dutchtest COMPLETE

PATIENT INFORMATION

Ordering Provider:
Test Provider MD

Male Sample Report

OR

DOB: 1987-11-06
Age: 37
Sex: Male

Accession # 01154541

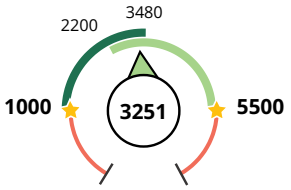
Collection Dates:
2025-06-12 (U4)
2025-06-13 (U1 U2 U3)

Hormone Testing Summary

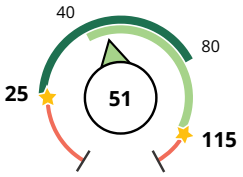
Normal, Age 18 - 40 (Androgens) | Age 41 - 60+ (Androgens) | Out of Range | Edge of Range

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

ANDROGEN PRODUCTION

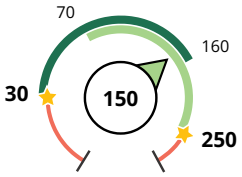


Total DHEA Production
DHEA-S + Etiocholanolone + Androsterone



Testosterone

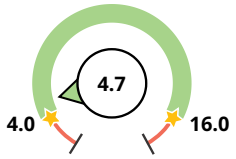
ANDROGEN METABOLISM



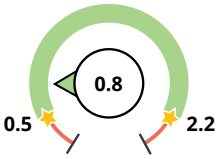
5a-Androstanediol
Cellular DHT Production

5a-Metabolism (Androgens)
Androsterone / Etiocholanolone

ESTROGEN PRODUCTION



Estrone (E1)



Estradiol (E2)

ESTROGEN METABOLISM

2-OH / 16-OH-E1 Balance

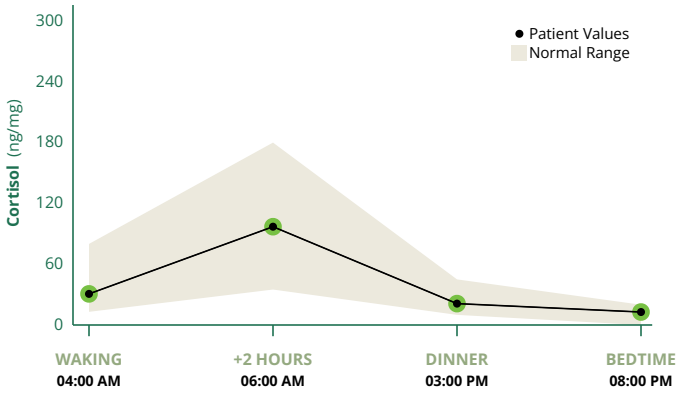
2-OH / 4-OH-E1 Balance

Phase 1 Metabolism

Methylation Activity
2-Methoxy / 2-OH-E1

Phase 2 Methylation

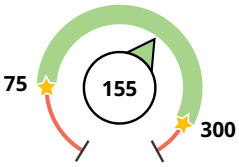
DAILY FREE CORTISOL PATTERN



CORTISOL METABOLISM

Cortisol Clearance Rate
THF + THE / Cortisol + Cortisone

Cortisol Metabolism



24 Hour Free Cortisol
Sum of all Values

Metabolized Cortisol
Total Cortisol Production (THF + THE)

