

PATIENT INFORMATION

Age: 27
Sex: Male

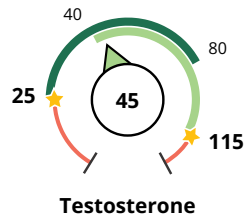
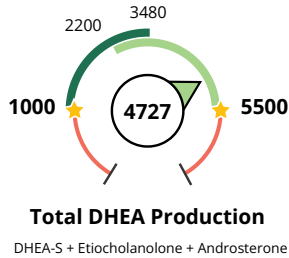
Collection Dates:
June 2026 2 U3 U4)

Hormone Testing Summary

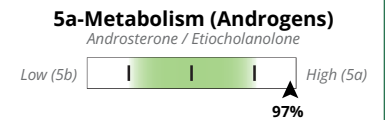
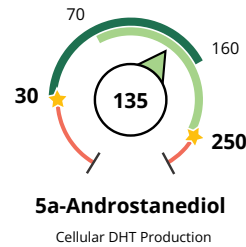
● Normal, Age 18 - 40 (Androgens) ● Age 41 - 60+ (Androgens) ● Out of Range ★ Edge of Range

For an expanded view of results, see pages 2 through 6. For interpretive support, see *About Your Results* pages.

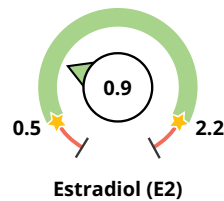
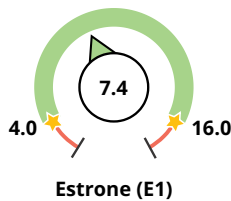
ANDROGEN PRODUCTION



