dutchtest® SEX HORMONES

MedPrimex

Accession # 01036012

Female Sample Report
123 A Street
Sometown, CA 90266

DOB: 1976-01-01
Age: 46
Sex: Female
Last Menstrual Period: 2022-05-25

Collection Times:

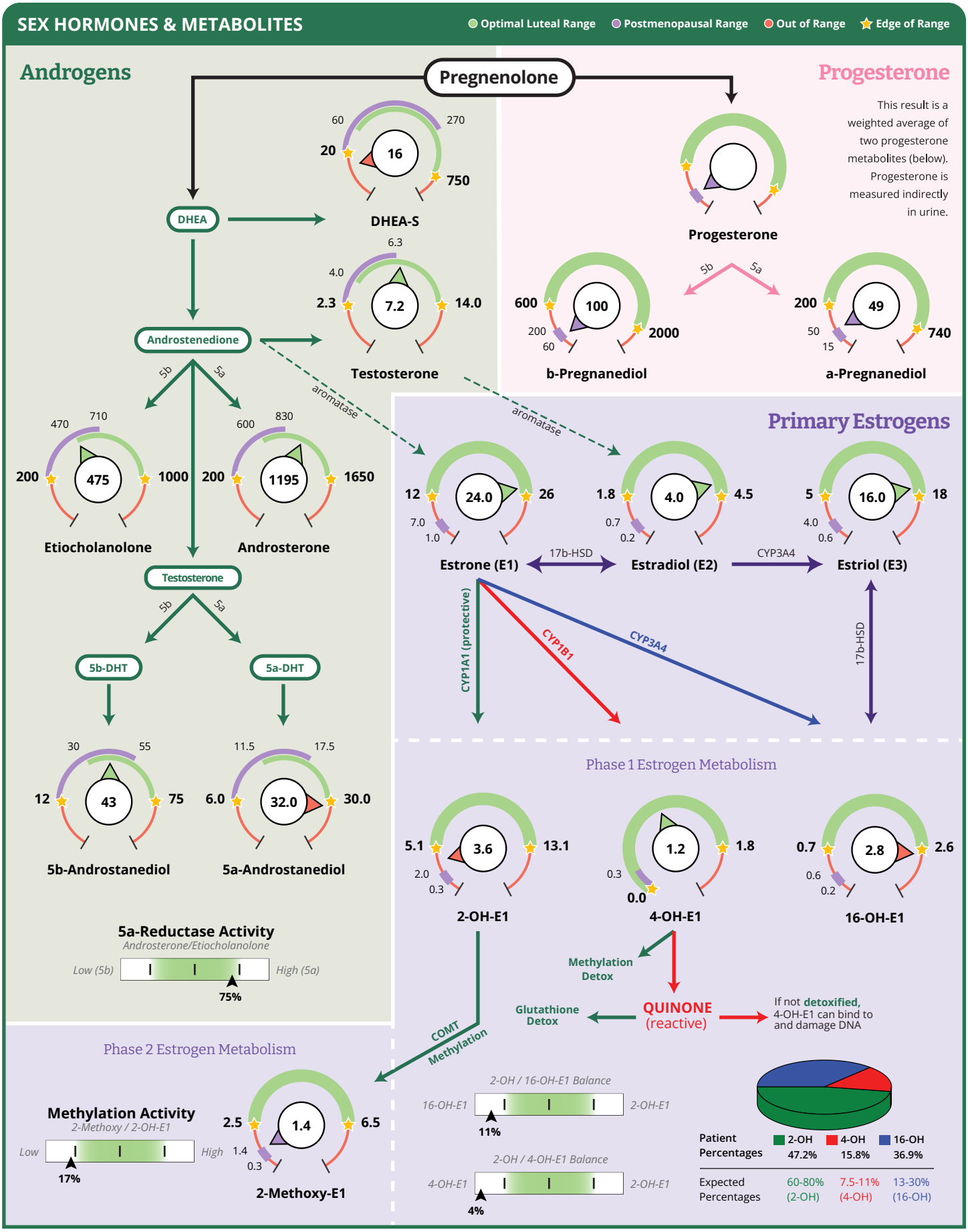
2022-06-13 04:00AM (U)
2022-06-13 06:00AM (U)
2022-06-13 03:00PM (U)
2022-06-13 08:00PM (U)