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

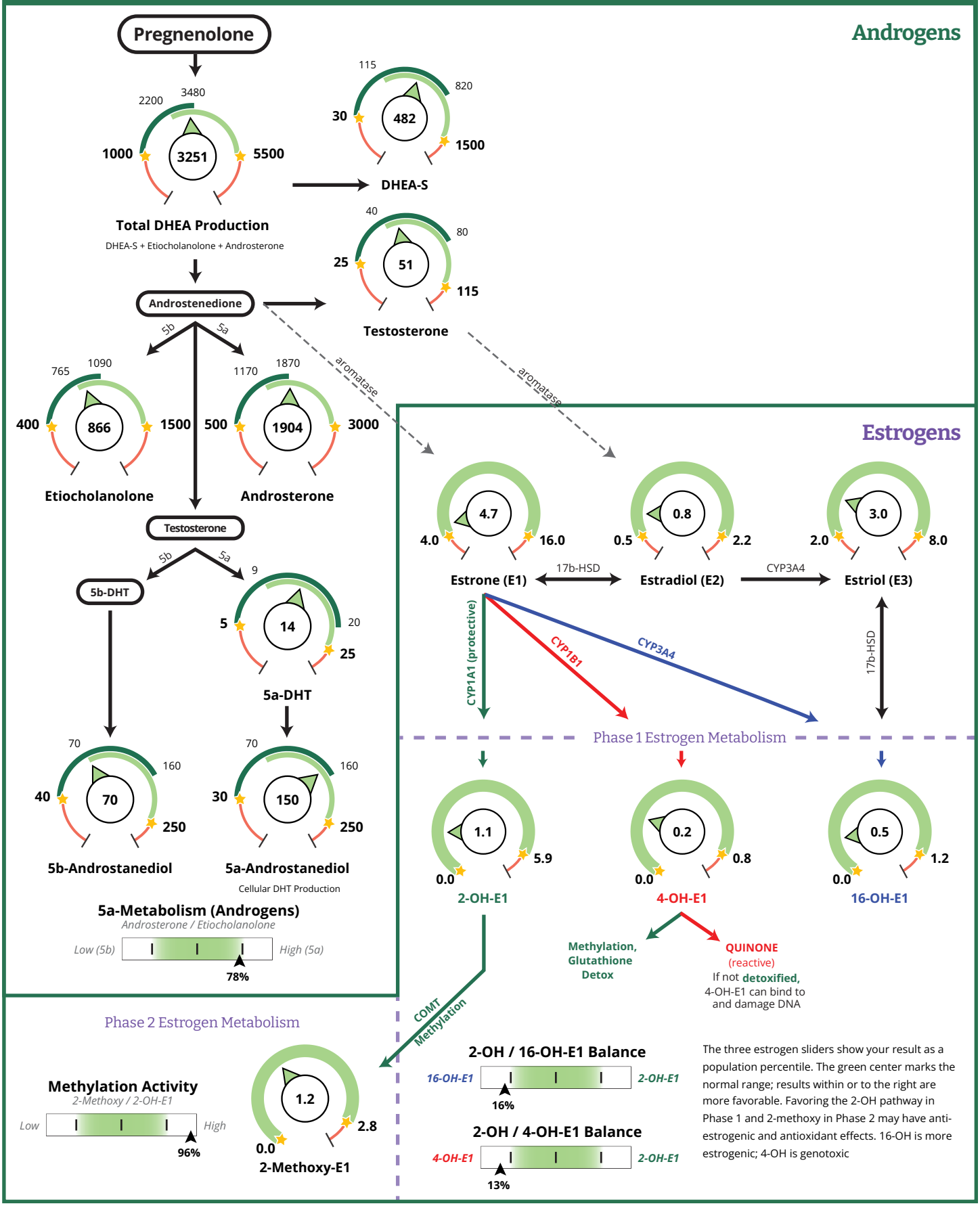
Watch | Needs Attention

- Biotin Deficiency
- Neuroinflammation

EXPANDED ESTROGEN & ANDROGENS

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

Androgens



The three estrogen sliders show your result as a population percentile. The green center marks the normal range; results within or to the right are more favorable. Favoring the 2-OH pathway in Phase 1 and 2-methoxy in Phase 2 may have anti-estrogenic and antioxidant effects. 16-OH is more estrogenic; 4-OH is genotoxic

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Accession # 01154541

Male Sample Report

OR

DOB: 1987-11-06
Age: 37
Sex: Male

Collection Times:

2025-06-13 04:00AM (U1)
2025-06-13 06:00AM (U2)
2025-06-13 03:00PM (U3)
2025-06-12 08:00PM (U4)

Ordering Provider:

Test Provider MD

Sex Hormones & Metabolites

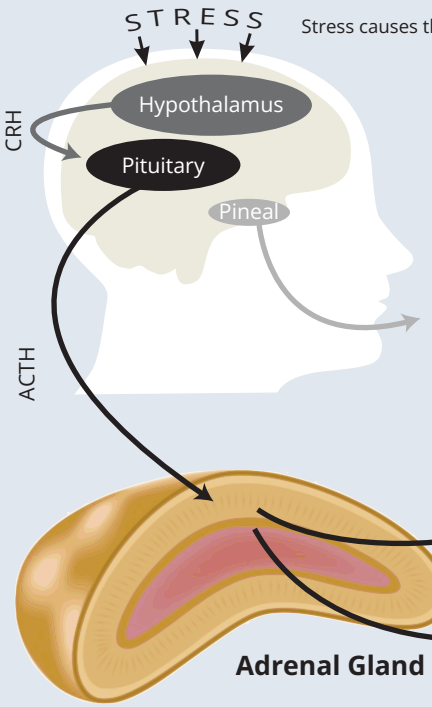
TEST		RESULT	UNITS	NORMAL RANGE
Progesterone Metabolites (Urine)				
b-Pregnanediol	Within range	180.7	ng/mg	75 - 400
a-Pregnanediol	Within range	92.0	ng/mg	20 - 130
Estrogens and Metabolites (Urine)				
Estrone (E1)	Low end of range	4.68	ng/mg	4 - 16
Estradiol (E2)	Within range	0.76	ng/mg	0.5 - 2.2
Estriol (E3)	Within range	3.0	ng/mg	2 - 8
2-OH-E1	Within range	1.08	ng/mg	0 - 5.9
4-OH-E1	Within range	0.19	ng/mg	0 - 0.8
16-OH-E1	Within range	0.46	ng/mg	0 - 1.2
2-Methoxy-E1	Within range	1.18	ng/mg	0 - 2.8
2-OH-E2	Within range	0.09	ng/mg	0 - 1.2
4-OH-E2	Within range	0.06	ng/mg	0 - 0.25
Total Estrogen	Low end of range	11.5	ng/mg	10 - 34
Metabolite Ratios (Urine)				
2-OH / 16-OH-E1 Balance	Below range	2.35	ratio	2.85 - 9.88
2-OH / 4-OH-E1 Balance	Below range	5.68	ratio	6.44 - 12.6
2-Methoxy / 2-OH Balance	Above range	1.09	ratio	0.4 - 0.7
Androgens and Metabolites (Urine)				
DHEA-S	Within range	482.0	ng/mg	30 - 1500
Androsterone	Within range	1903.6	ng/mg	500 - 3000
Etiocholanolone	Within range	865.7	ng/mg	400 - 1500
Testosterone	Within range	51.14	ng/mg	25 - 115
5a-DHT	Within range	13.7	ng/mg	5 - 25
5a-Androstanediol	Within range	150.0	ng/mg	30 - 250
5b-Androstanediol	Within range	70.3	ng/mg	40 - 250
Epi-Testosterone	Within range	36.3	ng/mg	25 - 115

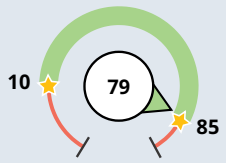
"Normal range" shown above refers to the overall range across all ranges, which lands between the stars on the dials. Age-dependent ranges are now included on the DUTCH dials on page 2.

EXPANDED CORTISOL & ADRENAL HORMONES

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

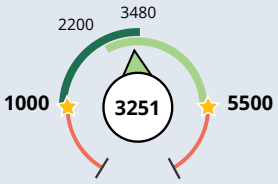
Stress causes the brain to release ACTH, which stimulates the adrenal glands to make hormones including DHEA and Cortisol.