ANDROGEN METABOLISM



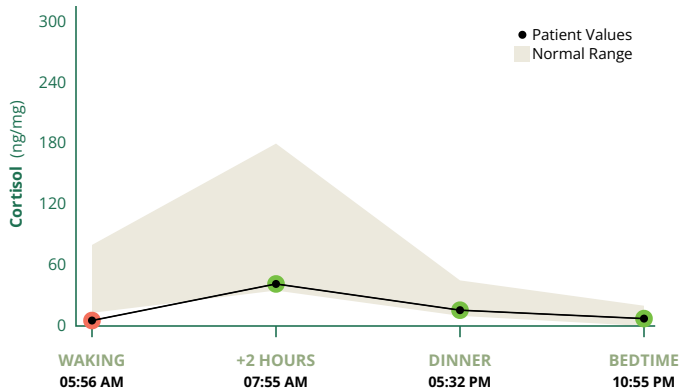
ESTROGEN PRODUCTION



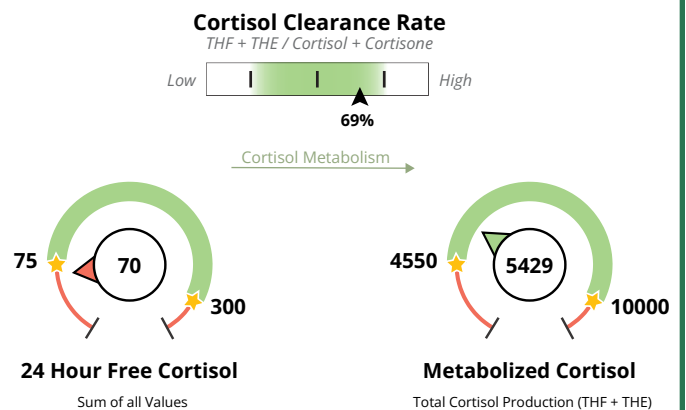
ESTROGEN METABOLISM



DAILY FREE CORTISOL PATTERN



CORTISOL METABOLISM

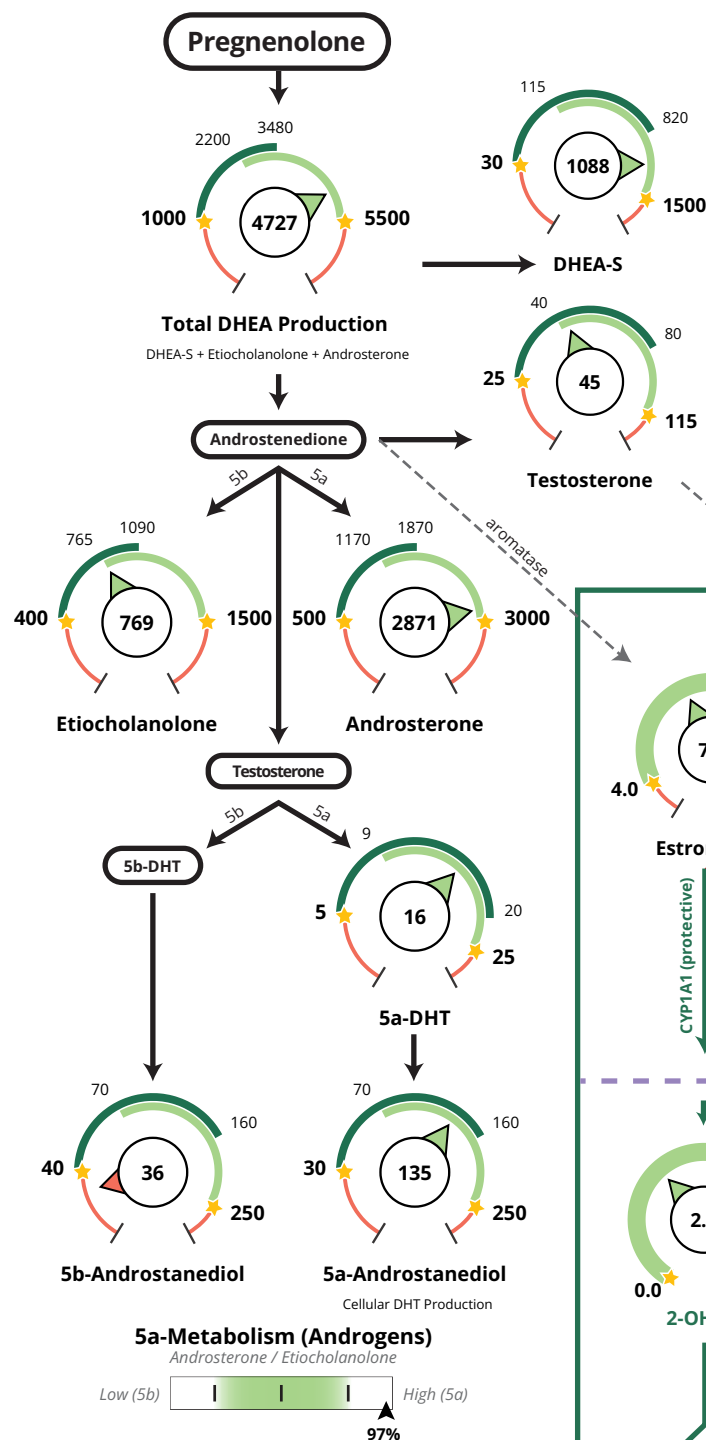


Organic Acid Tests (OATs) Suggests the Following Possible Imbalances | see page 6 for details

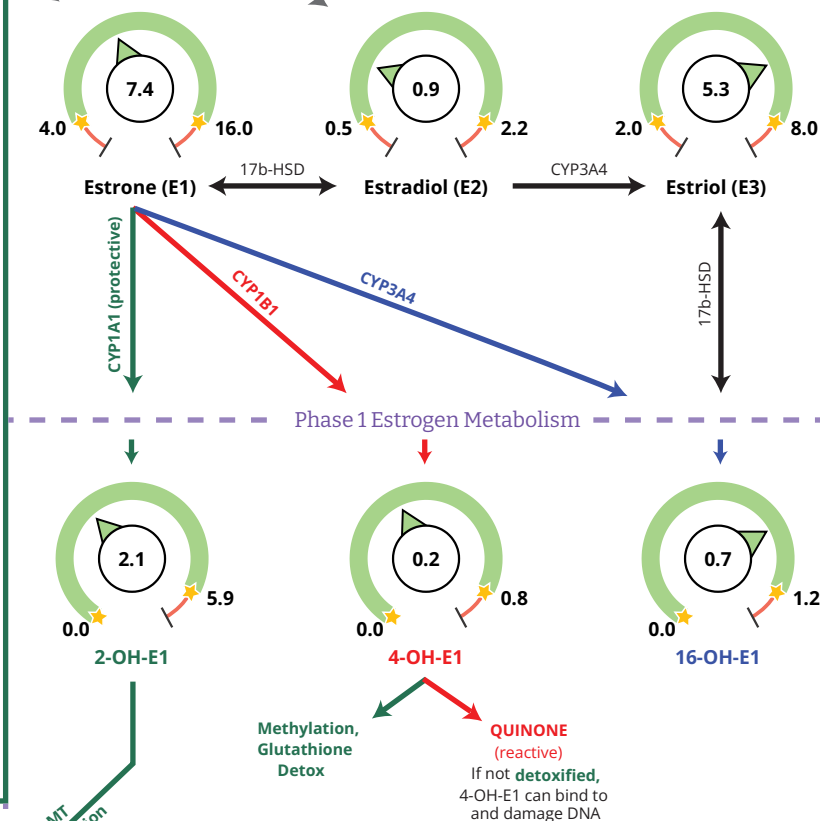
● Watch ● Needs Attention

● Neurotransmitters

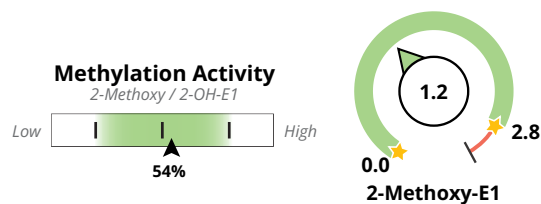
Androgens



Estrogens



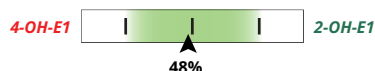
Phase 2 Estrogen Metabolism



2-OH / 16-OH-E1 Balance



2-OH / 4-OH-E1 Balance



The Phase 1 Estrogen Metabolism Pie Chart has been replaced by the 2-OH/16-OH-E1 and 2-OH/4OH-E1 slider bars (left). See this [video](#) for an explanation with examples. This change aligns the DUTCH report best with published scientific research. See our recent publication, found [here](#).