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Below luteal range	100.0	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Below luteal range	49.0	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	High end of luteal range	24.01	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	High end of luteal range	4.00	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	High end of luteal range	16.0	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Below luteal range	3.58	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	1.20	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Above luteal range	2.80	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Below luteal range	1.35	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Within luteal range	0.74	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.41	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Within range	54.1	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Below range	1.28	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Below range	2.98	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Below range	0.38	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)				**Range**	
DHEA-S	Below range	16.0	ng/mg	20 - 750	
Androsterone	Within range	1195.0	ng/mg	200 - 1650	
Etiocholanolone	Within range	474.6	ng/mg	200 - 1000	
Testosterone	Within range	7.16	ng/mg	2.3 - 14	
5a-DHT	High end of range	6.2	ng/mg	0 - 6.6	
5a-Androstanediol	Above range	32.0	ng/mg	6 - 30	
5b-Androstanediol	Within range	42.6	ng/mg	12 - 75	
Epi-Testosterone	Within range	8.6	ng/mg	2.3 - 14	

* The Luteal Range represents the expected premenopausal luteal range, collected menstrual cycle days 19-22 of a 28-day cycle. If your patient noted taking oral progesterone, the reference range represents the expected range on 100 - 200 mg of oral micronized progesterone (OMP). The ranges in the table below represent ranges in other times of the cycle your patient may have collected, such as follicular or ovulatory phases.

ADDITIONAL NORMAL RANGES	FOLLICULAR	OVULATORY	ON ORAL PG
b-Pregnanediol	100 - 300	100 - 300	2000 - 9000
a-Pregnanediol	25 - 100	25 - 100	580 - 3000
Estrone (E1)	4.0 - 12.0	22 - 68	N/A
Estradiol (E2)	1.0 - 2.0	4.0 - 12.0	N/A


SEX HORMONES & METABOLITES
Optimal Luteal Range
Postmenopausal Range
Out of Range
Edge of Range
Androgens
Pregnenolone
Progesterone
This result is a weighted average of two progesterone metabolites (below). Progesterone is measured indirectly in urine.
DHEA
DHEA-S
60
270
20
16
750
Progesterone
Androstenedione
Testosterone
6.3
4.0
2.3
7.2
14.0
5b
5a
600
100
200
60
2000
b-Pregnanediol
200
49
50
15
740
a-Pregnanediol
aromatase
Etiocholanolone
470
710
200
475
1000
Androsterone
600
830
200
1195
1650
Testosterone
5b-DHT
5a-DHT
5b-Androstanediol
30
55
12
43
75
5a-Androstanediol
11.5
17.5
6.0
32.0
30.0
5a-Reductase Activity
Androsterone/Etiocholanolone
Low (5b)
High (5a)
75%
Primary Estrogens
Estrone (E1)
12
24.0
26
7.0
1.0
17b-HSD
Estradiol (E2)
1.8
4.0
4.5
0.7
0.2
CYP3A4
Estriol (E3)
5
16.0
18
4.0
0.6
CYP1A1 (protective)
CYP1B1
CYP3A4
17b-HSD
Phase 1 Estrogen Metabolism
2-OH-E1
5.1
3.6
13.1
2.0
0.3
4-OH-E1
1.2
1.8
0.3
0.0
16-OH-E1
0.7
2.8
2.6
0.6
0.2
Methylation Detox
Glutathione Detox
QUINONE (reactive)
If not detoxified, 4-OH-E1 can bind to and damage DNA
COMT Methylation
Phase 2 Estrogen Metabolism
Methylation Activity
2-Methoxy / 2-OH-E1
Low
High
17%
2-Methoxy-E1
2.5
1.4
6.5
1.4
0.3
2-OH / 16-OH-E1 Balance
16-OH-E1
2-OH-E1
11%
2-OH / 4-OH-E1 Balance
4-OH-E1
2-OH-E1
4%
Patient Percentages
2-OH 47.2%
4-OH 15.8%
16-OH 36.9%
Expected Percentages
60-80% (2-OH)
7.5-11% (4-OH)
13-30% (16-OH)

Clinical Support Overview

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Please take a moment to read through the Clinical Support Overview below. These comments are specific to the patient's lab results. These comments are intended for educational purposes only. Specific treatment should be managed by a healthcare provider.