Melatonin - Waking

6-OH-Melatonin-Sulfate



Total DHEA Production

DHEA-S + Etiocholanolone + Androsterone

DHEA

Cortisol

Cortisol Metabolism

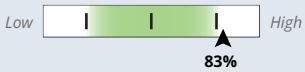
Circulating Free Cortisol

Metabolized Cortisol

Total Cortisol Production (THF + THE)

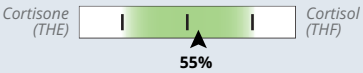
Cortisol Clearance Rate

THF + THE / Cortisol + Cortisone



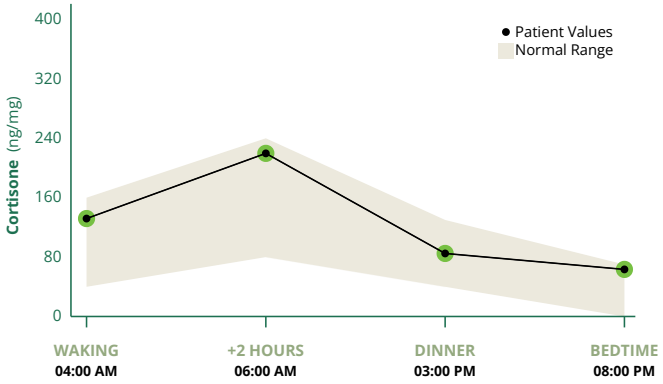
Systemic Preference

Cortisol / Cortisone Metabolites

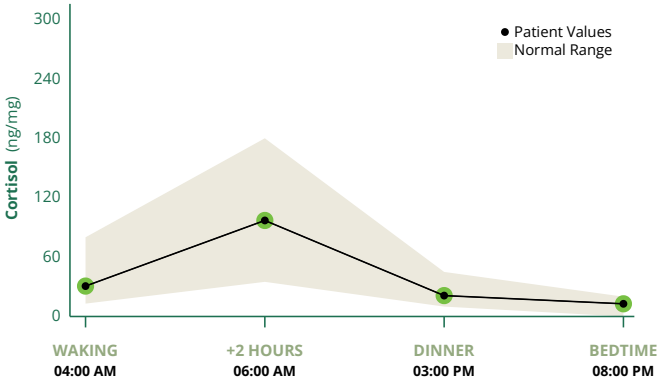


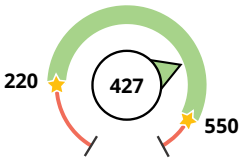
NOTE: This 11b-HSD index measures the balance of cortisol and cortisone metabolites which best reflects the overall balance of active cortisol and inactive cortisone systemically.

Daily Free Cortisone Pattern



Daily Free Cortisol Pattern

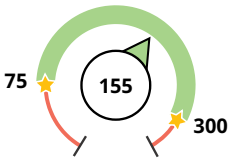




24 Hour Free Cortisone

Sum of all Values

Cortisol and Cortisone interconvert (11b-HSD)



24 Hour Free Cortisol

Sum of all Values

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Accession # 01154541

Male Sample Report

OR

DOB: 1987-11-06
Age: 37
Sex: Male

Collection Times:

2025-06-13 04:00AM (U1)
2025-06-13 06:00AM (U2)
2025-06-13 03:00PM (U3)
2025-06-12 08:00PM (U4)

Ordering Provider:

Test Provider MD

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U1) - Waking	Within range	30.7	ng/mg	13 - 80
Cortisol (U2) - +2 Hours	Within range	97.0	ng/mg	35 - 180
Cortisol (U3) - Dinner	Within range	21.1	ng/mg	10 - 45
Cortisol (U4) - Bedtime	Within range	12.8	ng/mg	0 - 20
Cortisone (U1) - Waking	Within range	131.9	ng/mg	40 - 160
Cortisone (U2) - +2 Hours	Within range	219.7	ng/mg	80 - 240
Cortisone (U3) - Dinner	Within range	84.9	ng/mg	40 - 130
Cortisone (U4) - Bedtime	High end of range	63.4	ng/mg	0 - 70
24 Hour Free Cortisol (Sum of all Values)	Within range	154.7	ng/mg	75 - 300
24 Hour Free Cortisone (Sum of all Values)	Within range	426.5	ng/mg	220 - 550
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	0.80	mg/ml	0.3 - 3
Creatinine (U2) - +2 Hours	Within range	1.07	mg/ml	0.3 - 3
Creatinine (U3) - Dinner	Within range	0.38	mg/ml	0.3 - 3
Creatinine (U4) - Bedtime	Within range	0.85	mg/ml	0.3 - 3
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Above range	2414.3	ng/mg	590 - 2380
b-Tetrahydrocortisol (b-THF)	Above range	3119.5	ng/mg	1340 - 3070
b-Tetrahydrocortisone (b-THE)	Above range	5965.5	ng/mg	2350 - 5800
Metabolized Cortisol (THF + THE)	Above range	11499.0	ng/mg	4610 - 10800
DHEA-S	Within range	482.0	ng/mg	30 - 1500
Cortisol Clearance Rate (CCR)	Above range	19.8		8.5 - 18.5

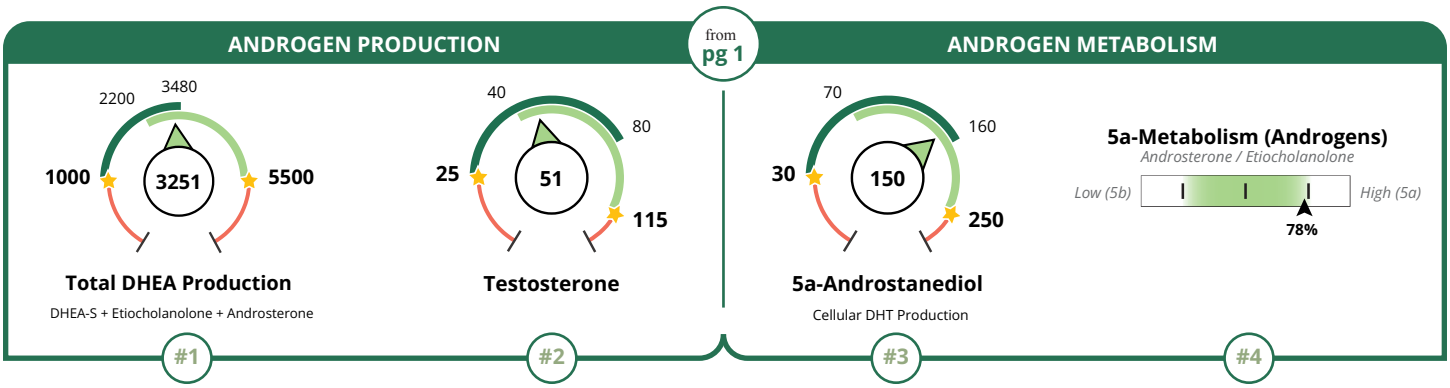
Organic Acid Tests (OATs)

TEST		RESULT	UNITS	NORMAL RANGE
Nutritional Organic Acids (Urine)				
Vitamin B12 Marker - May be deficient if high				
Methylmalonate (MMA)	Within range	1.4	ug/mg	0 - 3.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Within range	0.98	ug/mg	0.2 - 1.9
Kynurenate	Within range	4.5	ug/mg	1 - 6.6
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Above range	20.5	ug/mg	0 - 18
Glutathione Marker - May be deficient if high				
Pyroglutamate	Within range	56.8	ug/mg	38 - 83
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Within range	102.2	ug/mg	0 - 131
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Within range	5.7	ug/mg	4 - 16
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	Within range	6.1	ug/mg	2.5 - 7.5
Neuroinflammation Marker				
Quinolinate	Above range	18.3	ug/mg	0 - 12.5
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	High end of range	78.7	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	6.0	ng/mg	0 - 8.8

- The b-hydroxyisovalerate is above the range. This may indicate biotin (vitamin B7) deficiency.
- The quinolinate is above the normal range. This increase may be in response to high cortisol and inflammation, potentially contributing to mood and sleep dysregulation through neuroinflammation. Tryptophan taken within 72 hours before testing can also raise quinolinate in the urine without raising it in circulation.