Collection Times:

June 2026 AM (U1)

June 2026 AM (U2)

June 2026 PM (U3)

June 2026 PM (U4)

Age: 27

Sex: Male

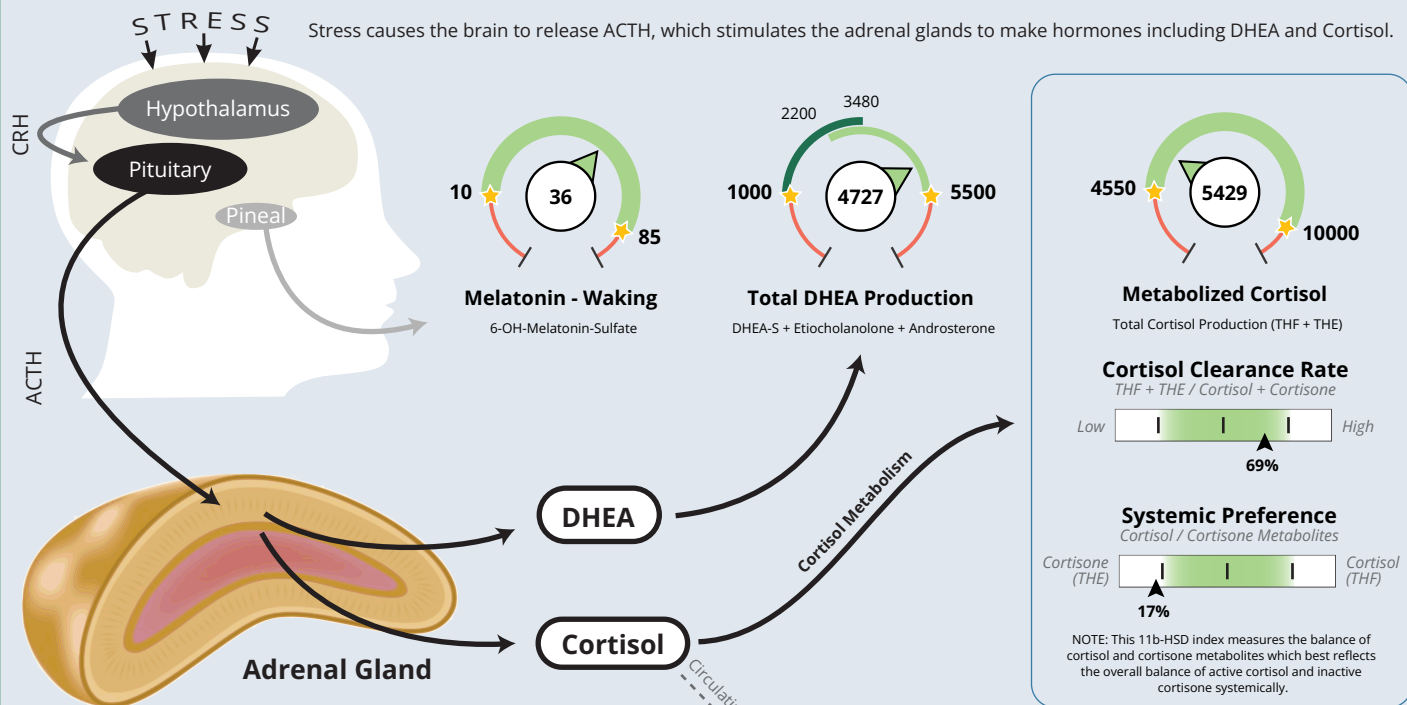
Sex Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Progesterone Metabolites (Urine)				
b-Pregnanediol	Within range	131.0	ng/mg	75 - 400
a-Pregnanediol	Within range	94.2	ng/mg	20 - 130
Estrogens and Metabolites (Urine)				
Estrone (E1)	Within range	7.35	ng/mg	4 - 16
Estradiol (E2)	Within range	0.88	ng/mg	0.5 - 2.2
Estriol (E3)	Within range	5.3	ng/mg	2 - 8
2-OH-E1	Within range	2.13	ng/mg	0 - 5.9
4-OH-E1	Within range	0.24	ng/mg	0 - 0.8
16-OH-E1	Within range	0.73	ng/mg	0 - 1.2
2-Methoxy-E1	Within range	1.15	ng/mg	0 - 2.8
2-OH-E2	Within range	0.31	ng/mg	0 - 1.2
4-OH-E2	Within range	0.07	ng/mg	0 - 0.25
Total Estrogen	Within range	18.2	ng/mg	10 - 34
Metabolite Ratios (Urine)				
2-OH / 16-OH-E1 Balance	Within range	2.92	ratio	2.85 - 9.88
2-OH / 4-OH-E1 Balance	Within range	8.88	ratio	6.44 - 12.6
2-Methoxy / 2-OH Balance	Within range	0.54	ratio	0.4 - 0.7
Androgens and Metabolites (Urine)				
DHEA-S	Within range	1087.9	ng/mg	30 - 1500
Androsterone	Within range	2870.6	ng/mg	500 - 3000
Etiocholanolone	Within range	768.6	ng/mg	400 - 1500
Testosterone	Within range	44.94	ng/mg	25 - 115
5a-DHT	Within range	16.2	ng/mg	5 - 25
5a-Androstanediol	Within range	134.7	ng/mg	30 - 250
5b-Androstanediol	Below range	36.0	ng/mg	40 - 250
Epi-Testosterone	Within range	94.0	ng/mg	25 - 115