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

Alert Comments:

How to read the DUTCH report

This report is not intended to treat, cure or diagnose any specific diseases.

DUTCH DIALS

The graphic dials in this report are intended for quick and easy evaluation of hormone levels. The green highlighted area between the stars shows the normal range. Results below the left star and beyond the right star are shaded red representing below and above the normal range respectively. The arrow points to the patient's result and will be the color of the result status (ie red for out of range, green for in range).

Low Example

Normal Example

High Example

NEW! - AGE DEPENDENT RANGES

Age-dependent ranges for females are oriented around optimal **premenopausal** and **postmenopausal** levels.

For estrogen and progesterone dials, the optimal premenopausal range is captured during the luteal phase of the menstrual cycle. The premenopausal range is shown in green, and the postmenopausal range is shown in purple, with **no overlap**. Due to the dramatic decline in estrogen and progesterone during the menopausal transition, the purple band is separate on the left hand (low) side of the dial.

Estrogen & Progesterone

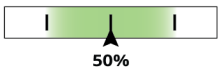
For female androgens, the optimal premenopausal range is not significantly affected by the phase in the menstrual cycle or menopause but declines with age more gradually. The premenopausal range is shown in green, and the postmenopausal range is shown in purple, with some overlap. Note that the arrow pointer changes color to the range it points to, with a preference for the premenopausal green when the ranges overlap.

Androgens

Optimal Luteal or Premenopausal Range Postmenopausal Range Out of Range

DUTCH SLIDERS

The graphic sliders indicate the relative ratio of the metabolites noted on the slider. The percentage stated is a population percentage. A result of 50% indicates that the ratio is higher than 50% of individuals tested, or right in the middle of the population's range. If the result is lower than 50% it will move to the left and higher than 50% will move to the right. The normal range is shaded green and out of range is shaded white.



For more information about the new slider bars, please click to read our **DUTCH Blog**.

Patient or Sample Comments

You will find comments specific to the patient results in each section below in bulleted text. Please refer to our DUTCH resources for further information on interpreting results.

- The patient reports regular menstrual cycles.

PROGESTERONE

The progesterone dial shows the weighted average of the two main urinary metabolites of progesterone, 5b-pregnanediol and 5a-pregnanediol.

- The weighted average of the two progesterone metabolites shows that progesterone is low for the luteal phase of the menstrual cycle. The ideal collection timing for capturing peak luteal levels occurs 4-9 days before menses. The patient reports irregular cycles, so check in with the patient about the timing of sample collection in relation to menstruation. Patients with irregular cycles experience less progesterone exposure overall due to anovulatory cycles, the most common cause of irregularity. Women over 40 who are experiencing irregular cycles may be experiencing perimenopause, another common cause of irregular cycles and low progesterone.

ESTROGEN

When evaluating estrogen levels, it is important to assess the following:

Estrogen Levels
The primary ovarian hormone, estradiol (the strongest estrogen), and "total estrogen" levels should be reviewed with the appropriate reference range (premenopausal or postmenopausal). For women on HRT, check in with DUTCH resources on specific HRT types and monitoring.

Estrogen Metabolism

- The 2-OH/16-OH-E1 is low. This indicates less 2-OH and/or more 16-OH. The 2-OH is considered a beneficial phase 1 detox pathway because it is stable, anti-estrogenic, and anti-carcinogenic. But in this case there is more 16-OH-E1 which is not ideal because this pathway is more estrogenic, proliferative, and is associated with inflammation.
- The 2-OH/4-OH-E1 is low. This indicates less 2-OH and/or more 4-OH. The 2-OH is considered a beneficial phase 1 detox pathway because it is stable, anti-estrogenic, and anti-carcinogenic. But in this case there is more 4-OH-E1 which is not ideal because this pathway is unstable, can form reactive quinones that cause DNA damage, and has been associated with increased breast cancer risk.
- The methylation slider shows the patient has slow estrogen methylation. Estrogen is methylated via the COMT enzyme, which can be impacted by nutrient deficiency and COMT genetic polymorphisms. Testing for COMT gene polymorphisms may also be helpful, depending on the case.