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:

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

- The total DHEA production is **3,251 ng/mg**, which is within the optimal range for men 18-40, but towards the lower end.

#2. Assess testosterone levels.

- Testosterone is **51.1 ng/mg**, which is within the optimal range for men 18-40 years old, but in the lower half.

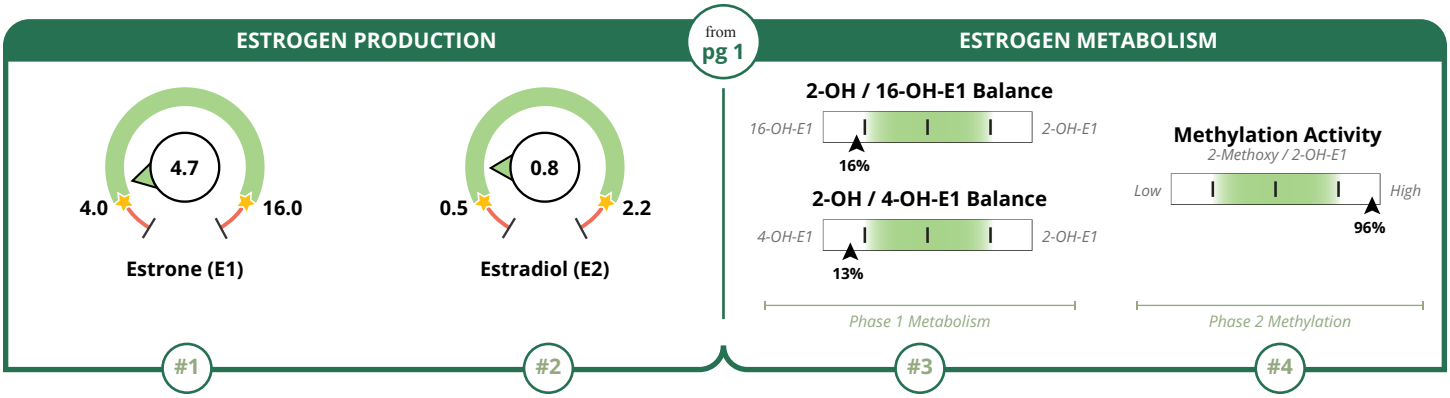
#3. Assess cellular production of 5a-DHT via 5a-androstanediol.

- 5a-Androstanediol is **150 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-Androstanediol 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.

- 5a-Metabolism of androgens is higher than **78.0%** of the population, which is within the range, but towards the high end. This indicates a mild preference for the more androgenic pathway. If paired with high androgens, this may contribute to androgen excess symptoms.

About Your Results | Estrogen



Estrogen-related Patient or Sample Comments:

#1. Assess estrogen levels.

- The estrone (E1) is **4.68 ng/mg,** which is within the optimal range. E1 is the most abundant estrogen but is significantly less potent then estradiol (E2).
- Estradiol (E2) is **0.76 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.