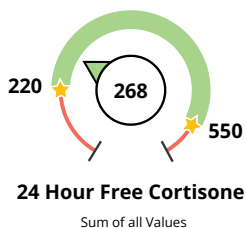
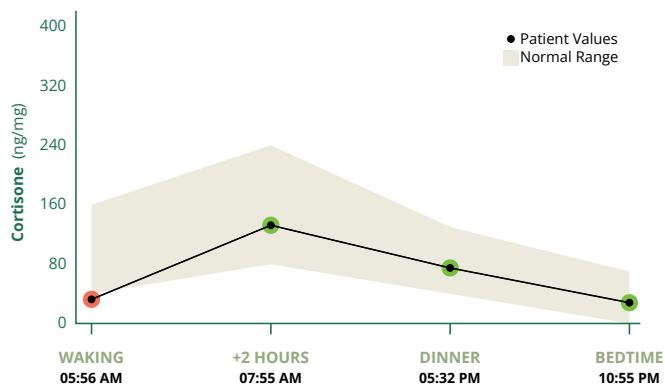
"Normal range" shown above refers to the overall range across all ranges, which lands between the stars on the dials. Age-dependent ranges are now included on the DUTCH dials on page 2.

EXPANDED CORTISOL & ADRENAL HORMONES

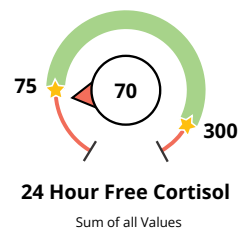
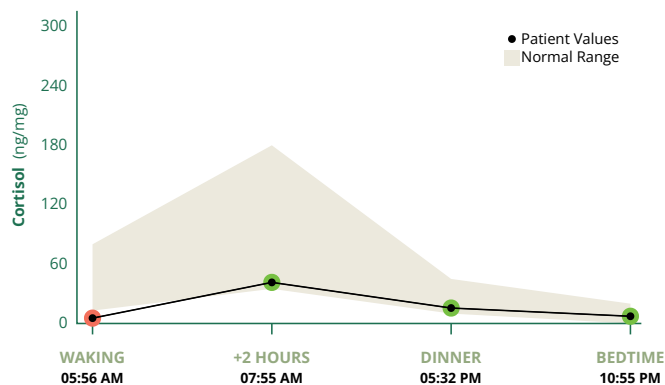
● Normal, Age 18 - 40 (Androgens) ○ Age 41 - 60+ (Androgens) ● Out of Range ★ Edge of Range



Daily Free Cortisone Pattern



Daily Free Cortisol Pattern



Cortisol and Cortisone interconvert (11b-HSD)

Age: 27

Sex: Male

Collection Times:

June 2026 AM (U1)

June 2026 AM (U2)

June 2026 PM (U3)

June 2026 PM (U4)

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U1) - Waking	Below range	5.4	ng/mg	13 - 80
Cortisol (U2) - +2 Hours	Low end of range	41.5	ng/mg	35 - 180
Cortisol (U3) - Dinner	Low end of range	15.6	ng/mg	10 - 45
Cortisol (U4) - Bedtime	Within range	7.3	ng/mg	0 - 20
Cortisone (U1) - Waking	Below range	32.5	ng/mg	40 - 160
Cortisone (U2) - +2 Hours	Within range	132.3	ng/mg	80 - 240
Cortisone (U3) - Dinner	Within range	74.8	ng/mg	40 - 130
Cortisone (U4) - Bedtime	Within range	28.0	ng/mg	0 - 70
24 Hour Free Cortisol (Sum of all Values)	Below range	69.8	ng/mg	75 - 300
24 Hour Free Cortisone (Sum of all Values)	Low end of range	267.6	ng/mg	220 - 550
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	0.91	mg/ml	0.3 - 3
Creatinine (U2) - +2 Hours	Within range	1.16	mg/ml	0.3 - 3
Creatinine (U3) - Dinner	Within range	1.21	mg/ml	0.3 - 3
Creatinine (U4) - Bedtime	Within range	1.51	mg/ml	0.3 - 3
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Within range	614.4	ng/mg	175 - 700
b-Tetrahydrocortisol (b-THF)	Below range	1575.9	ng/mg	1750 - 4000
b-Tetrahydrocortisone (b-THE)	Within range	3238.8	ng/mg	2350 - 5800
Metabolized Cortisol (THF + THE)	Low end of range	5429.0	ng/mg	4550 - 10000
DHEA-S	Within range	1087.9	ng/mg	30 - 1500
Cortisol Clearance Rate (CCR)	Within range	16.1		8.5 - 18.5