ANDROGENS
When evaluating androgen levels, it is important to assess the following:

Androgen Levels
Review Testosterone and Total DHEA levels for insight into androgen production. While urinary testosterone levels generally agree well with serum testosterone levels, there are some cases where they do not. We recommend using serum testing to confirm a low testosterone result on the DUTCH test.

- Women aged 41-55 may be within or below the optimal premenopausal range. Symptoms plus other androgens are important for assessing if the levels are appropriate for the patient. This is the normal age for perimenopause and menopause which, for different women, can vary by years. Therefore, this age group should view the expected androgen levels with both optimal premenopausal and postmenopausal ranges in mind.

Androgen Metabolism
5a-reductase converts testosterone into 5a-DHT (DHT), which is even more potent (~3x) than testosterone. The best representation of tissue 5a-DHT and overall androgen status, is 5a-Androstanediol. Metabolites created down the 5b-pathway are significantly less androgenic than their 5a counterparts.

- The 5a-Androstanediol is high. 5a-androstanediol is a target tissue metabolite of 5a-DHT, the body's most potent androgen. 5a-androstanediol levels represent tissue 5a-DHT better than measuring 5a-DHT directly, whether in urine or serum, because 5a-DHT typically remains in target tissues until it is metabolized into 5a-androstanediol. High 5a-androstanediol indicates high tissue androgens even in the absence of high testosterone or DHEA metabolites. Review the full status of androgens, including symptoms, before considering a treatment plan. You can find more information about this here.
- The DHEA-S is lower than the other major metabolites of DHEA, etiocholanolone and androsterone. DHEA-S is mostly formed in the adrenal glands via sulfation. Inflammation can block sulfation. This lowers the DHEA-S and drives the 5a & 5b-reductase enzymes, metabolizing DHEA away from DHEA-S. Consider addressing inflammation and adrenal health.

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:

Female Reference Ranges (Updated 05.20.2025)									
	Low%	High%	Low	High		Low%	High%	Low	High
b-Pregnanediol	20%	90%	600	2000	Cortisol A (waking)	20%	90%	10	50
a-Pregnanediol	20%	90%	200	740	Cortisol B (morning)	20%	90%	30	130
Estrone (E1)	20%	80%	12	26	Cortisol C (~5pm)	20%	90%	7	30
Estradiol (E2)	20%	80%	1.8	4.5	Cortisol D (bed)	0	90%	0	14
Estriol (E3)	20%	80%	5	18	Cortisone A (waking)	20%	90%	40	120
2-OH-E1	20%	80%	5.1	13.1	Cortisone B (morning)	20%	90%	90	230
4-OH-E1	0	80%	0	1.8	Cortisone C (~5pm)	20%	90%	32	110
16-OH-E1	20%	80%	0.7	2.6	Cortisone D (bed)	0	90%	0	55
2-Methoxy-E1	20%	80%	2.5	6.5	Cortisol Clearance Rate (CCR)	20%	80%	6	12.5
2-OH-E2	0	80%	0	3.1	Melatonin (6-OHMS)	20%	90%	10	85
4-OH-E2	0	80%	0	0.52	8-OHdG	0	90%	0	5.2
2-16-ratio	20%	80%	2.69	11.83	Methylmalonate	0	90%	0	2.5
2-4-ratio	20%	80%	5.4	12.62	Xanthurenate	0	90%	0.12	1.2
2Me-2OH-ratio	20%	80%	0.39	0.67	Kynurenate	0	90%	0.8	4.5
DHEA-S	20%	90%	20	750	b-Hydroxyisovalerate	0	90%	0	12.5
Androsterone	20%	80%	200	1650	Pyroglutamate	10%	90%	28	58
Etiocholanolone	20%	80%	200	1000	Indican	0	90%	0	100
Testosterone	20%	80%	2.3	14	Homovanillate	10%	95%	3	11
5a-DHT	0	80%	0	6.6	Vanilmandelate	10%	95%	2.2	5.5
5a-Androstanediol	20%	80%	6	30	Quinolinate	0	90%	0	9.6
5b-Androstanediol	20%	80%	12	75	**Calculated Values**				
Epi-Testosterone	20%	80%	2.3	14	Total DHEA Production	20%	80%	500	3000
a-THF	20%	90%	75	370	Total Estrogens	20%	80%	35	70
b-THF	20%	90%	1050	2500	Metabolized Cortisol	20%	90%	2750	6500
b-THE	20%	90%	1550	3800	24hr Free Cortisol	20%	90%	65	200
					24hr Free Cortisone	20%	90%	220	450