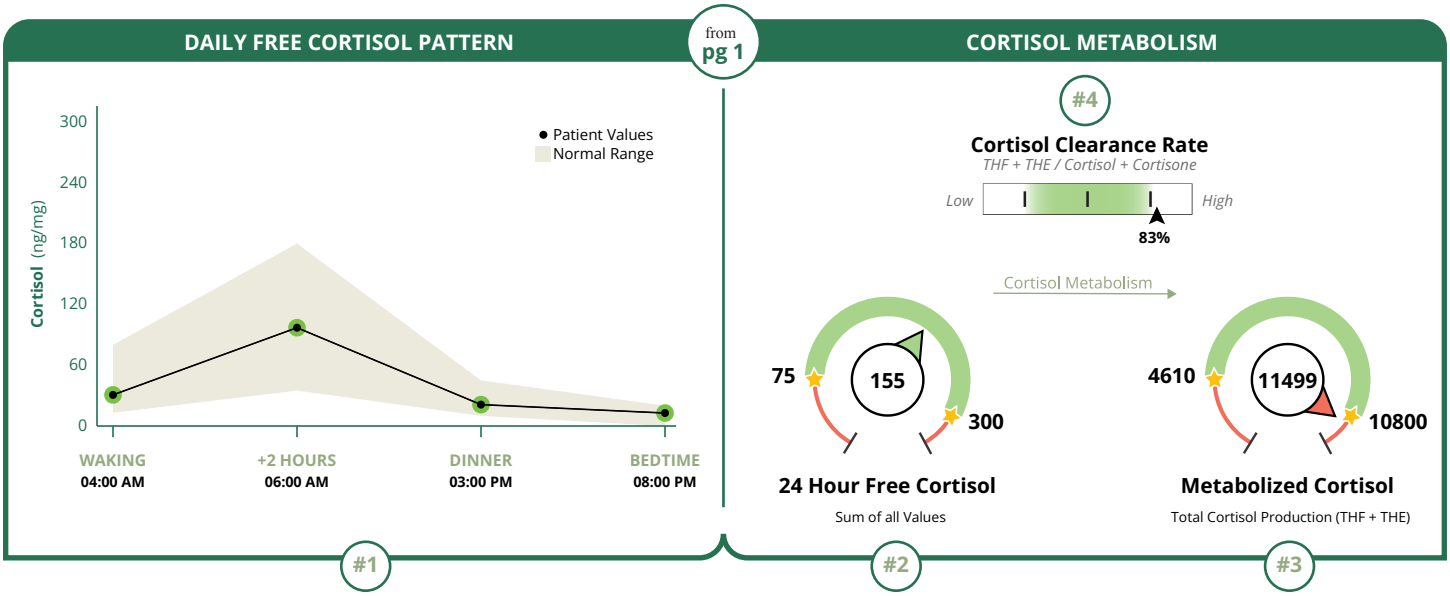
#3. Assess 2-OH preference in phase 1 estrogen metabolism.

- The 2-OH/16-OH-E1 is higher than only **16.0%** of the population, which is below the optimal range. This indicates a preference for the estrogenic 16-OH-E1 metabolite compared to the beneficial 2-OH-E1 metabolite. The 16-OH preference may be associated with estrogenic activity and high estrogen symptoms.
- The 2-OH/4-OH-E1 is higher than only **13.0%** of the population, which is below the optimal range. This indicates a preference for the potentially genotoxic (DNA damaging) 4-OH-E1 metabolite compared to the beneficial 2-OH-E1 metabolite. The 4-OH preference may be associated with oxidative stress.

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

- The methylation activity is higher than **96.0%** of the population, which is above the optimal range. This indicates fast estrogen methylation, which is beneficial for efficient estrogen detoxification.

About Your Results | Cortisol



Cortisol-related Patient or Sample Comments:

#1. Assess the daily free cortisol pattern.

- All points on the Daily Free Cortisol Pattern are within the optimal range. Cortisol levels should follow a rhythm that is higher in the morning and lower at night.

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

- The 24hr Free Cortisol is **155 ng/mg**, which is within the optimal range.

#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 **11,499 ng/mg**, which is above the optimal range.

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

- The Cortisol Clearance Rate is higher than **83.0%** of the population, which is above the optimal range. This indicates that cortisol and cortisone are being metabolized at a faster rate than expected. If paired with low free cortisol, this can contribute to low cortisol symptoms.
- The patient reports that they have a BMI between 25 and 30. A higher BMI is associated with a fast cortisol clearance 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-androstanediol 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-androstanediol 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.

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 dybiosis, 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.

The Systemic Preference slider reflects the balance between cortisol (THF) and cortisone (THE) metabolites and provides an estimate of the body?s overall cortisol-to-cortisone balance. As these metabolites are processed through the liver, the body may shift toward cortisol (THF) or cortisone (THE) depending on physiologic demands and underlying medical conditions. A normal ratio indicates an appropriate balance between THF and THE.

- The Systemic Preference slider is higher than **55.0%** of the population, which is within the optimal range. This indicates the balance between systemic cortisone and cortisol is normal.

#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 balanced compared to the Total Cortisol Production. This indicates a balanced state for tissue repair and maintenance.

#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:

Male Reference Ranges (Updated 9.24.2026)									
	Low%	High%	Low	High		Low%	High%	Low	High
b-Pregnanediol	10%	90%	75	400	Cortisol U0 (Mid-Sleep)	0	90%	0	23
a-Pregnanediol	10%	90%	20	130	Cortisol U1 (Waking)	20%	90%	25	130
Estrone (E1)	10%	90%	4	16	Cortisol U2 (+2 Hours)	20%	90%	35	180
Estradiol (E2)	10%	90%	0.5	2.2	Cortisol U3 (Dinner)	20%	90%	10	45
Estriol (E3)	10%	90%	2	8	Cortisol U4 (Bedtime)	0	90%	0	20
2-OH-E1	0	90%	0	5.9	Cortisone U0 (Mid-Sleep)	0	90%	0	70
4-OH-E1	0	90%	0	0.8	Cortisone U1 (Waking)	20%	90%	75	215
16-OH-E1	0	90%	0	1.2	Cortisone U2 (+2 Hours)	20%	90%	80	240
2-Methoxy-E1	0	90%	0	2.8	Cortisone U3 (Dinner)	20%	90%	40	130
2-OH-E2	0	90%	0	1.2	Cortisone U4 (Bedtime)	0	90%	0	70
4-OH-E2	0	90%	0	0.25	Cortisol Clearance Rate (CCR)	20%	80%	8.5	18.5
2-16-ratio	20%	80%	2.85	9.88	Melatonin (6-OHMS)	20%	90%	10	85
2-4-ratio	20%	80%	6.44	12.6	8-OHdG	0	90%	0	8.8
2Me-2OH-ratio	20%	80%	0.4	0.7	Methylmalonate	0	90%	0	3.5
DHEA-S	20%	90%	30	1500	Xanthurenate	0	90%	0.2	1.9
Androsterone	20%	80%	500	3000	Kynurenate	0	90%	1	6.6
Etiocholanolone	20%	80%	400	1500	b-Hydroxyisovalerate	0	90%	0	18
Testosterone	20%	90%	25	115	Pyroglutamate	10%	90%	38	83
5a-DHT	20%	90%	5	25	Indican	0	90%	0	131
5a-Androstanediol	20%	90%	30	250	Homovanillate	10%	95%	4	16
5b-Androstanediol	20%	90%	40	250	Vanilmandelate	10%	95%	2.5	7.5
Epi-Testosterone	20%	90%	25	115	Quinolinate	0	90%	0	12.5
a-THF	20%	90%	590	2380	**Calculated Values**				
b-THF	20%	90%	1340	3070	Total DHEA Production	20%	80%	1000	5500
b-THE	20%	90%	2350	5800	Total Estrogens	10%	90%	10	34
					Metabolized Cortisol	20%	90%	4610	10800
					24hr Free Cortisol	20%	90%	75	300
					24hr Free Cortisone	20%	90%	220	550

% = population percentile: Example - a high limit of 90% means results higher than 90% of the men tested for the reference range will be designated as "high."