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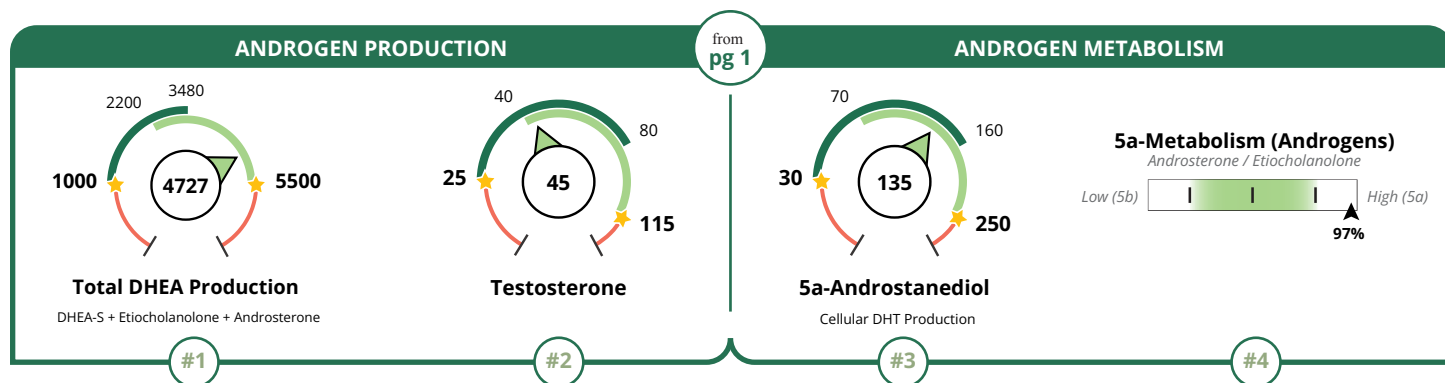
Collection Dates:
June 2026 (U1 U2 U3 U4)

Organic Acid Tests (OATs)

TEST		RESULT	UNITS	NORMAL RANGE
Nutritional Organic Acids (Urine)				
Vitamin B12 Marker - May be deficient if high				
Methylmalonate (MMA)	Within range	1.0	ug/mg	0 - 3.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Within range	0.96	ug/mg	0.2 - 1.9
Kynurenate	Within range	5.2	ug/mg	1 - 6.6
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Within range	8.9	ug/mg	0 - 18
Glutathione Marker - May be deficient if high				
Pyroglutamate	Within range	50.5	ug/mg	38 - 83
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Within range	47.0	ug/mg	0 - 131
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Low end of range	4.4	ug/mg	4 - 16
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	Within range	4.0	ug/mg	2.5 - 7.5
Neuroinflammation Marker				
Quinolate	Within range	8.3	ug/mg	0 - 12.5
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	Within range	36.2	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	4.9	ng/mg	0 - 8.8

About Your Results | Androgens

The following *About Your Results* sections include key DUTCH report elements from page 1 to aid your interpretation.



Androgen-related Patient or Sample Comments:

- The patient reports significant symptoms of androgen deficiency.

#1. Assess adrenal androgen levels (Total DHEA).

- The total DHEA production is **4,727 ng/mg**, which is within the optimal range for men ages 18-40 years old.

#2. Assess testosterone levels.

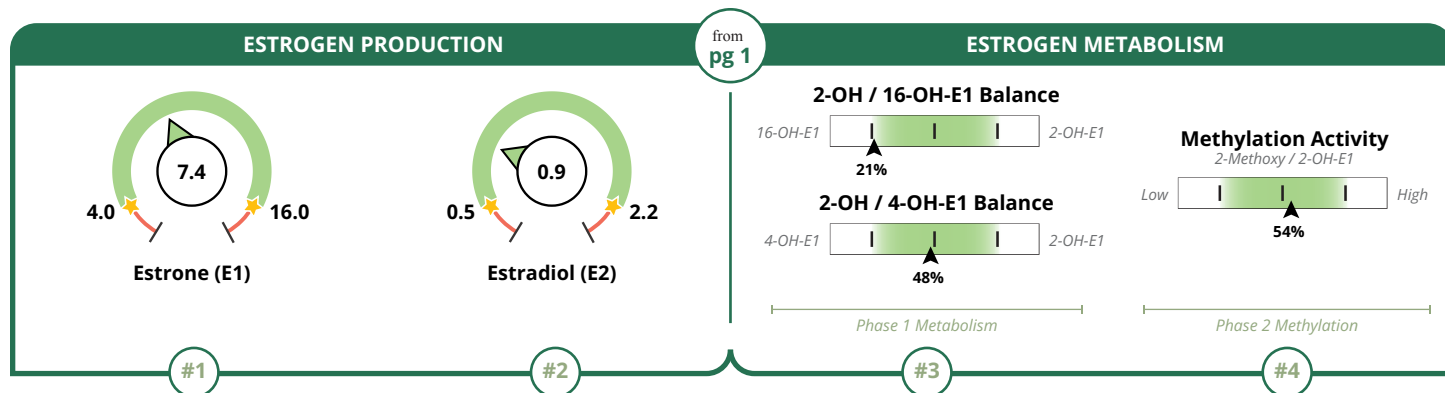
- Testosterone is **44.9 ng/mg**, which is within the optimal range for men 18-40 years old, but in the lower half.