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

dutchtest® SEX HORMONES

MedPrimex

Accession # 01036015

Male Sample Report
123 A Street
Sometown, CA 90266

DOB: 1976-01-01
Age: 46
Sex: Male

Collection Times:

2022-06-13 04:00AM (U)
2022-06-13 06:00AM (U)
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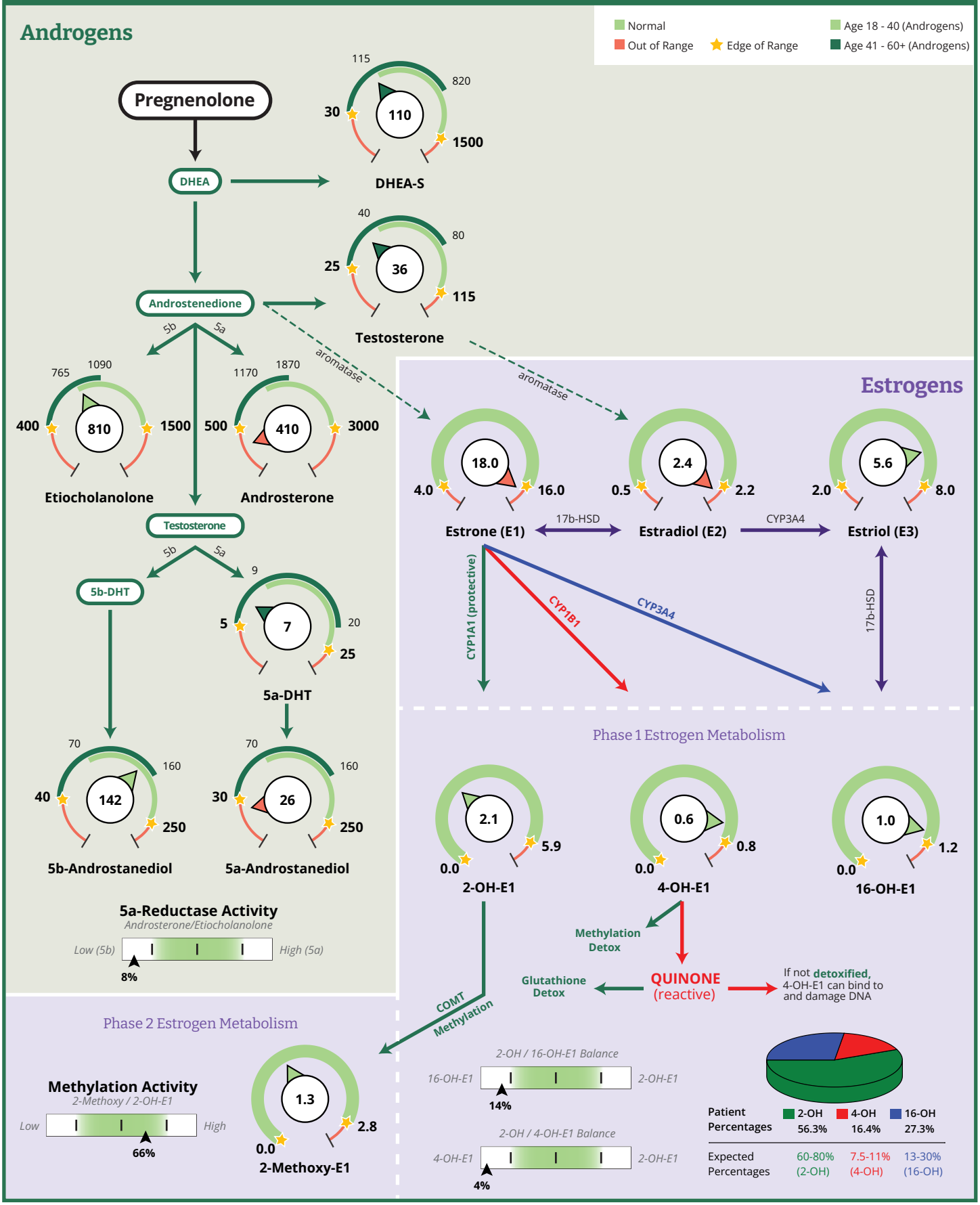
Sex Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Progesterone Metabolites (Urine)				
b-Pregnanediol	Within range	175.7	ng/mg	75 - 400
a-Pregnanediol	Low end of range	24.0	ng/mg	20 - 130
Estrogens and Metabolites (Urine)				
Estrone (E1)	Above range	17.96	ng/mg	4 - 16
Estradiol (E2)	Above range	2.42	ng/mg	0.5 - 2.2
Estriol (E3)	Within range	5.6	ng/mg	2 - 8
2-OH-E1	Within range	2.08	ng/mg	0 - 5.9
4-OH-E1	Within range	0.60	ng/mg	0 - 0.8
16-OH-E1	Within range	1.00	ng/mg	0 - 1.2
2-Methoxy-E1	Within range	1.25	ng/mg	0 - 2.8
2-OH-E2	Within range	0.31	ng/mg	0 - 1.2
4-OH-E2	Within range	0.21	ng/mg	0 - 0.25
Total Estrogen	Within range	31.4	ng/mg	10 - 34
Metabolite Ratios (Urine)				
2-OH / 16-OH-E1 Balance	Below range	2.06	ratio	2.85 - 9.88
2-OH / 4-OH-E1 Balance	Below range	3.43	ratio	6.44 - 12.6
2-Methoxy / 2-OH Balance	Within range	0.61	ratio	0.4 - 0.7
Androgens and Metabolites (Urine)				
DHEA-S	Low end of range	110.0	ng/mg	30 - 1500
Androsterone	Below range	410.0	ng/mg	500 - 3000
Etiocholanolone	Within range	809.7	ng/mg	400 - 1500
Testosterone	Low end of range	36.03	ng/mg	25 - 115
5a-DHT	Low end of range	7.0	ng/mg	5 - 25
5a-Androstanediol	Below range	26.0	ng/mg	30 - 250
5b-Androstanediol	Within range	142.0	ng/mg	40 - 250
Epi-Testosterone	Low end of range	41.2	ng/mg	25 - 115

