), which walk you through each section of your test report.

"We've got a whole series of tutorials that can help you figure out, either as a provider, how to make sense of it, or as a patient to figure out, 'Where's my dysfunction, so that I can find a provider specifically who has experience in HPA-axis dysfunction or female issues as it relates to estrogen or progesterone?"

For a tour of the DUTCH report from Newman, watch the video embedded above in an earlier section. The DUTCH test really outperforms all of the other methods when it comes to telling the story about what your hormones are doing, and this will allow you to figure out what areas you should be focusing on in terms of taking corrective action. Any relatively literate patient can take this report, read it, and understand which hormones may be "off."

And you also get free tutorials on how to interpret your results. It really is a great and powerful tool for understanding what's going on with your hormones. You will need to work with a healthcare provider for some of the more complex cases and of course when treatment is needed. DUTCH also has a network of providers across the globe that can assist with the whole process of balancing hormones.

More Information

The [DUTCH hormone test](#) can be ordered on their website for patients from most states. While you can order it yourself, it's strongly recommended you work with a qualified and experienced healthcare provider when trying to address hormonal issues, due to the sheer complexity.

The DUTCH Complete test, which sells for \$499, is a complete hormone panel, including estrogen, progesterone, androgens, metabolites, melatonin, cortisol, and more. Please understand that this is not an affiliate program and I earn nothing if you wind up ordering this test. I only recommend it because I believe it's the best one out there.

For insurance reimbursement, you'd have to order it through your healthcare provider and get an insurance receipt from Precision Analytical for the test. You can then try to submit it to your insurance company for reimbursement (reimbursement is usually about 65%). In some cases you may receive at least a portion of the cost back.

Another test you can get is called Cycle Mapping, which can be helpful if you're trying to become pregnant or if you're premenopausal with fluctuating cycles, or a cycle without bleeding (uterine ablation or a partial hysterectomy). It's a bit more extensive, and more expensive, but it provides you with data on your female hormones throughout your entire menstrual cycle, to help you identify the source of the problem.

Once you receive your test report, the Testing Matrix and accompanying video tutorials can guide you through your report, so you understand what the test means for your health.