#3. Assess cellular production of 5a-DHT via 5a-androstenediol.

- 5a-Androstenediol is **135 ng/mg**, which is within the optimal range for men 18-40 years old and overlaps with the range for men aged 41 and over. 5a-Androstenediol reflects the tissue activity of 5a-DHT (the most potent androgen).

#4. Assess if there is a preference for the more potent alpha metabolism of the androgens.

- The 5a-Metabolism of androgens is higher than **97.0%** of the population, which is above the range. This indicates a preference for the more androgenic pathway. If paired with high androgens, this may contribute to androgen excess symptoms.



Estrogen-related Patient or Sample Comments:

#1. Assess estrogen levels.

- The estrone (E1) is **7.3 ng/mg**, which is within the optimal range. E1 is the most abundant estrogen but is significantly less potent than estradiol (E2).
- Estradiol (E2) is **0.88 ng/mg**, which is within the optimal range. E2 is the most potent estrogen and its levels are often related to symptoms.

#2. Assess the conversion of testosterone to estradiol (via aromatase).

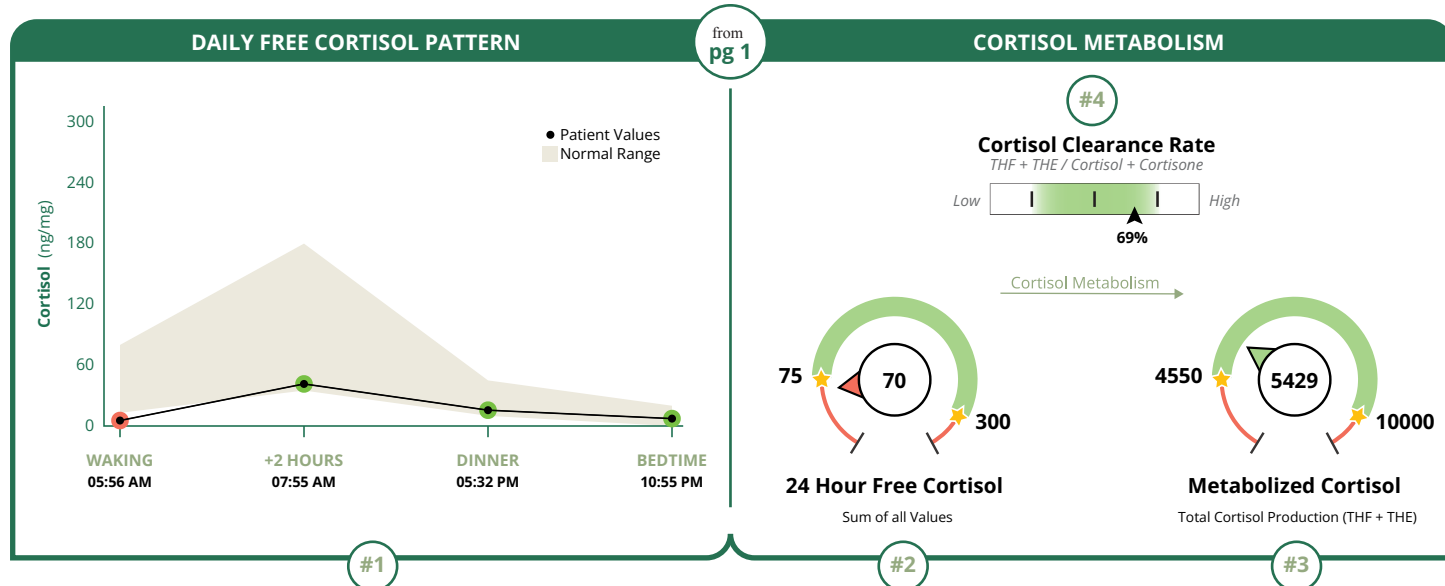
- In males, E2 levels come from conversion of circulating testosterone via the aromatase enzyme. Reviewing the E2 level can give insight into circulating testosterone and aromatase activity. The strongest influence on aromatase activity is body fat percentage.

#3. Assess 2-OH preference in phase 1 estrogen metabolism.