“Normal” range shown above is the overall normal range across all ages (shown as between the stars on the dials). Age-dependent reference ranges are now included with the DUTCH dials on the next page.

SEX HORMONES & METABOLITES



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Low Example

Normal Example

High Example

NEW! - AGE DEPENDENT RANGES

Age-dependent ranges for males are are used on the **androgen** dials.

Males commonly go through a decline in androgen production starting around age 40. These dials use light green for optimal levels for ages 18-40 and dark green for ages 41 and beyond. Note that the arrow pointer changes color to the range it points to, with a preference for the light green when the ranges overlap.

Androgens

Optimal Range for Age 18 - 40 | Optimal Range for Age 41 - 60+ | Out of Range

DUTCH SLIDERS

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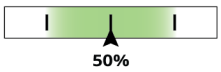

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Androgen Levels
Review Testosterone and Total DHEA levels for insight into androgen production. While urinary testosterone levels generally agree well with serum testosterone levels, there are some cases where they do not. We recommend using serum testing to confirm a low testosterone result on the DUTCH test.

Androgen Metabolism
5a-reductase converts testosterone into 5a-DHT (DHT), which is even more potent (~3x) than testosterone. The best representation of tissue 5a-DHT and overall androgen status, is 5a-Androstanediol. Metabolites created down the 5b-pathway are significantly less androgenic than their 5a counterparts.

- The 5a-Androstanediol is low for a man of any age. 5a-androstanediol is a target tissue metabolite of 5a-DHT, the body's most potent androgen. Low 5a-androstanediol indicates low tissue 5a-DHT. Review testosterone and DHEA results, the patient's symptoms, as well as the 5a-reductase activity slider for complete information on androgen status. You can find more information about this here.
- The 5a-Reductase Activity result is low. This slider result indicates that there are more 5b androgens (liver detox metabolites) relative to 5a androgens (target tissue androgen activation) but does not tell us if the 5a androgens are low on their own. It is still important to assess the level of these potent androgens. Review other comments and DUTCH androgen results for further insight. In men, low 5a-reductase activity may be associated with low androgen symptoms.

ESTROGEN
When evaluating estrogen levels, it is important to assess the following:

Estrogen Levels
The status (low, normal or high?) of estrogen production: Estradiol (the strongest estrogen) is made primarily from aromatization of testosterone in peripheral tissues such as testes, adipose, liver, skin, muscle, etc.

- The estradiol (E2) result is high. When E2 is high in men, it can cause breast tissue growth, impaired sexual function, impaired fertility, mood changes, and changes in body fat distribution towards the hips and thighs. In men, E2 is a product of the peripheral conversion of testosterone and other androgens via the aromatase enzyme. High E2 in men can be caused by obesity, insulin resistence, liver disease, and high testosterone, among others.

Estrogen Metabolism

- The 2-OH/16-OH-E1 is low. This indicates less 2-OH and/or more 16-OH. The 2-OH is considered a beneficial phase 1 detox pathway because it is stable, anti-estrogenic, and anti-carcinogenic. But in this case there is more 16-OH-E1 which is not ideal because this pathway is more estrogenic, proliferative, and is associated with inflammation.
- The 2-OH/4-OH-E1 is low. This indicates less 2-OH and/or more 4-OH. The 2-OH is considered a beneficial phase 1 detox pathway because it is stable, anti-estrogenic, and anti-carcinogenic. But in this case there is more 4-OH-E1 which is not ideal because this pathway is unstable, can form reactive quinones that cause DNA damage, and has been associated with increased breast cancer risk.

PROGESTERONE
The DUTCH Test measures the two main urinary metabolites of progesterone, 5b-pregnanediol and 5a-pregnanediol.

- The progesterone metabolites shows progesterone is in range indicating normal production.

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 05.20.2025)									
	Low%	High%	Low	High		Low%	High%	Low	High
b-Pregnanediol	10%	90%	75	400	Cortisol A (waking)	20%	90%	13	80
a-Pregnanediol	10%	90%	20	130	Cortisol B (morning)	20%	90%	35	180
Estrone (E1)	10%	90%	4	16	Cortisol C (~5pm)	20%	90%	10	45
Estradiol (E2)	10%	90%	0.5	2.2	Cortisol D (bed)	0	90%	0	20
Estriol (E3)	10%	90%	2	8	Cortisone A (waking)	20%	90%	40	160
2-OH-E1	0	90%	0	5.9	Cortisone B (morning)	20%	90%	80	240
4-OH-E1	0	90%	0	0.8	Cortisone C (~5pm)	20%	90%	40	130
16-OH-E1	0	90%	0	1.2	Cortisone D (bed)	0	90%	0	70
2-Methoxy-E1	0	90%	0	2.8	Cortisol Clearance Rate (CCR)	20%	80%	8.5	17.5
2-OH-E2	0	90%	0	1.2	Melatonin (6-OHMS)	20%	90%	10	85
4-OH-E2	0	90%	0	0.25	8-OHdG	0	90%	0	8.8
2-16-ratio	20%	80%	2.85	9.88	Methylmalonate	0	90%	0	3.5
2-4-ratio	20%	80%	6.44	12.6	Xanthurenate	0	90%	0.2	1.9
2Me-2OH-ratio	20%	80%	0.4	0.7	Kynurenate	0	90%	1	6.6
DHEA-S	20%	90%	30	1500	b-Hydroxyisovalerate	0	90%	0	18
Androsterone	20%	80%	500	3000	Pyroglutamate	10%	90%	38	83
Etiocholanolone	20%	80%	400	1500	Indican	0	90%	0	131
Testosterone	20%	90%	25	115	Homovanillate	10%	95%	4	16
5a-DHT	20%	90%	5	25	Vanilmandelate	10%	95%	2.5	7.5
5a-Androstanediol	20%	90%	30	250	Quinolinate	0	90%	0	12.5
5b-Androstanediol	20%	90%	40	250	**Calculated Values**				
Epi-Testosterone	20%	90%	25	115	Total DHEA Production	20%	80%	1000	5500
a-THF	20%	90%	175	700	Total Estrogens	10%	90%	10	34
b-THF	20%	90%	1750	4000	Metabolized Cortisol	20%	90%	4550	10000
b-THE	20%	90%	2350	5800	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 women tested for the reference range will be designated as "high."