- The 2-OH/16-OH-E1 is higher than only **21.0%** of the population, which is in the optimal range, but towards the low end. This indicates a mild preference for the estrogenic 16-OH-E1 metabolite compared to the beneficial 2-OH-E1 metabolite. If paired with high E2 or high 16-OH-E1, this may contribute to high estrogen symptoms.
- The 2-OH/4-OH-E1 is higher than **48.0%** of the population, which is within the optimal range. This indicates a balance between the beneficial 2-OH-E1 metabolite and the potentially genotoxic (DNA damaging) 4-OH-E1 metabolite.

#4. Assess methylation of 2-OH catechol estrogens.

- The methylation activity is higher than **54.0%** of the population, which is within the optimal range. This indicates optimal estrogen methylation, which is beneficial for efficient estrogen detoxification.



Cortisol-related Patient or Sample Comments:

- The patient reported significant fatigue in the afternoon/evening, but not in the morning.

#1. Assess the daily free cortisol pattern.

- One or more points on the Daily Free Cortisol Pattern are out of the optimal range. Note the time of day and whether out-of-range results are low or high at each point.

#2. Assess the daily total of free cortisol in circulation (24hr Free Cortisol).

- The 24hr Free Cortisol is **69.8 ng/mg**, which is below the optimal range. This indicates low free cortisol levels.

#3. Assess the total cortisol produced by the adrenal glands (Metabolized Cortisol.)

- The Metabolized Cortisol, which reflects the total cortisol output for the day, is **5,429 ng/mg**, which is within the optimal range, but towards the low end.

#4. Assess the rate of cortisol clearance from the body.

- The Cortisol Clearance Rate is higher than **69.0%** of the population, which is within the optimal range. This indicates that cortisol and cortisone are being metabolized at a normal rate.

ANDROGENS

The previous "About Your Results" pages look at core insights for the DUTCH report shown on the Hormone Testing Summary page, all of which are worth considering for most patients. Next, "Advanced Insights" cover additional features within the DUTCH test that require reviewing the pages after the summary page. These concepts are more complex but can be highly relevant for some patients. Review the concepts and look for patient-specific comments, when notable, in bullets.

#1. Assess if the DHEA-S is relatively lower than the Total DHEA.

DHEA-S is primarily produced in the adrenals through sulfation. Inflammation can inhibit sulfation, lowering DHEA-S levels and diverting DHEA metabolism toward 5a- and 5b-reductase pathways, resulting in higher etiocholanolone (5b-metabolite) and androsterone (5a-metabolite) levels relative to DHEA-S. Review the patient's results to assess if this pattern is present.

#2. Assess the androgen pattern to determine if urine testosterone may not accurately reflect systemic levels (UGT2B17 deletion).

- This advanced topic is only relevant if the patient has low testosterone (T) with other specific patterns of androgen metabolites, especially when levels of Epi-T (see page 3) are much higher than T on the DUTCH Test. In patients that do have a suspicious pattern, urine testosterone may underestimate true testosterone levels. This patient's results do NOT indicate a reason to be suspicious of the urine testosterone levels. For information on this topic, see this [video](#).

#3. While 5a-androstenediol best represents cellular 5a-DHT production, assess if 5a-DHT offers additional insight into androgenic activity

5a-DHT is testosterone's active metabolite and is three times more potent than testosterone. If elevated it may contribute to androgen excess symptoms. Research shows 5a-androstenediol may be a better marker of 5a-DHT tissue activity, but the 5a-DHT result may provide additional insight. Review the 5a-DHT result in context of other androgens and androgenic symptoms for a deeper understanding of the androgen results.

#4. Assess whether any of the androgen-related organic acids are out of range.

Androgen levels can be influenced by sleep and oxidative stress. Imbalances in glutathione, melatonin, and oxidative stress markers, if present, will be commented on here. This may help identify contributing factors affecting androgen markers.

ESTROGEN & PROGESTERONE

#1. Assess whether E1, E3, or Total Estrogen levels add more insight into overall estrogenic activity.

While E2 is the most potent estrogen, other estrogens such as estrone (E1), also contribute to overall estrogenic activity. Additionally, examining Total Estrogens (listed on the Sex Hormones & Metabolites page) can provide insight into overall estrogen production, which may not be fully reflected in the E2 result alone.

E1 is 10% as potent as E2 but is typically more abundant. This makes it a significant contributor to estrogenic symptoms (high or low). While all estrogens are potent immune stimulators, E1 may promote more inflammatory cytokine production than other estrogens. In cases where E1 is significantly different from E2, a note will be here describing the potential impact.

About Your Results | Advanced Insights (continued)

E3 is a weak estrogen that may have anti-inflammatory properties. For those using E3 therapy, since the route of administration can influence how the test result is interpreted, notes on E3 supplements (such as creams or pills) will be shown here.

The Total Estrogen level should be viewed secondarily to the most potent estrogen levels like E1 and E2, which typically match the patient presentation best. For example, Total Estrogen can be high with robust, healthy estrogen metabolism. Therefore, its levels do not always indicate a cause for high or low estrogen-related symptoms. If out of range, the Total Estrogen level will be noted here.

#2. Assess progesterone production.

In males, progesterone metabolites measured in urine are primarily of adrenal origin. B-pregnanediol is the best marker of total progesterone. High b-pregnanediol may be associated with increased stress or inflammation. Low b-pregnanediol may accompany reduced adrenal cortisol output, although the clinical significance of low progesterone in men is not well understood.

#3. Assess estrogen clearance through phase 1 and 2.

By looking at the parent estrogens (E1, E2) and their breakdown products (2OH, 4OH, 16OH, and 2MeOHE1), we can see how quickly estrogen is being metabolized. If the parent estrogens are higher than the breakdown products, it means estrogen is clearing more slowly, which increases risk of estrogen excess symptoms. Balanced levels show normal clearance, while lower parent estrogens compared to breakdown products suggest faster clearance, decreasing the risk of estrogen excess symptoms.

- The phase 1 estrogen metabolites levels are balanced with the primary estrogens (E1, E2). This indicates normal phase 1 estrogen clearance.

#4. Assess whether any of the estrogen-related organic acids are out of range.

Estrogen levels, metabolites, and metabolism patterns can be influenced by nutrient status, oxidative stress, and gut health. Imbalances in glutathione, B12, B6, gut dysbiosis, and oxidative stress markers will be commented on here, if relevant for the patient. This may help identify contributing factors affecting estrogens.

ADRENAL

#1. Assess if cortisone (inactive) adds more insight to the free cortisol assessment.

Cortisol is an active adrenal glucocorticoid, while cortisone is an inactive "storage" form. In the kidney, a significant amount of cortisol is converted to cortisone before excretion into urine. Therefore, urinary cortisone should be considered a reflection or "shadow" of systemic cortisol. The degree to which this happens in an individual may vary. If free cortisone is significantly higher than free cortisol, it may indicate free cortisol levels were higher in circulation (serum) than the urinary free cortisol implies. If free cortisone is lower than free cortisol, this may indicate free cortisol levels were not as high in circulation (serum) as urinary free cortisol implies.

If the cortisone is significantly different from cortisol, there will be a bulleted comment below.

#2. Assess if there is a whole-body preference for (inactive) cortisone or (active) cortisol.

About Your Results | Advanced Insights (continued)

The Systemic Preference slider reflects the balance between cortisol (THF) and cortisone (THE) metabolites and is influenced by systemic cortisol needs. The balance between THF and THE is the best estimation of the systemic balance of cortisol to cortisone. As these metabolites are processed through the liver, the body may shift to cortisol (THF) in response to acute stressors (e.g., immune activation or infection), or toward cortisone (THE) with chronic stress (e.g., long-term inflammation or illness). Review the patient's result to determine if they are out of range.

- The Systemic Preference slider is higher than only **17.0%** of the population, which is below the optimal range. This indicates significantly higher levels of cortisone metabolites compared to cortisol metabolites. If free cortisol levels are robust, this may be protective by turning off excess cortisol to balance tissue levels. If cortisol levels are low, this may contribute to low cortisol symptoms.

#3. Assess for anabolic-catabolic balance.

Androgens such as DHEA (assessed as Total DHEA Production) support tissue growth and repair, while cortisol promotes tissue breakdown. When DHEA is significantly higher than cortisol, it may suggest an anabolic state (favoring tissue building and repair). When DHEA is significantly lower than cortisol, it may suggest a catabolic state (favoring tissue breakdown).

- The Total DHEA Production is high compared to the Total Cortisol Production. Androgens promote tissue growth and repair, while cortisol promotes tissue breakdown. When androgens are significantly higher than cortisol, as in this case, it may suggest an anabolic (tissue repair and building) state.

#4. Assess whether any of the cortisol-related organic acids are out of range.

Cortisol can be impacted by inflammation, nutrient status, and sleep. Imbalances in B12, B6, melatonin, and neuroinflammation markers will be commented on here if relevant for the patient. This may help identify contributing factors affecting cortisol results.

Thank you for choosing DUTCH for your functional endocrinology testing needs!

Please review our DUTCH resources for information on reading the DUTCH test:

For DUTCH Overviews and Tutorials, click here: <https://dutchtest.com/tutorials>

To view the steroid pathway chart, click here: <https://dutchtest.com/steroid-pathway>

Finally, please review the patient's results along with their requisition form. It is designed to capture relevant medications, symptoms, diagnoses, sample collection, and notes that may be helpful in interpreting the results.

Additional Comments

Reference Range Percentiles

Reference ranges are developed by testing thousands of healthy individuals, while excluding results from outliers or those on impactful medications. A percentile approach is applied, as is done with most labs. Classic reference ranges use the 95th percentile as the upper end of range and the 5th percentile as the lower end of range. Our DUTCH ranges uses the percentiles found in the table below. We feel these ranges reflect the more optimal range sought in functional medicine practices. The table below shows the percentiles used for the reference range of each analyte on the DUTCH report: