



Case Studies



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CASE 1

TERESA

A 42-YO FEMALE WITH BURNOUT

1

PATIENT HISTORY

CHIEF COMPLAINTS

- Low mood (depression)
- Poor exercise tolerance
- Sleep issues
- Significant daytime fatigue
- Joint pain
- Chronic ongoing stress

PAST MEDICAL HISTORY

- Irregular cycles 17-45 days
- Stress: started master's program and went through divorce 2 years ago
- 2 teenage children, single-parent house
- Drinks a glass of wine nightly

MEDICATIONS & SUPPLEMENTS

- None

PHYSICAL EXAM

- 5'5"; 145 lbs.; BMI 24
- BP 110/66 mm Hg
- Pulse 80 bpm

PERTINENT SERUM LABS

- **High** triglycerides, **low** HDL



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Teresa, Burnout
123 A Street
Sometown, CA 90266

DOB: 1983-01-01
Age: 42
Sex: Female
Last Menstrual Period:
2004-02-01

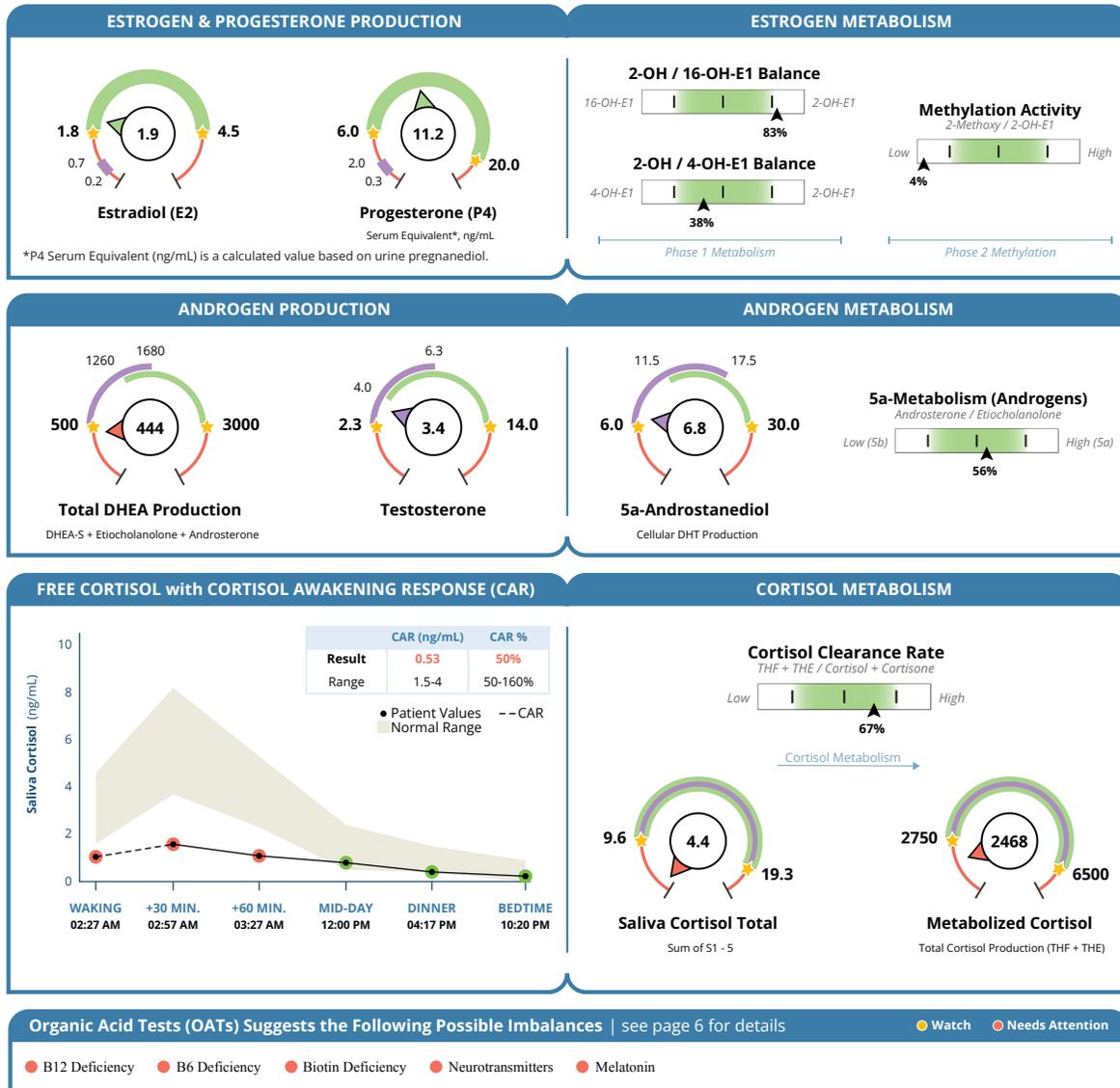
Case # 1

Collection Dates:
2025-10-09 (S1 S2 S3 SX S4 S5 U1 U2 U3 U4)

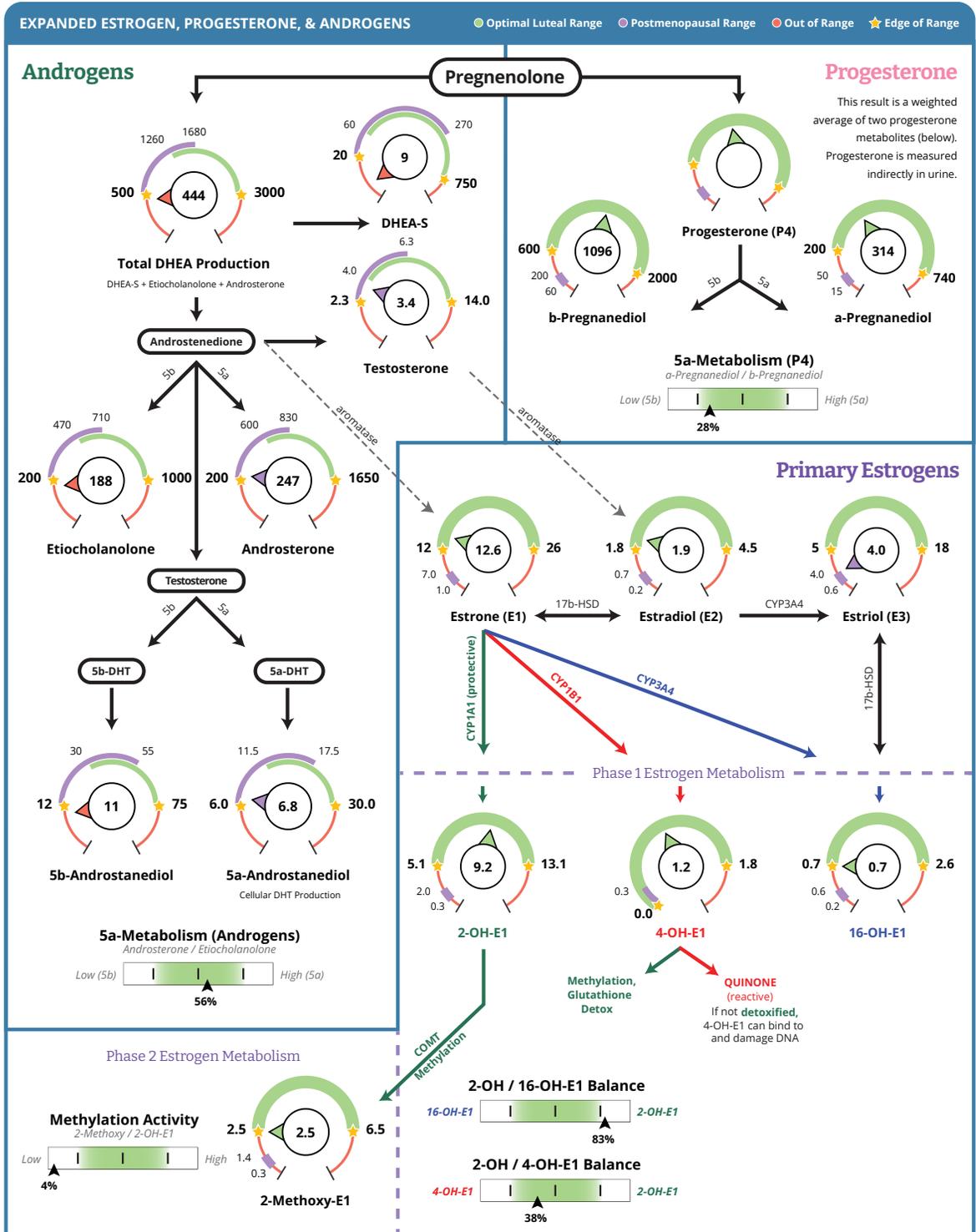
Hormone Testing Summary

● Optimal Luteal Range ● Postmenopausal Range ● 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.



1



1



Case # 1
 Teresa, Burnout
 123 A Street
 Sometown, CA 90266
DOB: 1983-01-01
Age: 42
Sex: Female
Last Menstrual Period:
 2004-02-01

Collection Times:
 2025-10-09 02:27AM (S1)
 2025-10-09 02:57AM (S2)
 2025-10-09 03:27AM (S3)
 2025-10-09 12:00PM (SX)
 2025-10-09 04:17PM (S4)
 2025-10-09 10:20PM (S5)
 2025-10-09 02:29AM (U1)
 2025-10-09 04:40AM (U2)
 2025-10-09 04:20PM (U3)
 2025-10-09 10:28PM (U4)

Ordering Provider:
 Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Within luteal range	1095.7	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Within luteal range	314.3	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Low end of luteal range	12.60	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Low end of luteal range	1.90	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Below luteal range	4.0	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Within luteal range	9.19	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	1.17	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Low end of luteal range	0.70	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Low end of luteal range	2.50	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Low end of luteal range	0.08	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.15	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Below range	32.3	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Above range	13.13	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Within range	7.85	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Below range	0.27	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)					
				Range	
DHEA-S	Below range	9.1	ng/mg	20 - 750	
Androsterone	Within range	247.0	ng/mg	200 - 1650	
Etiocholanolone	Below range	187.5	ng/mg	200 - 1000	
Testosterone	Within range	3.41	ng/mg	2.3 - 14	
5a-DHT	Within range	0.6	ng/mg	0 - 6.6	
5a-Androstenediol	Within range	6.8	ng/mg	6 - 30	
5b-Androstenediol	Below range	11.2	ng/mg	12 - 75	
Epi-Testosterone	Within range	3.0	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.

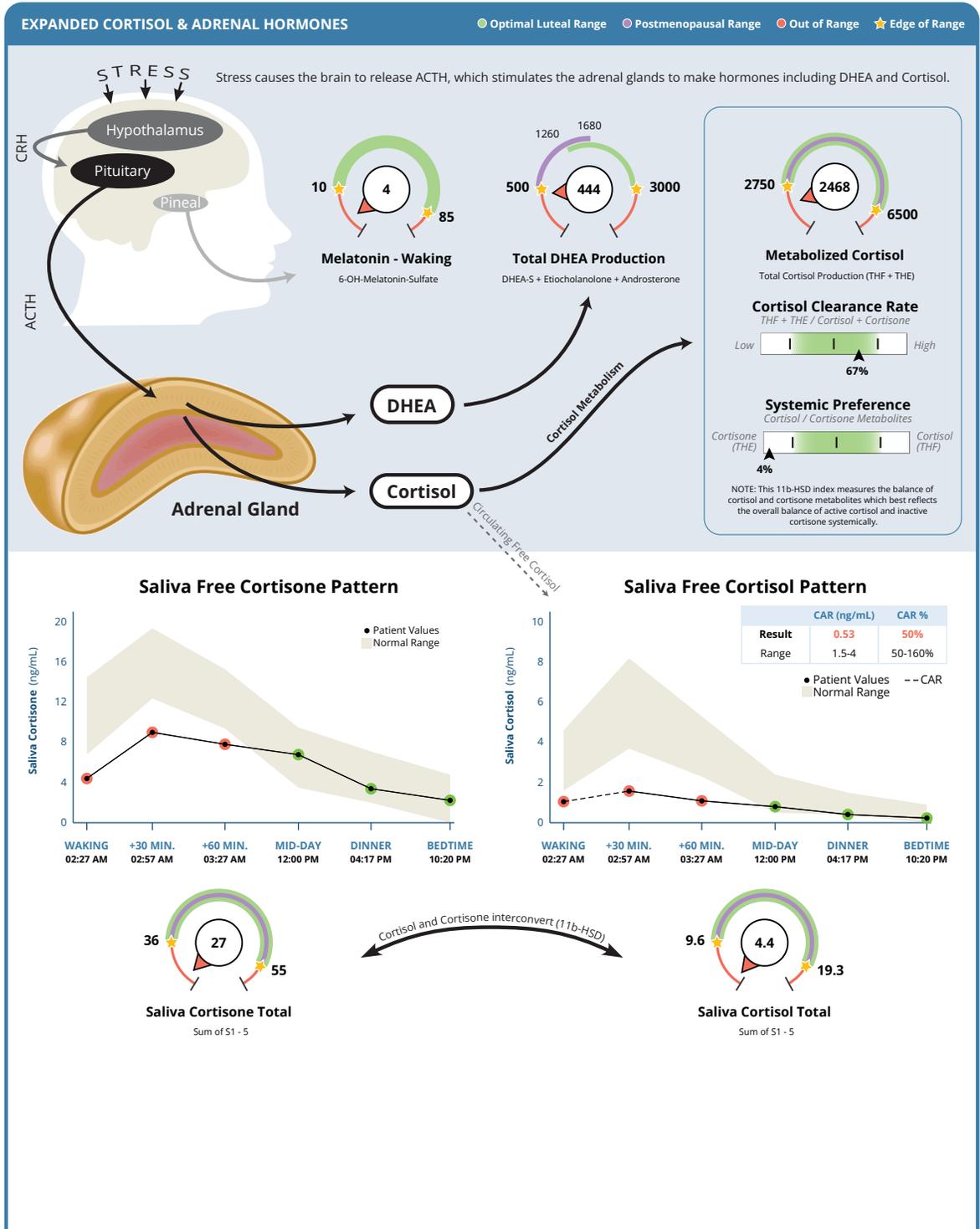
ADDITIONAL NORMAL RANGES	FOLLICULAR	OVULATORY	ON ORAL PG
b-Pregnanediol	100 - 300	100 - 300	2000 - 9000
a-Pregnanediol	25 - 100	25 - 100	580 - 3000
Estrone (E1)	4.0 - 12.0	22 - 68	N/A
Estradiol (E2)	1.0 - 2.0	4.0 - 12.0	N/A

PRECISION ANALYTICAL INC.
 CREATORS OF THE DUTCH TEST®
 Precision Analytical (Dawn Huo, Ph.D., Lab Director)
 3138 NE Rivergate Street
 McMinnville, OR 97128

Female Sample Report
 Accessioned - 10/15/2025
 Final Report - 2/17/2026

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Case # 1
 Teresa, Burnout
 123 A Street
 Sometown, CA 90266
DOB: 1983-01-01
Age: 42
Sex: Female
Last Menstrual Period:
 2004-02-01

Collection Times:
 2025-10-09 02:27AM (S1)
 2025-10-09 02:57AM (S2)
 2025-10-09 03:27AM (S3)
 2025-10-09 12:00PM (SX)
 2025-10-09 04:17PM (S4)
 2025-10-09 10:20PM (S5)
 2025-10-09 02:29AM (U1)
 2025-10-09 04:40AM (U2)
 2025-10-09 04:20PM (U3)
 2025-10-09 10:28PM (U4)

Ordering Provider:
 Precision Analytical

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Free Cortisol and Cortisone (Saliva)				
Cortisol Awakening Response (CAR)	Below range	0.53	ng/mL	1.5 - 4
Cortisol (S1) - Waking	Below range	1.05	ng/mL	1.6 - 4.6
Cortisol (S2) - +30 Min.	Below range	1.58	ng/mL	3.7 - 8.2
Cortisol (S3) - +60 Min.	Below range	1.09	ng/mL	2.3 - 5.3
Cortisol (SX) - Mid-Day	Low end of range	0.80	ng/mL	0.5 - 2.4
Cortisol (S4) - Dinner	Low end of range	0.41	ng/mL	0.4 - 1.5
Cortisol (S5) - Bedtime	Within range	0.23	ng/mL	0 - 0.9
Cortisone (S1) - Waking	Below range	4.41	ng/mL	6.8 - 14.5
Cortisone (S2) - +30 Min.	Below range	9.01	ng/mL	12.4 - 19.4
Cortisone (S3) - +60 Min.	Below range	7.82	ng/mL	9.4 - 15.3
Cortisone (SX) - Mid-Day	Within range	6.79	ng/mL	3.5 - 9.5
Cortisone (S4) - Dinner	Within range	3.39	ng/mL	2 - 7.1
Cortisone (S5) - Bedtime	Within range	2.23	ng/mL	0 - 4.8
Saliva Cortisol Total (S1 - 5)	Below range	4.37	ng/mL	9.6 - 19.3
Saliva Cortisone Total (S1 - 5)	Below range	26.86	ng/mL	36 - 55
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	1.26	mg/ml	0.2 - 2
Creatinine (U2) - +2 Hours	Within range	0.69	mg/ml	0.2 - 2
Creatinine (U3) - Dinner	Within range	0.48	mg/ml	0.2 - 2
Creatinine (U4) - Bedtime	Within range	0.71	mg/ml	0.2 - 2
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Below range	34.0	ng/mg	75 - 370
b-Tetrahydrocortisol (b-THF)	Below range	543.5	ng/mg	1050 - 2500
b-Tetrahydrocortisone (b-THE)	Low end of range	1890.4	ng/mg	1550 - 3800
Metabolized Cortisol (THF + THE)	Below range	2468.0	ng/mg	2750 - 6500
DHEA-S	Below range	9.1	ng/mg	20 - 750
Cortisol Clearance Rate (CCR)	Within range	79.1		45 - 95

1



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Teresa, Burnout
123 A Street
Somertown , CA 90266

DOB: 1983-01-01
Age: 42
Sex: Female
Last Menstrual Period:
2004-02-01

Case # 1

Collection Dates:
2025-10-09 (S1 S2 S3 SX S4 S5 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)	Above range	2.9	ug/mg 0 - 2.5
Vitamin B6 Markers - May be deficient if high			
Xanthurenate	Above range	1.30	ug/mg 0.12 - 1.2
Kynurenate	Above range	4.7	ug/mg 0.8 - 4.5
Biotin Marker - May be deficient if high			
b-Hydroxyisovalerate	Above range	18.4	ug/mg 0 - 12.5
Glutathione Marker - May be deficient if high			
Pyroglutamate	Within range	49.3	ug/mg 28 - 58
Gut Marker - Potential gut putrefaction or dysbiosis if high			
Indican	Within range	31.6	ug/mg 0 - 100
Neuro-Related Markers (Urine)			
Dopamine Metabolite			
Homovanillate (HVA)	Below range	2.9	ug/mg 3 - 11
Norepinephrine/Epinephrine Metabolite			
Vanilmandelate (VMA)	Low end of range	2.5	ug/mg 2.2 - 5.5
Neuroinflammation Marker			
Quinolinatate	Within range	5.0	ug/mg 0 - 9.6
Additional Markers (Urine)			
Melatonin - Waking			
6-OH-Melatonin-Sulfate	Below range	3.8	ng/mg 10 - 85
Oxidative Stress / DNA Damage			
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	1.6	ng/mg 0 - 5.2

- The MMA is above the range. This may indicate vitamin B12 or adenosylcobalamin deficiency. B12 is important for phase 2 methylation (estrogen detox), neurotransmitter synthesis, and other key processes.
- Both the xanthurenate and kynurenate are above the range. This may indicate vitamin B6 deficiency. B6 is important for phase 2 methylation (estrogen detox), neurotransmitter synthesis, and other key processes. Tryptophan taken within 72 hours before testing can also raise these markers without indicating a true B6 deficiency.
- The b-hydroxyisovalerate is above the range. This may indicate biotin (vitamin B7) deficiency.
- The HVA, a metabolite of dopamine, is below the normal range. This may be seen with low dopamine or with slow methylation. Review dopamine-related symptoms before initiating treatment.
- The waking urinary 6-OH-Melatonin-Sulfate is low. This reflects low overnight production of melatonin. This may be implicated in poor sleep and insomnia.

CASE 2

EMMA

A 51-YO FEMALE IN MENOPAUSE

2

PATIENT HISTORY

CHIEF COMPLAINTS

- Hot flashes
- Insomnia
- Weight gain
- Vaginal dryness
- Frequent UTIs

PAST MEDICAL HISTORY

- Intact uterus
- Menopausal x 1 year
- Metabolic disease & insulin resistance

MEDICATIONS & SUPPLEMENTS

- Melatonin 5 mg at bedtime
- Occasional ibuprofen for joint stiffness

PHYSICAL EXAM

- 5'5", 176 lbs., BMI: 29.3
- BP: 138/82 mm Hg
- Pulse: 78 bpm

PERTINENT SERUM LABS

- Fasting glucose: 104 mg/dL (**H**)
- Fasting insulin: 14 μ IU/mL (**H**)
- Lipid panel: triglycerides 178 (**H**)

NOTES

2



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Emma, Menopause
123 A Street
Somertown, CA 90266

DOB: 1974-01-01
Age: 51
Sex: Female
Last Menstrual Period:

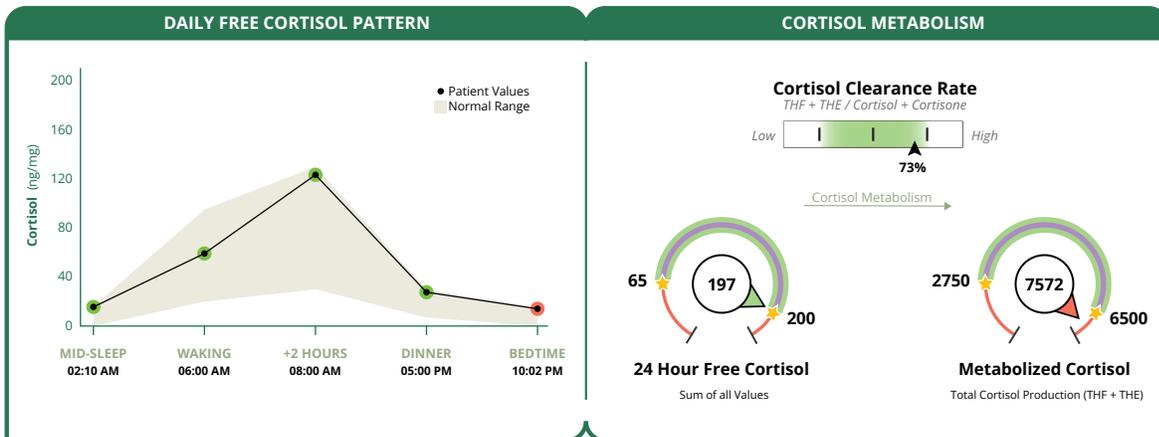
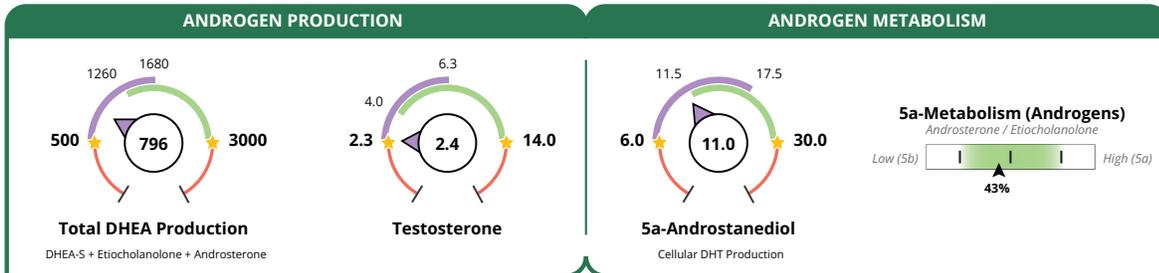
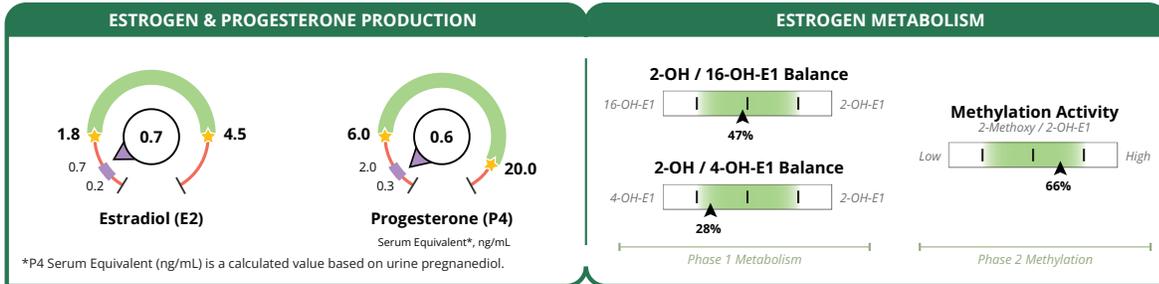
Case # 2

Collection Dates:
2025-10-11 (U3 U4)
2025-10-12 (U0 U1 U2)

Hormone Testing Summary

● Optimal Luteal Range ● Postmenopausal Range ● Out of Range ★ Edge of Range

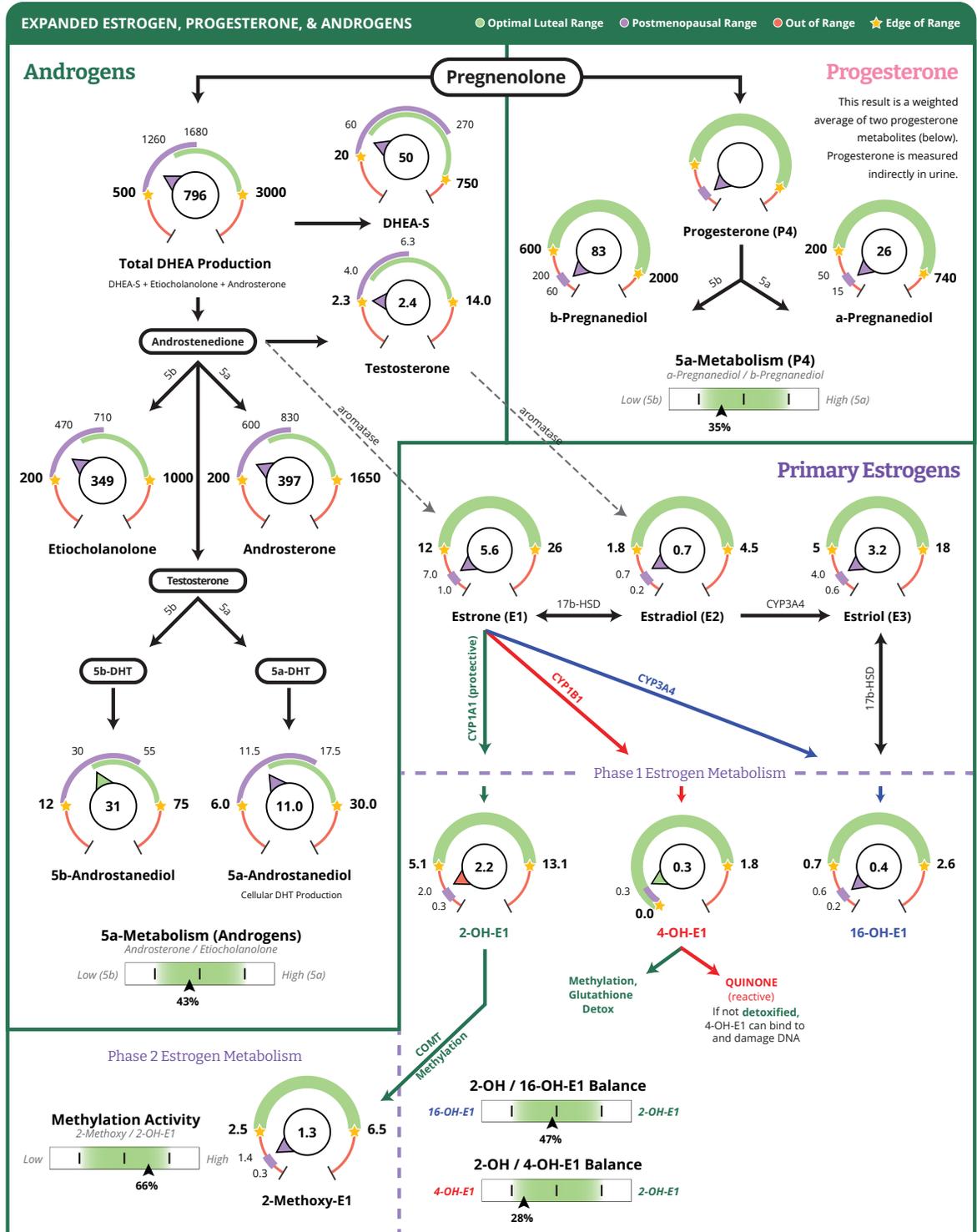
For an expanded view of results, see pages 2 through 6. For interpretive support, see *About Your Results* pages.



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

- Neurotransmitters





2



Case # 2

Emma, Menopause
 123 A Street
 Sometown, CA 90266
DOB: 1974-01-01
Age: 51
Sex: Female
Last Menstrual Period:

Collection Times:

2025-10-12 02:10AM (U0)
 2025-10-12 06:00AM (U1)
 2025-10-12 08:00AM (U2)
 2025-10-11 05:00PM (U3)
 2025-10-11 10:02PM (U4)

Ordering Provider:

Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Below luteal range	83.1	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Below luteal range	26.0	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Below luteal range	5.58	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Below luteal range	0.70	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Below luteal range	3.2	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Below luteal range	2.16	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	0.32	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Below luteal range	0.37	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Below luteal range	1.25	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Within luteal range	0.67	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.09	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Below range	14.3	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Within range	5.84	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Within range	6.75	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Within range	0.58	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)					
Range					
DHEA-S	Within range	49.8	ng/mg	20 - 750	
Androstosterone	Within range	396.8	ng/mg	200 - 1650	
Etiocholanolone	Within range	349.1	ng/mg	200 - 1000	
Testosterone	Within range	2.43	ng/mg	2.3 - 14	
5a-DHT	Within range	0.8	ng/mg	0 - 6.6	
5a-Androstenediol	Within range	11.0	ng/mg	6 - 30	
5b-Androstenediol	Within range	30.9	ng/mg	12 - 75	
Epi-Testosterone	Below range	1.8	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.

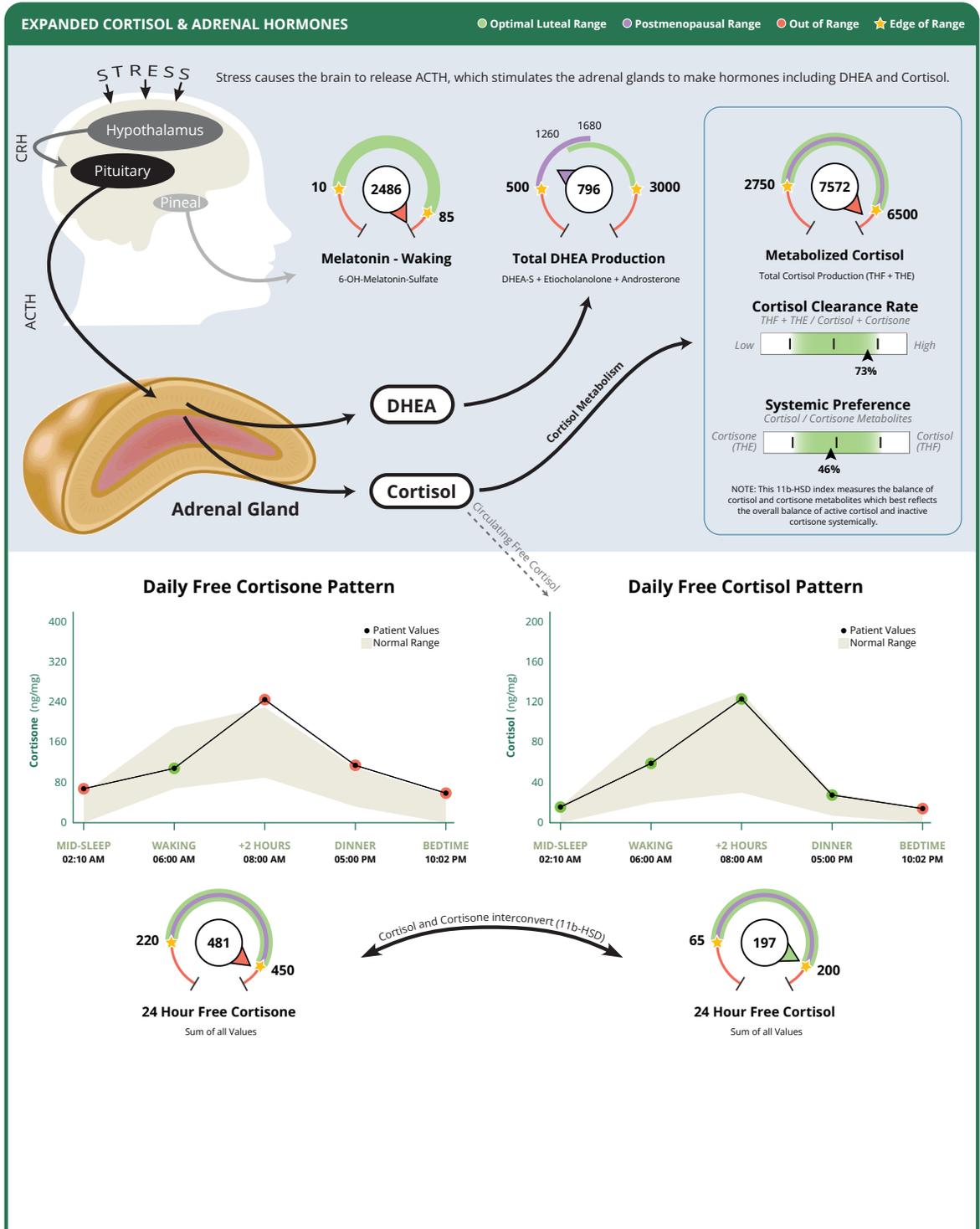
ADDITIONAL NORMAL RANGES	FOLLICULAR	OVULATORY	ON ORAL PG
b-Pregnanediol	100 - 300	100 - 300	2000 - 9000
a-Pregnanediol	25 - 100	25 - 100	580 - 3000
Estrone (E1)	4.0 - 12.0	22 - 68	N/A
Estradiol (E2)	1.0 - 2.0	4.0 - 12.0	N/A

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Female Sample Report
 Accessioned - 10/15/2025
 Final Report - 2/5/2026

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 Report Version 1.6.0

2



2



Case # 2
 Emma, Menopause
 123 A Street
 Sometown, CA 90266
DOB: 1974-01-01
Age: 51
Sex: Female
Last Menstrual Period:

Collection Times:
 2025-10-12 02:10AM (U0)
 2025-10-12 06:00AM (U1)
 2025-10-12 08:00AM (U2)
 2025-10-11 05:00PM (U3)
 2025-10-11 10:02PM (U4)

Ordering Provider:
 Precision Analytical

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U0) - Mid-Sleep	High end of range	15.6	ng/mg	0 - 16
Cortisol (U1) - Waking	Within range	59.2	ng/mg	20 - 95
Cortisol (U2) - +2 Hours	High end of range	123.4	ng/mg	30 - 130
Cortisol (U3) - Dinner	Within range	27.6	ng/mg	7 - 30
Cortisol (U4) - Bedtime	Above range	14.1	ng/mg	0 - 14
Cortisone (U0) - Mid-Sleep	Above range	67.8	ng/mg	0 - 59
Cortisone (U1) - Waking	Within range	108.5	ng/mg	68 - 190
Cortisone (U2) - +2 Hours	Above range	245.6	ng/mg	90 - 230
Cortisone (U3) - Dinner	Above range	114.5	ng/mg	32 - 110
Cortisone (U4) - Bedtime	Above range	59.0	ng/mg	0 - 55
24 Hour Free Cortisol (Sum of all Values)	High end of range	197.0	ng/mg	65 - 200
24 Hour Free Cortisone (Sum of all Values)	Above range	481.0	ng/mg	220 - 450
Creatinine (Urine)				
Creatinine (U0) - Mid-Sleep	Low end of range	0.37	mg/ml	0.2 - 2
Creatinine (U1) - Waking	Low end of range	0.33	mg/ml	0.2 - 2
Creatinine (U2) - +2 Hours	Within range	0.35	mg/ml	0.2 - 2
Creatinine (U3) - Dinner	Within range	0.22	mg/ml	0.2 - 2
Creatinine (U4) - Bedtime	Within range	0.59	mg/ml	0.2 - 2
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Above range	556.2	ng/mg	75 - 370
b-Tetrahydrocortisol (b-THF)	Above range	2690.2	ng/mg	1050 - 2500
b-Tetrahydrocortisone (b-THE)	Above range	4325.6	ng/mg	1550 - 3800
Metabolized Cortisol (THF + THE)	Above range	7572.0	ng/mg	2750 - 6500
DHEA-S	Within range	49.8	ng/mg	20 - 750
Cortisol Clearance Rate (CCR)	High end of range	11.2		6 - 12.5

2



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Emma, Menopause
123 A Street
Somertown, CA 90266

DOB: 1974-01-01
Age: 51
Sex: Female
Last Menstrual Period:

Case # 2

Collection Dates:
2025-10-11 (U3 U4)
2025-10-12 (U0 U1 U2)

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	1.5 ug/mg	0 - 2.5
Vitamin B6 Markers - May be deficient if high			
Xanthurenate	Within range	0.39 ug/mg	0.12 - 1.2
Kynurenate	Within range	1.7 ug/mg	0.8 - 4.5
Biotin Marker - May be deficient if high			
b-Hydroxyisovalerate	Within range	6.5 ug/mg	0 - 12.5
Glutathione Marker - May be deficient if high			
Pyroglutamate	Within range	40.3 ug/mg	28 - 58
Gut Marker - Potential gut putrefaction or dysbiosis if high			
Indican	Within range	49.3 ug/mg	0 - 100
Neuro-Related Markers (Urine)			
Dopamine Metabolite			
Homovanillate (HVA)	Within range	5.3 ug/mg	3 - 11
Norepinephrine/Epinephrine Metabolite			
Vanilmandelate (VMA)	Above range	6.2 ug/mg	2.2 - 5.5
Neuroinflammation Marker			
Quinolinate	Within range	4.7 ug/mg	0 - 9.6
Additional Markers (Urine)			
Melatonin - Waking			
6-OH-Melatonin-Sulfate	Above range	2486.3 ng/mg	10 - 85
Oxidative Stress / DNA Damage			
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	2.4 ng/mg	0 - 5.2

- The VMA, a metabolite of epinephrine/norepinephrine, is above the normal range. This may be seen with high adrenal output or stress. Reviewing cortisol issues may help determine the root cause.
- The melatonin is significantly above the normal range, which is commonly seen with melatonin supplementation. Taking melatonin the night before testing can lead to high urine levels due to first-pass metabolism. As a result, supplemented levels are not a reliable indicator of circulating melatonin and should not be used to adjust dosing.

2

CASE 3

JENNA

A 35-YO FEMALE WITH ACNE

PATIENT HISTORY

3

CHIEF COMPLAINTS

- Acne
- Bloating
- Anxiety/Depression

PAST MEDICAL HISTORY

- Strong FMHx breast cancer, CVD, DM
- IBS-C
- Insulin resistance
- PT currently follows SAD diet, dines out 5 days a week, and is usually eating in a rush
- 1 alcoholic drink 2-5x weekly

MEDICATIONS & SUPPLEMENTS

- Advil for occasional headaches

PHYSICAL EXAM

- 5'6"; 185 lbs.; BMI 29.9
- BP 125/72 mm Hg
- Pulse 82 bpm

PERTINENT SERUM LABS

- Fasting Glucose: 105 mmol/L (H); ALT: 50 U/L (H)
- Fasting Insulin: 16 mIU/mL (H)
- TG: 155 mg/dL (H)
- hsCRP: 3.2 mg/L (H)
- Vitamin D: 24 nmol/L (L)



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Jenna, Acne
123 A Street
Somertown, CA 90266

DOB: 1990-01-01
Age: 35
Sex: Female
Last Menstrual Period:

Case # 3

Collection Dates:
2025-10-02 (U3 U4)
2025-10-03 (U1 U2)

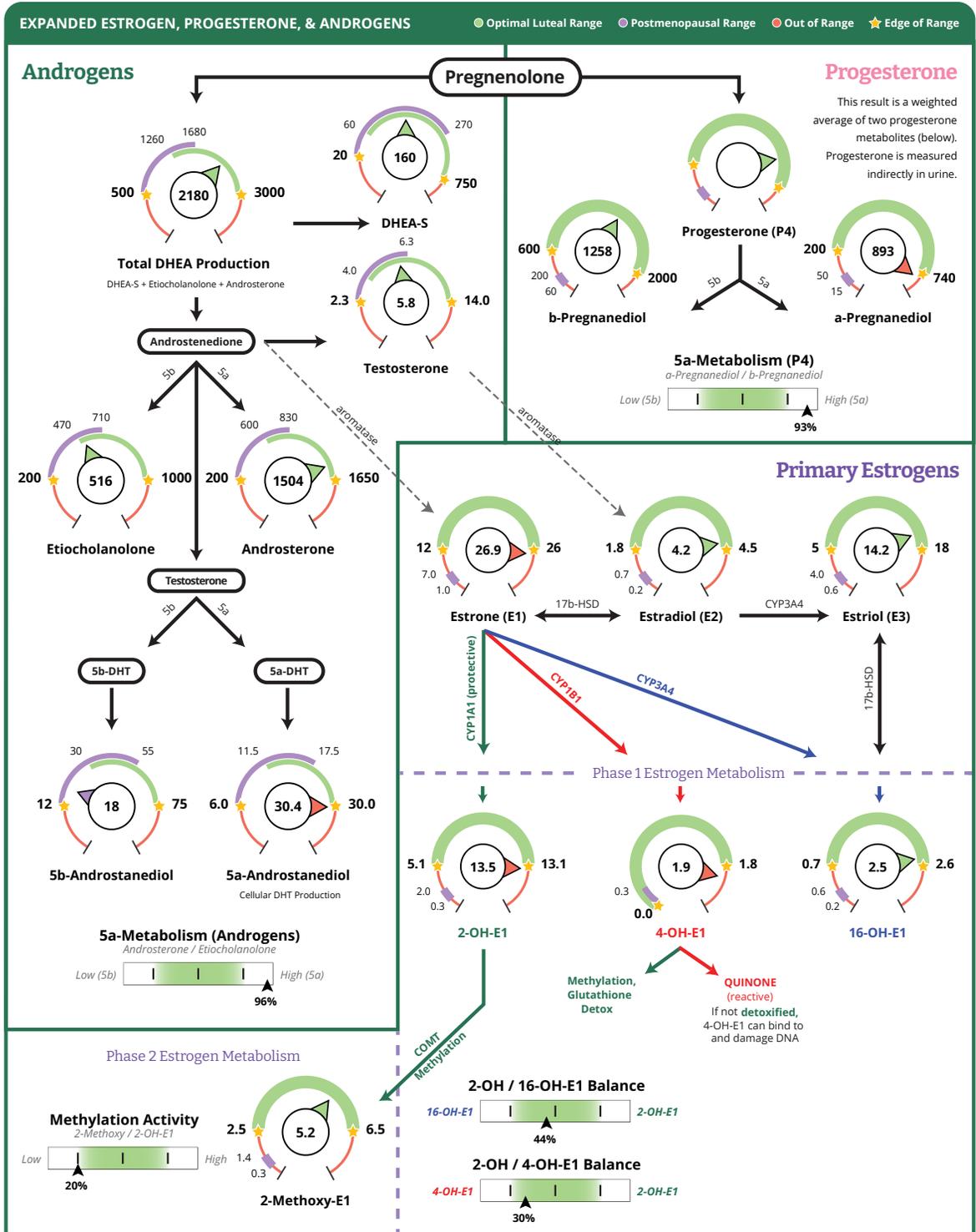
Hormone Testing Summary

● Optimal Luteal Range ● Postmenopausal Range ● 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.



3



3



Case # 3

Jenna, Acne
 123 A Street
 Sometown, CA 90266
DOB: 1990-01-01
Age: 35
Sex: Female
Last Menstrual Period:

Collection Times:

2025-10-03 07:00AM (U1)
 2025-10-03 09:00AM (U2)
 2025-10-02 06:00PM (U3)
 2025-10-02 11:00PM (U4)

Ordering Provider:

Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Within luteal range	1257.9	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Above luteal range	893.1	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Above luteal range	26.87	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	High end of luteal range	4.20	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Within luteal range	14.2	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Above luteal range	13.45	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Above luteal range	1.90	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	High end of luteal range	2.45	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Within luteal range	5.22	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Within luteal range	1.36	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Above luteal range	0.53	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Above range	70.2	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Within range	5.49	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Within range	7.08	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Within range	0.39	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)					
Range					
DHEA-S	Within range	159.8	ng/mg	20 - 750	
Androsterone	Within range	1504.3	ng/mg	200 - 1650	
Etiocholanolone	Within range	516.2	ng/mg	200 - 1000	
Testosterone	Within range	5.76	ng/mg	2.3 - 14	
5a-DHT	Above range	6.9	ng/mg	0 - 6.6	
5a-Androstanediol	Above range	30.4	ng/mg	6 - 30	
5b-Androstanediol	Within range	18.4	ng/mg	12 - 75	
Epi-Testosterone	Within range	8.4	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.

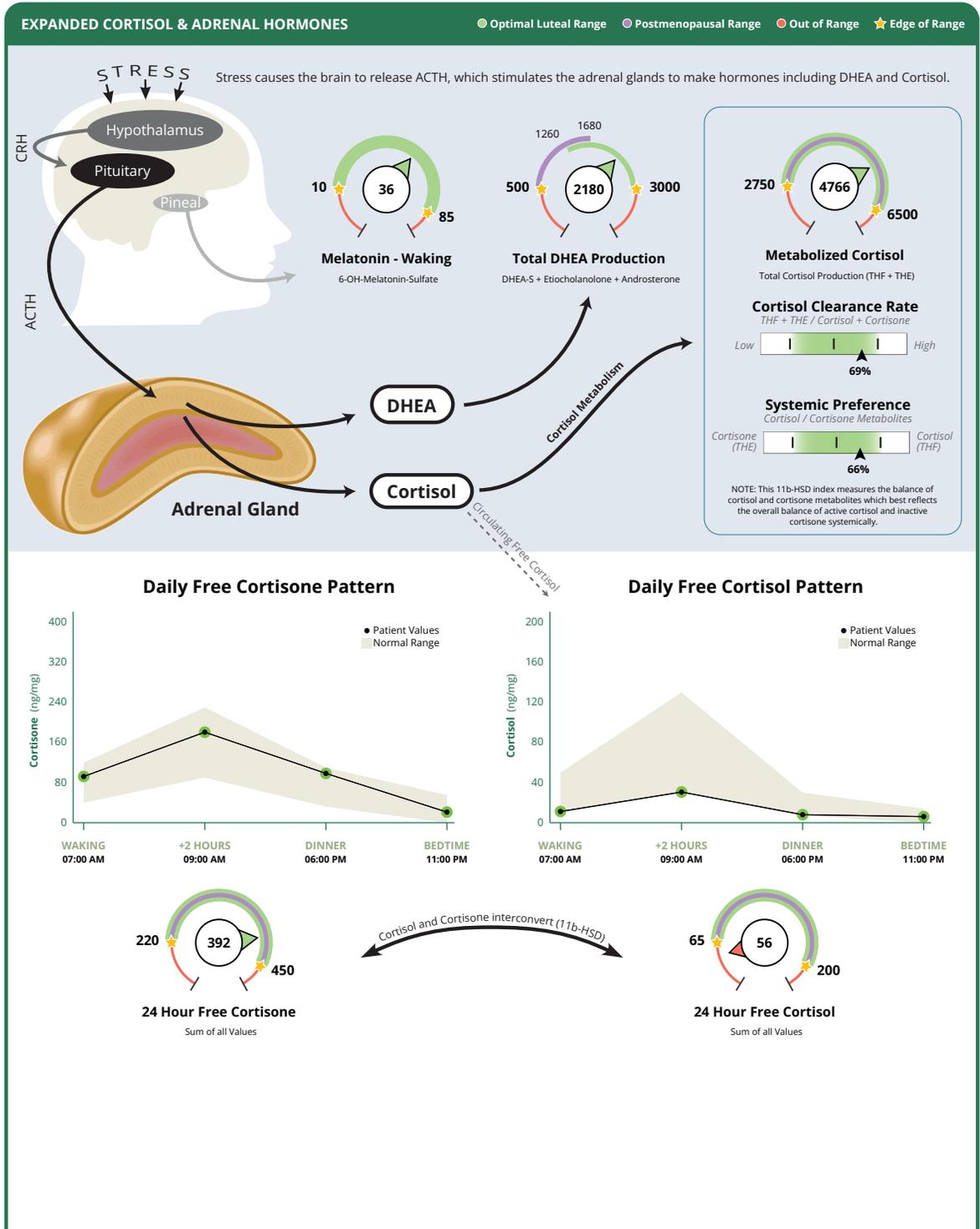
ADDITIONAL NORMAL RANGES	FOLLICULAR	OVULATORY	ON ORAL PG
b-Pregnanediol	100 - 300	100 - 300	2000 - 9000
a-Pregnanediol	25 - 100	25 - 100	580 - 3000
Estrone (E1)	4.0 - 12.0	22 - 68	N/A
Estradiol (E2)	1.0 - 2.0	4.0 - 12.0	N/A

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 CREATORS OF THE DUTCH TEST®
 Precision Analytical (Dawn Huo, Ph.D., Lab Director)
 3138 NE Rivergate Street
 McMinnville, OR 97128

Female Sample Report
 Accessioned - 10/15/2025
 Final Report - 2/17/2026

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3



3



Case # 3
 Jenna, Acne
 123 A Street
 Sometown , CA 90266
DOB: 1990-01-01
Age: 35
Sex: Female
Last Menstrual Period:

Collection Times:
 2025-10-03 07:00AM (U1)
 2025-10-03 09:00AM (U2)
 2025-10-02 06:00PM (U3)
 2025-10-02 11:00PM (U4)

Ordering Provider:
 Precision Analytical

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U1) - Waking	Low end of range	11.2	ng/mg	10 - 50
Cortisol (U2) - +2 Hours	Low end of range	30.6	ng/mg	30 - 130
Cortisol (U3) - Dinner	Low end of range	8.0	ng/mg	7 - 30
Cortisol (U4) - Bedtime	Within range	6.1	ng/mg	0 - 14
Cortisone (U1) - Waking	Within range	92.2	ng/mg	40 - 120
Cortisone (U2) - +2 Hours	Within range	180.6	ng/mg	90 - 230
Cortisone (U3) - Dinner	Within range	98.4	ng/mg	32 - 110
Cortisone (U4) - Bedtime	Within range	21.2	ng/mg	0 - 55
24 Hour Free Cortisol (Sum of all Values)	Below range	55.9	ng/mg	65 - 200
24 Hour Free Cortisone (Sum of all Values)	Within range	392.4	ng/mg	220 - 450
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	0.76	mg/ml	0.2 - 2
Creatinine (U2) - +2 Hours	Within range	1.01	mg/ml	0.2 - 2
Creatinine (U3) - Dinner	Above range	2.02	mg/ml	0.2 - 2
Creatinine (U4) - Bedtime	Within range	0.58	mg/ml	0.2 - 2
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Above range	381.2	ng/mg	75 - 370
b-Tetrahydrocortisol (b-THF)	Within range	1813.9	ng/mg	1050 - 2500
b-Tetrahydrocortisone (b-THE)	Within range	2570.8	ng/mg	1550 - 3800
Metabolized Cortisol (THF + THE)	Within range	4766.0	ng/mg	2750 - 6500
DHEA-S	Within range	159.8	ng/mg	20 - 750
Cortisol Clearance Rate (CCR)	Within range	10.6		6 - 12.5

3



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Jenna, Acne
123 A Street
Somertown, CA 90266

DOB: 1990-01-01
Age: 35
Sex: Female
Last Menstrual Period:

Case # 3

Collection Dates:
2025-10-02 (U3 U4)
2025-10-03 (U1 U2)

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	2.2	ug/mg	0 - 2.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Within range	0.51	ug/mg	0.12 - 1.2
Kynurenate	Above range	6.2	ug/mg	0.8 - 4.5
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Within range	8.8	ug/mg	0 - 12.5
Glutathione Marker - May be deficient if high				
Pyroglutamate	Above range	69.2	ug/mg	28 - 58
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Within range	66.4	ug/mg	0 - 100
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Within range	5.4	ug/mg	3 - 11
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	Within range	2.9	ug/mg	2.2 - 5.5
Neuroinflammation Marker				
Quinolinate	Above range	9.7	ug/mg	0 - 9.6
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	Within range	35.9	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	1.6	ng/mg	0 - 5.2

- The kynurenate is above the range. This may indicate a vitamin B6 deficiency. B6 is essential for phase 2 methylation (estrogen detoxification), neurotransmitter synthesis, and other key metabolic processes. Tryptophan taken within 72 hours before testing can also raise kynurenate without indicating a true B6 deficiency.
- The pyroglutamate is high. Elevated pyroglutamate indicates impaired glutathione production. Mild elevation is typically associated with low or deficient glycine or cysteine. Depending on the case, very elevated pyroglutamate can be seen with excess acetaminophen use or can be genetic.
- 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.

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CASE 4

GABBY

A 31-YO FEMALE WITH INFERTILITY & PCOS

PATIENT HISTORY

CHIEF COMPLAINTS

- Infertility
- Hair loss
- Acne
- High stress

PAST MEDICAL HISTORY

- High stress due to demanding job and poor sleep
- History of irregular cycles, sometimes absent for 2-3 months
- Sedentary lifestyle

MEDICATIONS & SUPPLEMENTS

- Prenatal Multivitamin

PHYSICAL EXAM

- 5'5"; 175 lbs.; BMI 29.1
- BP 110/76 mm Hg
- Pulse 74 bpm

PERTINENT SERUM LABS

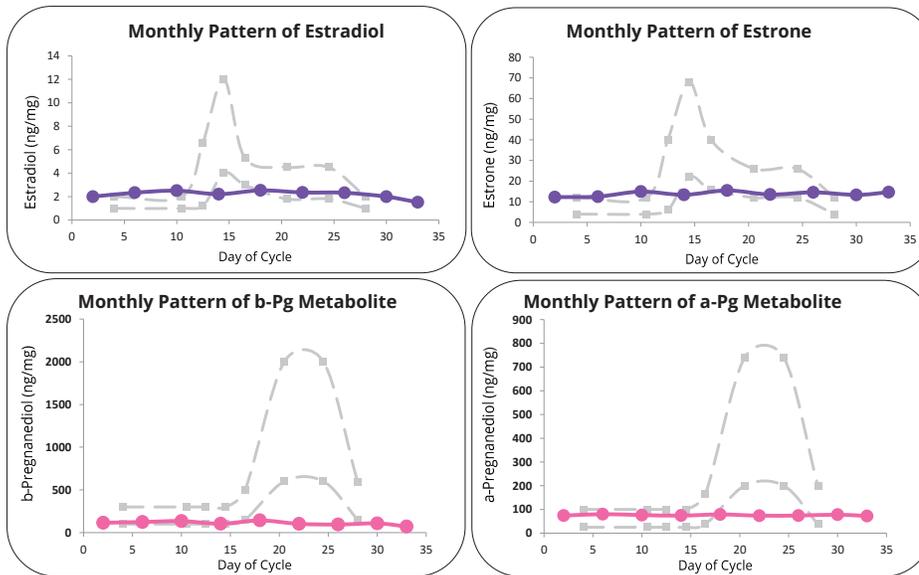
- Dyslipidemia (**high** TG and LDL)
- Fasting Insulin: 17 (**H**); HbA1c: 5.9 (**H**)
- hs-CRP: 2.6 (**H**)
- Total Testosterone: 42 ng/dL (**high-end**)
- SHBG 28 nmol/L (**Low-end**)

4



Name: Female Sample Report
 D.O.B. 01/01/94
 Collection Dates:
 9/10-10/12/2025
 Provider: Precision Analytical
 Accession # 1094137

Estrogen (E) patterns can be seen below in purple. Progesterone (Pg) patterns can be seen below in pink. Normal ranges are within the gray dashed lines. See page 2 for more information.



All values given in ng/mg creatinine

Measurement	1	2	3	4	5	6	7	8	9
Day(s) of Cycle	1,3	5,7	9,11	13,15	17,19	21,23	25,27	29,31	33

The days listed above were used for measurements. Two samples are used and listed for long cycles or patients without a normal cycle.

Estradiol (E2)	2.00	2.33	2.51	2.21	2.53	2.35	2.33	1.99	1.52
Estrone (E1)	12.2	12.5	14.9	13.4	15.5	13.5	14.6	13.3	14.6
a-Pregnanediol	74	80	76	74	79	74	74	78	72
b-Pregnanediol	115	124	135	104	143	103	95	108	72
b-Pregnanediol/E2 Ratio	58	53	54	47	57	44	41	54	48
Creatinine	0.90	1.73	1.34	1.80	1.71	1.84	1.44	2.01	

Sample (#5) with the highest b-Pg value (143) is used for E and Pg metabolites for DUTCH Complete or Plus if ordered.

Normal Ranges	Follicular	Ovulatory	Luteal	Postmenopausal
Estradiol	1-2ng/mg	4-12ng/mg	1.8-4.5ng/mg	0.2-0.7ng/mg
Estrone	4-12ng/mg	22-68ng/mg	12-26ng/mg	1.0-7.0ng/mg
a-Pregnanediol	25-100ng/mg	25-100ng/mg	200-740ng/mg	15-50ng/mg
b-Pregnanediol	100-300ng/mg	100-300ng/mg	600-2000ng/mg	60-200ng/mg

b-Pregnanediol/E2 ratio is typically 50-300 in the follicular phase, <100 during ovulation, and 100-500 in the luteal phase. Creatinine normal range, 0.2-2.0 mg/mL. Values outside this range may be less certain due to under or overhydration.



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 3138 NE Rivergate St.
 McMinnville, OR 97128

Accession Date: 01/00/00
 Report Date: 02/12/2026

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 CLIA #38D2047310

CASE 4: GABBY | PAGE 1, HORMONE TESTING SUMMARY



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Gabby, Infertility PCOS
123 A Street
Sometown, CA 90266

DOB: 1994-01-01
Age: 31
Sex: Female
Last Menstrual Period:
2025-08-23

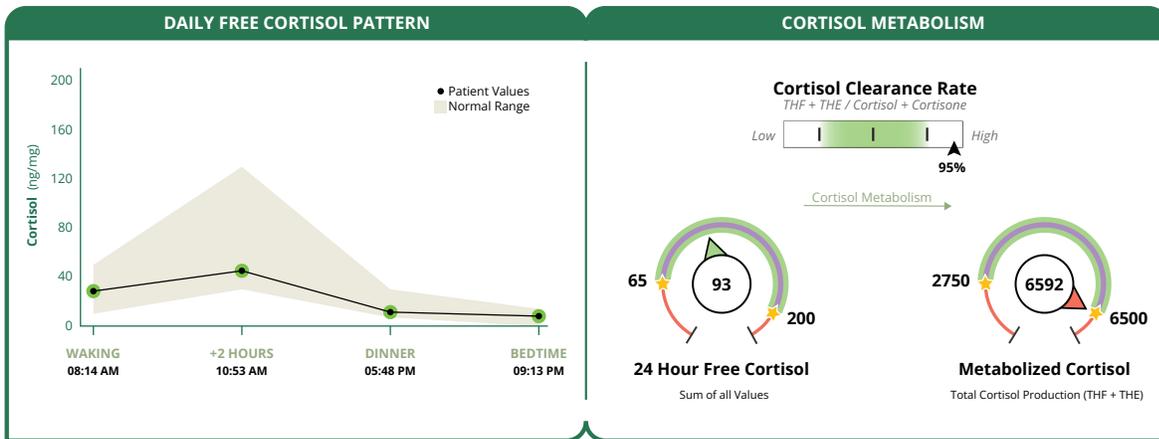
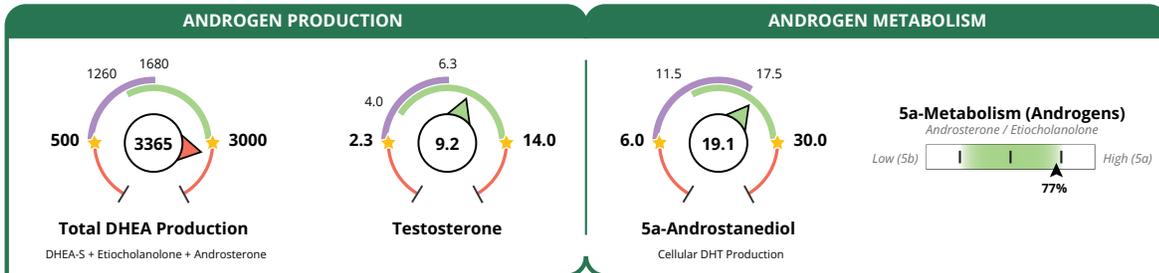
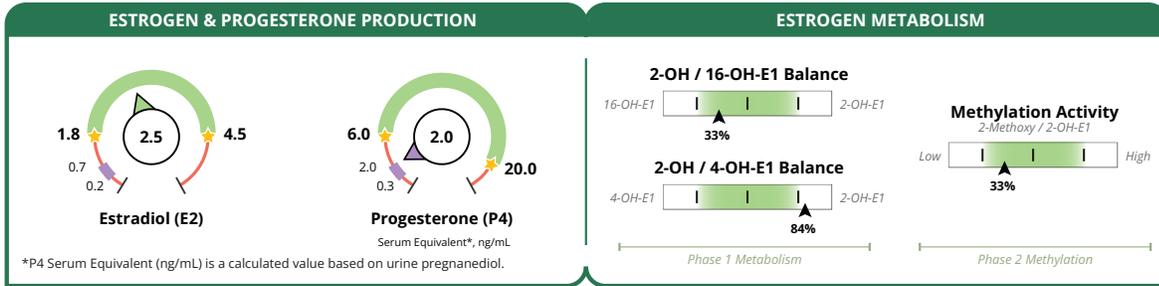
Case # 4

Collection Dates:
2025-10-12 (U1 U2 U3 U4)

Hormone Testing Summary

● Optimal Luteal Range ● Postmenopausal Range ● 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.



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

● Watch ● Needs Attention

● B6 Deficiency ● Neuroinflammation

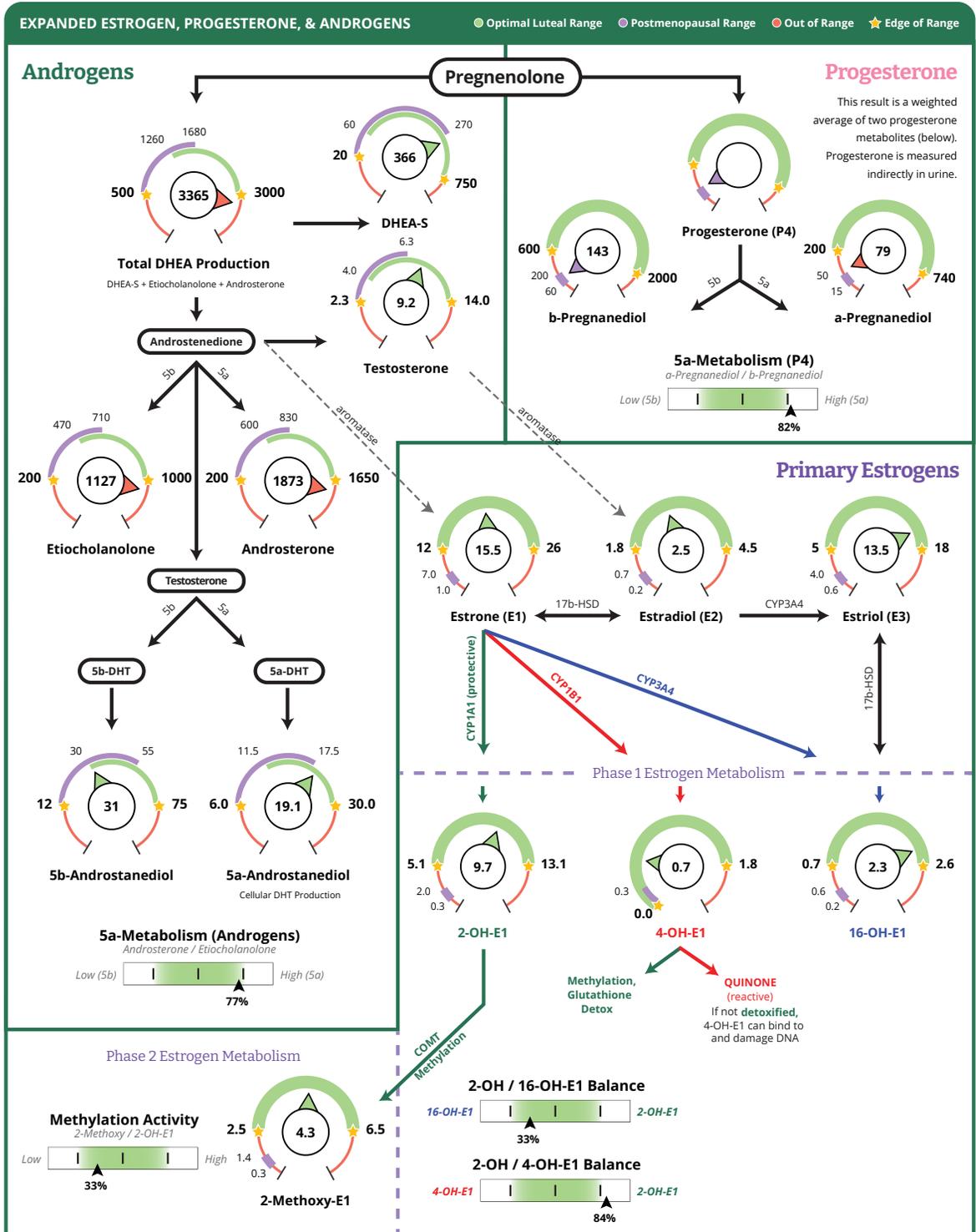
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CREATORS OF THE DUTCH TEST[®]

Precision Analytical (Dawn Huo, Ph.D., Lab Director)
3138 NE Rivergate Street
McMinnville, OR 97128

Female Sample Report
Accessioned - 10/20/2025
Final Report - 2/12/2026

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4



Case # 4
 Gabby, Infertility PCOS
 123 A Street
 Sometown, CA 90266
DOB: 1994-01-01
Age: 31
Sex: Female
Last Menstrual Period:
 2025-08-23

Collection Times:
 2025-10-12 08:14AM (U1)
 2025-10-12 10:53AM (U2)
 2025-10-12 05:48PM (U3)
 2025-10-12 09:13PM (U4)

Ordering Provider:
 Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Below luteal range	143.2	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Below luteal range	78.5	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Within luteal range	15.49	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Within luteal range	2.53	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Within luteal range	13.5	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Within luteal range	9.70	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	0.71	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	High end of luteal range	2.28	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Within luteal range	4.28	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Within luteal range	1.01	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.12	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Within range	49.6	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Within range	4.25	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Above range	13.66	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Within range	0.44	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)					
Range					
DHEA-S	Within range	365.5	ng/mg	20 - 750	
Androsterone	Above range	1872.9	ng/mg	200 - 1650	
Etiocholanolone	Above range	1126.7	ng/mg	200 - 1000	
Testosterone	Within range	9.21	ng/mg	2.3 - 14	
5a-DHT	Within range	4.6	ng/mg	0 - 6.6	
5a-Androstenediol	Within range	19.1	ng/mg	6 - 30	
5b-Androstenediol	Within range	30.8	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

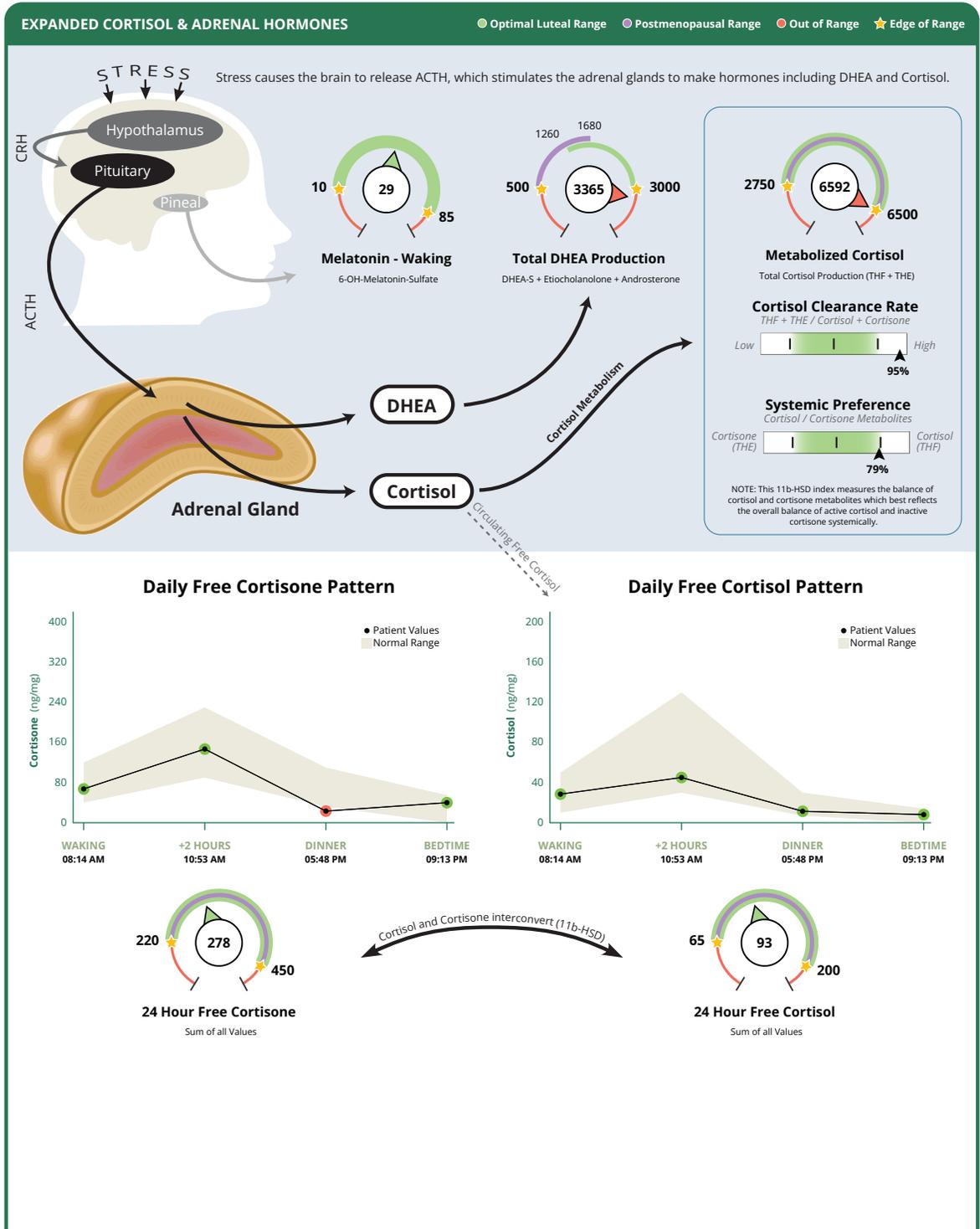
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 CREATORS OF THE DUTCH TEST®
 Precision Analytical (Dawn Huo, Ph.D., Lab Director)
 3138 NE Rivergate Street
 McMinnville, OR 97128

Female Sample Report
 Accessioned - 10/20/2025
 Final Report - 2/12/2026

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CASE 4: GABBY | PAGE 4 & 5, ADRENAL HORMONES



4



Case # 4
 Gabby, Infertility PCOS
 123 A Street
 Sometown, CA 90266
DOB: 1994-01-01
Age: 31
Sex: Female
Last Menstrual Period:
 2025-08-23

Collection Times:
 2025-10-12 08:14AM (U1)
 2025-10-12 10:53AM (U2)
 2025-10-12 05:48PM (U3)
 2025-10-12 09:13PM (U4)

Ordering Provider:
 Precision Analytical

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U1) - Waking	Within range	28.5	ng/mg	10 - 50
Cortisol (U2) - +2 Hours	Low end of range	45.1	ng/mg	30 - 130
Cortisol (U3) - Dinner	Low end of range	11.4	ng/mg	7 - 30
Cortisol (U4) - Bedtime	Within range	8.1	ng/mg	0 - 14
Cortisone (U1) - Waking	Within range	67.4	ng/mg	40 - 120
Cortisone (U2) - +2 Hours	Within range	147.0	ng/mg	90 - 230
Cortisone (U3) - Dinner	Below range	23.2	ng/mg	32 - 110
Cortisone (U4) - Bedtime	Within range	40.0	ng/mg	0 - 55
24 Hour Free Cortisol (Sum of all Values)	Within range	93.1	ng/mg	65 - 200
24 Hour Free Cortisone (Sum of all Values)	Within range	277.6	ng/mg	220 - 450
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	1.23	mg/ml	0.2 - 2
Creatinine (U2) - +2 Hours	Within range	0.59	mg/ml	0.2 - 2
Creatinine (U3) - Dinner	Within range	0.76	mg/ml	0.2 - 2
Creatinine (U4) - Bedtime	Within range	0.57	mg/ml	0.2 - 2
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Above range	612.3	ng/mg	75 - 370
b-Tetrahydrocortisol (b-THF)	Above range	2597.8	ng/mg	1050 - 2500
b-Tetrahydrocortisone (b-THE)	Within range	3382.2	ng/mg	1550 - 3800
Metabolized Cortisol (THF + THE)	Above range	6592.0	ng/mg	2750 - 6500
DHEA-S	Within range	365.5	ng/mg	20 - 750
Cortisol Clearance Rate (CCR)	Above range	17.8		6 - 12.5

4



Ordering Provider:
Precision Analytical

PATIENT INFORMATION

Gabby, Infertility PCOS
123 A Street
Somertown , CA 90266

DOB: 1994-01-01
Age: 31
Sex: Female
Last Menstrual Period: 2025-08-23

Case # 4

Collection Dates:
2025-10-12 (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	2.0	ug/mg	0 - 2.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Above range	1.50	ug/mg	0.12 - 1.2
Kynurenate	Above range	4.8	ug/mg	0.8 - 4.5
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Within range	5.6	ug/mg	0 - 12.5
Glutathione Marker - May be deficient if high				
Pyroglutamate	Within range	42.4	ug/mg	28 - 58
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Within range	67.2	ug/mg	0 - 100
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Within range	4.3	ug/mg	3 - 11
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	Within range	2.9	ug/mg	2.2 - 5.5
Neuroinflammation Marker				
Quinolinate	Above range	13.6	ug/mg	0 - 9.6
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	Within range	28.9	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	2.1	ng/mg	0 - 5.2

- Both the xanthurenate and kynurenate are above the range. This may indicate vitamin B6 deficiency. B6 is important for phase 2 methylation (estrogen detox), neurotransmitter synthesis, and other key processes. Tryptophan taken within 72 hours before testing can also raise these markers without indicating a true B6 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.

4

CASE 5

ANNA

A 20-YO FEMALE WITH ENDOMETRIOSIS
& DYSMENORRHEA

PATIENT HISTORY

CHIEF COMPLAINTS

- Dysmenorrhea
- Heavy bleeding
- High stress
- Headaches

PAST MEDICAL HISTORY

- Stress job x 7 Months
- Regular 26-day cycles
- Menses increasingly more painful/heavier in the past 4 months
- Headaches day prior to menses lasting through days 1-2

MEDICATIONS & SUPPLEMENTS

- None

PHYSICAL EXAM

- 5'5"; 157 lbs.; BMI 26.1
- BP 116/76 mm Hg
- Pulse 84 bpm

PERTINENT SERUM LABS

- Iron deficiency anemia
- Day 3 Labs: FSH 5.2 mIU/ml, E2 58 pg/nl (**H**)
- Vitamin B12: 345 pg/mL (**L**)
- CRP 3.2 mg/dL (**H**)

5



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Anna, Dysmenorrhea
123 A Street
Somertown, CA 90266

DOB: 2005-01-01
Age: 20
Sex: Female
Last Menstrual Period:
2025-09-16

Case # 5

Collection Dates:
2025-10-07 (U3 U4)
2025-10-08 (U1 U2)

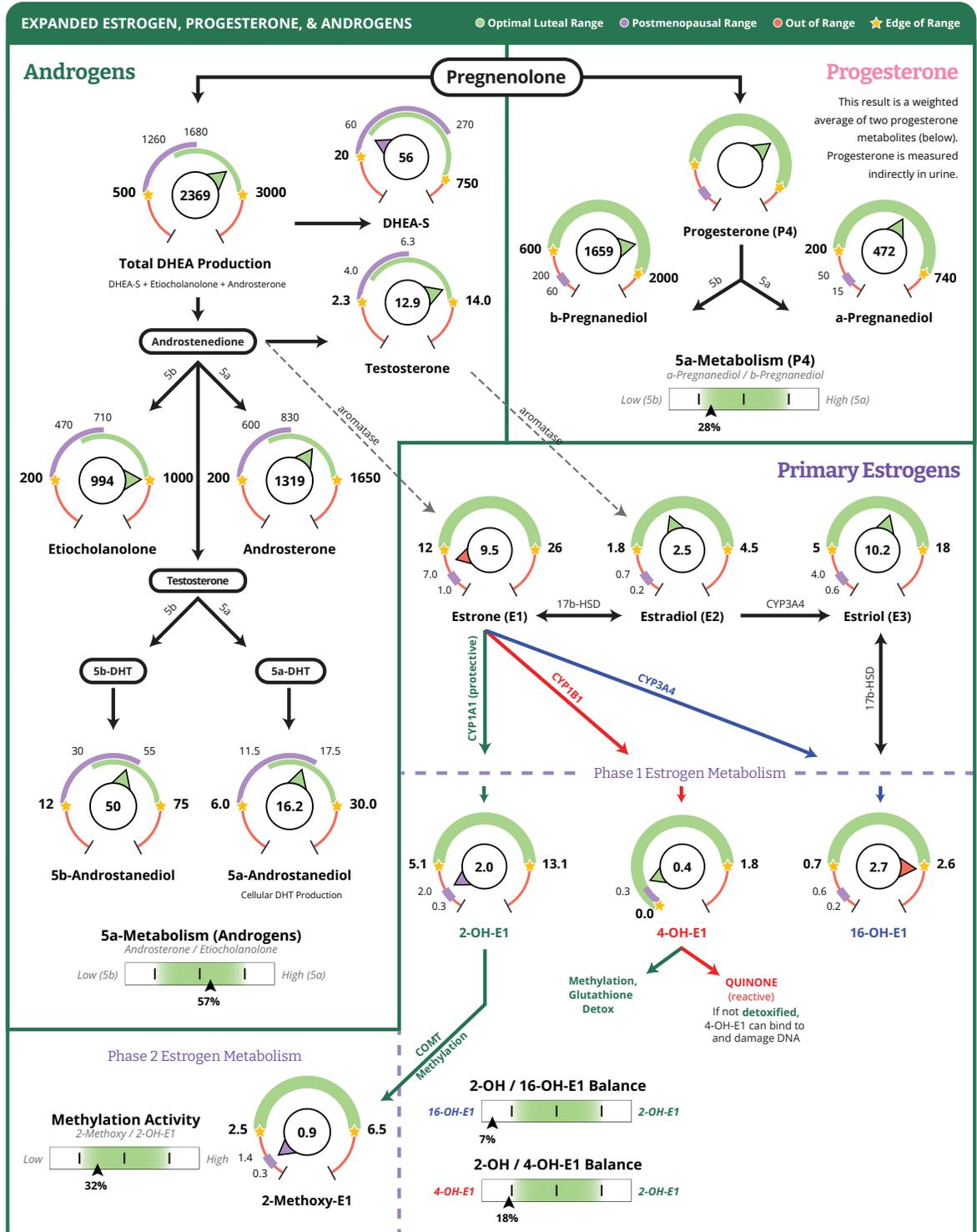
Hormone Testing Summary

● Optimal Luteal Range ● Postmenopausal Range ● 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.



5



5



Case # 5

Anna, Dysmenorrhea
123 A Street
Sometown, CA 90266

DOB: 2005-01-01

Age: 20

Sex: Female

Last Menstrual Period:

2025-09-16

Collection Times:

2025-10-08 05:49AM (U1)
2025-10-08 07:48AM (U2)
2025-10-07 05:05PM (U3)
2025-10-07 09:58PM (U4)

Ordering Provider:

Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Within luteal range	1659.0	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Within luteal range	472.0	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Below luteal range	9.53	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Within luteal range	2.50	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Within luteal range	10.2	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Below luteal range	1.99	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	0.38	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Above luteal range	2.70	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Below luteal range	0.87	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Within luteal range	0.86	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.15	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Below range	29.2	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Below range	0.74	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Below range	5.24	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Within range	0.44	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)					
Range					
DHEA-S	Within range	55.6	ng/mg	20 - 750	
Androsterone	Within range	1318.8	ng/mg	200 - 1650	
Etiocholanolone	Within range	994.2	ng/mg	200 - 1000	
Testosterone	Within range	12.87	ng/mg	2.3 - 14	
5a-DHT	Within range	2.0	ng/mg	0 - 6.6	
5a-Androstanediol	Within range	16.2	ng/mg	6 - 30	
5b-Androstanediol	Within range	50.0	ng/mg	12 - 75	
Epi-Testosterone	Within range	12.6	ng/mg	2.3 - 14	

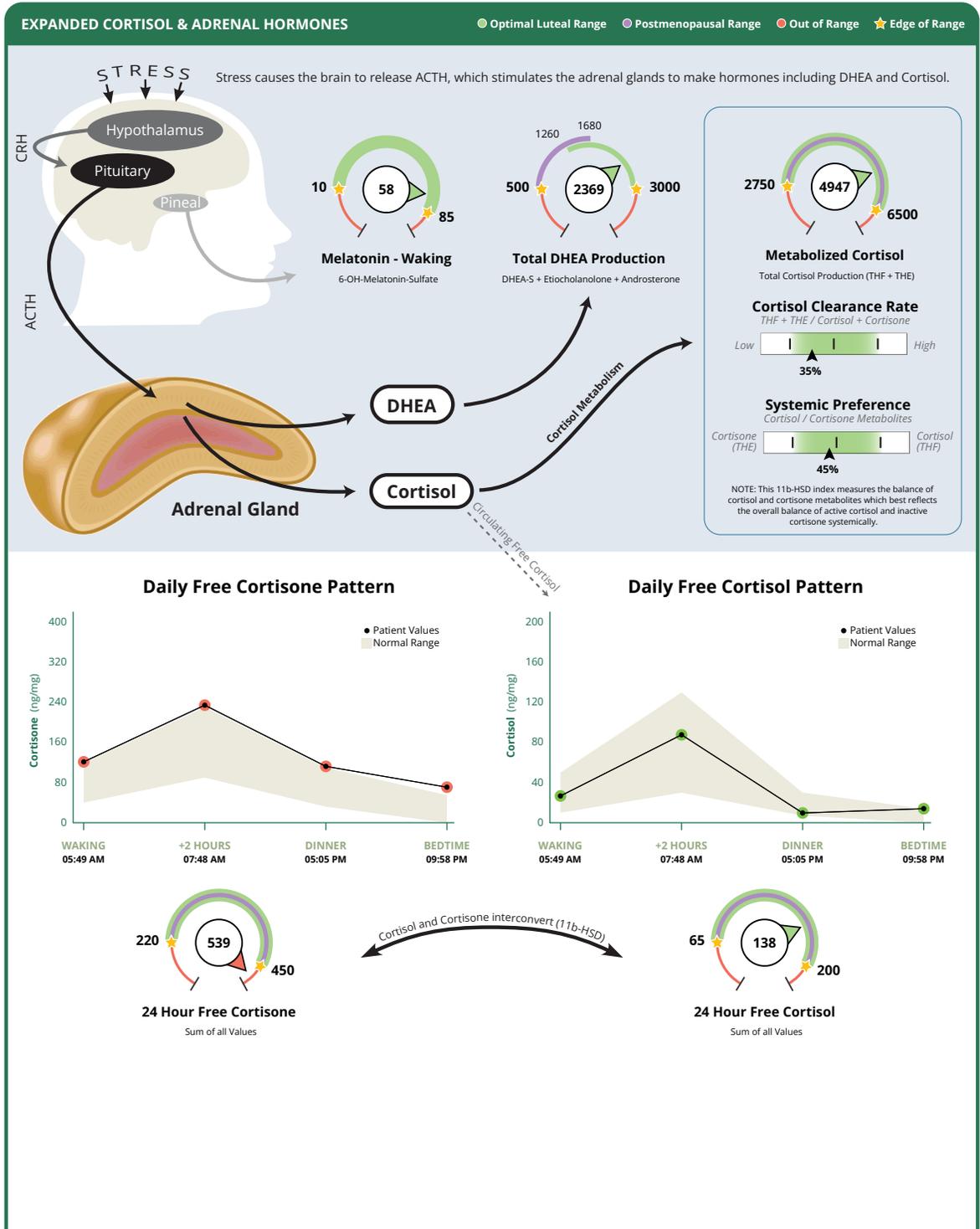
* The Luteal Range represents the expected premenopausal luteal range, collected menstrual cycle days 19-22 of a 28-day cycle. If your patient noted taking oral progesterone, the reference range represents the expected range on 100 - 200 mg of oral micronized progesterone (OMP). The ranges in the table 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

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Female Sample Report
Accessioned - 10/17/2025
Final Report - 2/17/2026

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Case # 5

Anna, Dysmenorrhea
123 A Street
Sometown, CA 90266

DOB: 2005-01-01

Age: 20

Sex: Female

Last Menstrual Period:
2025-09-16

Collection Times:

2025-10-08 05:49AM (U1)
2025-10-08 07:48AM (U2)
2025-10-07 05:05PM (U3)
2025-10-07 09:58PM (U4)

Ordering Provider:

Precision Analytical

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U1) - Waking	Within range	26.7	ng/mg	10 - 50
Cortisol (U2) - +2 Hours	Within range	87.7	ng/mg	30 - 130
Cortisol (U3) - Dinner	Low end of range	9.7	ng/mg	7 - 30
Cortisol (U4) - Bedtime	High end of range	14.0	ng/mg	0 - 14
Cortisone (U1) - Waking	Above range	121.4	ng/mg	40 - 120
Cortisone (U2) - +2 Hours	Above range	234.5	ng/mg	90 - 230
Cortisone (U3) - Dinner	Above range	112.4	ng/mg	32 - 110
Cortisone (U4) - Bedtime	Above range	70.9	ng/mg	0 - 55
24 Hour Free Cortisol (Sum of all Values)	Within range	138.1	ng/mg	65 - 200
24 Hour Free Cortisone (Sum of all Values)	Above range	539.2	ng/mg	220 - 450
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	1.80	mg/ml	0.2 - 2
Creatinine (U2) - +2 Hours	Within range	1.98	mg/ml	0.2 - 2
Creatinine (U3) - Dinner	Within range	1.37	mg/ml	0.2 - 2
Creatinine (U4) - Bedtime	Above range	2.22	mg/ml	0.2 - 2
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Within range	217.1	ng/mg	75 - 370
b-Tetrahydrocortisol (b-THF)	Within range	1897.2	ng/mg	1050 - 2500
b-Tetrahydrocortisone (b-THE)	Within range	2832.6	ng/mg	1550 - 3800
Metabolized Cortisol (THF + THE)	Within range	4947.0	ng/mg	2750 - 6500
DHEA-S	Within range	55.6	ng/mg	20 - 750
Cortisol Clearance Rate (CCR)	Within range	7.3		6 - 12.5



Ordering Provider:
Precision Analytical

PATIENT INFORMATION

Anna, Dysmenorrhea
123 A Street
Sometown, CA 90266

DOB: 2005-01-01
Age: 20
Sex: Female
Last Menstrual Period:
2025-09-16

Case # 5

Collection Dates:
2025-10-07 (U3 U4)
2025-10-08 (U1 U2)

Organic Acid Tests (OATs)

TEST		RESULT	UNITS	NORMAL RANGE
Nutritional Organic Acids (Urine)				
Vitamin B12 Marker - May be deficient if high				
Methylmalonate (MMA)	High end of range	2.4	ug/mg	0 - 2.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Above range	1.34	ug/mg	0.12 - 1.2
Kynurenate	Above range	4.7	ug/mg	0.8 - 4.5
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Within range	8.5	ug/mg	0 - 12.5
Glutathione Marker - May be deficient if high				
Pyroglutamate	Within range	40.0	ug/mg	28 - 58
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Above range	103.4	ug/mg	0 - 100
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Within range	7.8	ug/mg	3 - 11
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	Within range	4.2	ug/mg	2.2 - 5.5
Neuroinflammation Marker				
Quinolate	Within range	4.1	ug/mg	0 - 9.6
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	Within range	57.8	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Above range	5.9	ng/mg	0 - 5.2

- Both the xanthurenate and kynurenate are above the range. This may indicate vitamin B6 deficiency. B6 is important for phase 2 methylation (estrogen detox), neurotransmitter synthesis, and other key processes. Tryptophan taken within 72 hours before testing can also raise these markers without indicating a true B6 deficiency.
- The indican is above the range. This can indicate gut dysbiosis. Gut dysbiosis can affect estrogen metabolism, inflammation, and malabsorption of nutrients. Further GI testing may be indicated.
- The 8-hydroxy-2'-deoxyguanosine (8-OHdG) is above the normal range. This can result from oxidative damage to DNA. This may indicate a need for reducing oxidative damage, reactive oxygen species, and improving antioxidant status.

5

CASE 6

TANYA

A 29-YO FEMALE WITH AMENORRHEA

PATIENT HISTORY

CHIEF COMPLAINTS

- Amenorrhea
- Hot flashes
- Anxiety
- Afternoon fatigue

PAST MEDICAL HISTORY

- Amenorrheic x 16 months
- History of restricted dieting and intense exercise
- ACE (adverse childhood events) score = 6

MEDICATIONS & SUPPLEMENTS

- None

PHYSICAL EXAM

- 5' 6"; 112 lbs.; BMI 18.1 (low)
- BP 96/72 mm Hg
- Pulse 55 bpm

PERTINENT SERUM LABS

- Low WBC count (L)
- Low Thyroid: fT4 0.6 (L), fT3 2.1 (L)
- Vitamin D 12 ng/mL (L)
- LH 0.4 (L), FSH 1.3 (L)



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Tanya, Amenorrhea
123 A Street
Somertown, CA 90266

DOB: 1996-01-01
Age: 29
Sex: Female
Last Menstrual Period:

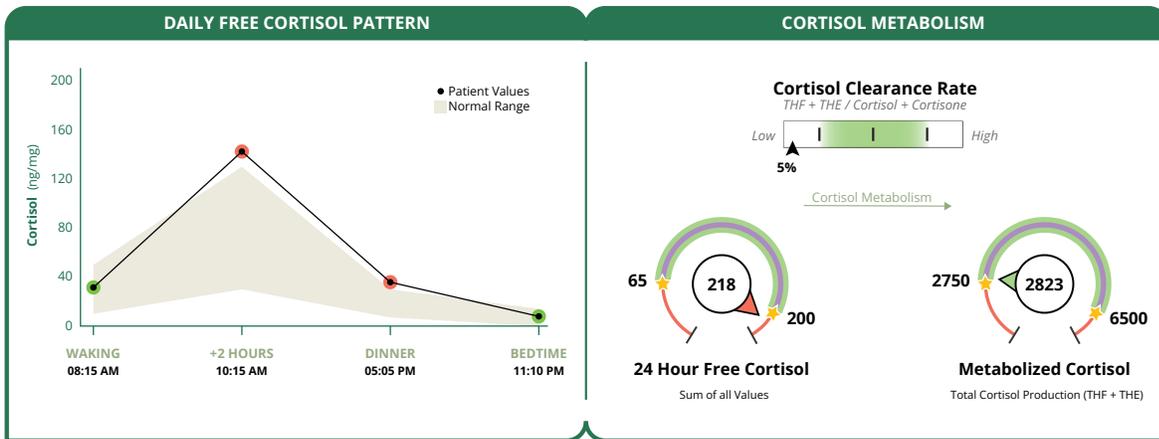
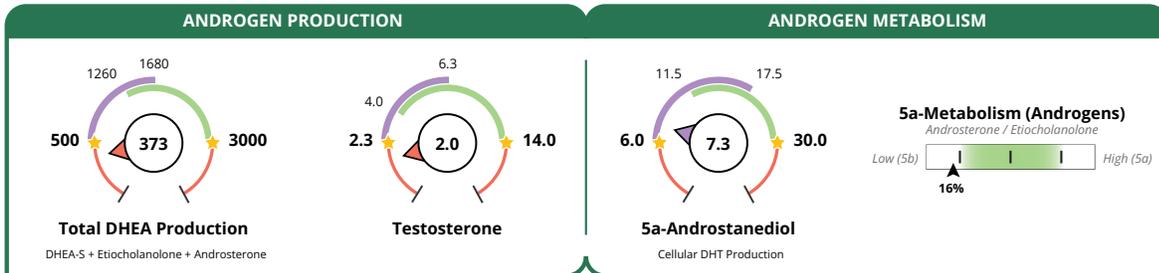
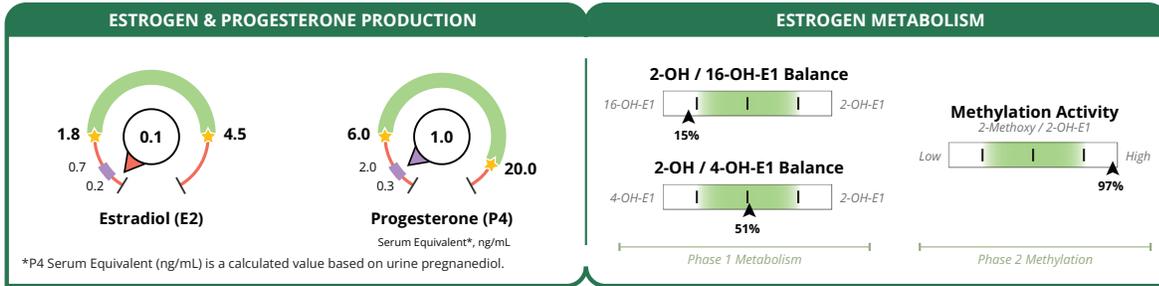
Case # 6

Collection Dates:
2025-10-17 (U3 U4)
2025-10-18 (U1 U2)

Hormone Testing Summary

● Optimal Luteal Range ● Postmenopausal Range ● 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.



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

- Neurotransmitters

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Female Sample Report
Accessioned - 10/24/2025
Final Report - 2/12/2026

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Case # 6

Tanya, Amenorrhea
 123 A Street
 Sometown, CA 90266
DOB: 1996-01-01
Age: 29
Sex: Female
Last Menstrual Period:

Collection Times:

2025-10-18 08:15AM (U1)
 2025-10-18 10:15AM (U2)
 2025-10-17 05:05PM (U3)
 2025-10-17 11:10PM (U4)

Ordering Provider:

Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Below luteal range	142.0	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Below luteal range	26.4	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Below luteal range	0.78	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Below luteal range	0.12	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Below luteal range	4.1	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Below luteal range	1.27	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	0.14	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Below luteal range	0.65	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Below luteal range	1.58	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Low end of luteal range	0.49	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.06	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Below range	9.2	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Below range	1.95	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Within range	9.07	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Above range	1.24	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)					
Range					
DHEA-S	Below range	19.2	ng/mg	20 - 750	
Androsterone	Below range	157.7	ng/mg	200 - 1650	
Etiocholanolone	Below range	196.3	ng/mg	200 - 1000	
Testosterone	Below range	1.99	ng/mg	2.3 - 14	
5a-DHT	Within range	1.4	ng/mg	0 - 6.6	
5a-Androstanediol	Within range	7.3	ng/mg	6 - 30	
5b-Androstanediol	Within range	22.3	ng/mg	12 - 75	
Epi-Testosterone	Below range	1.2	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.

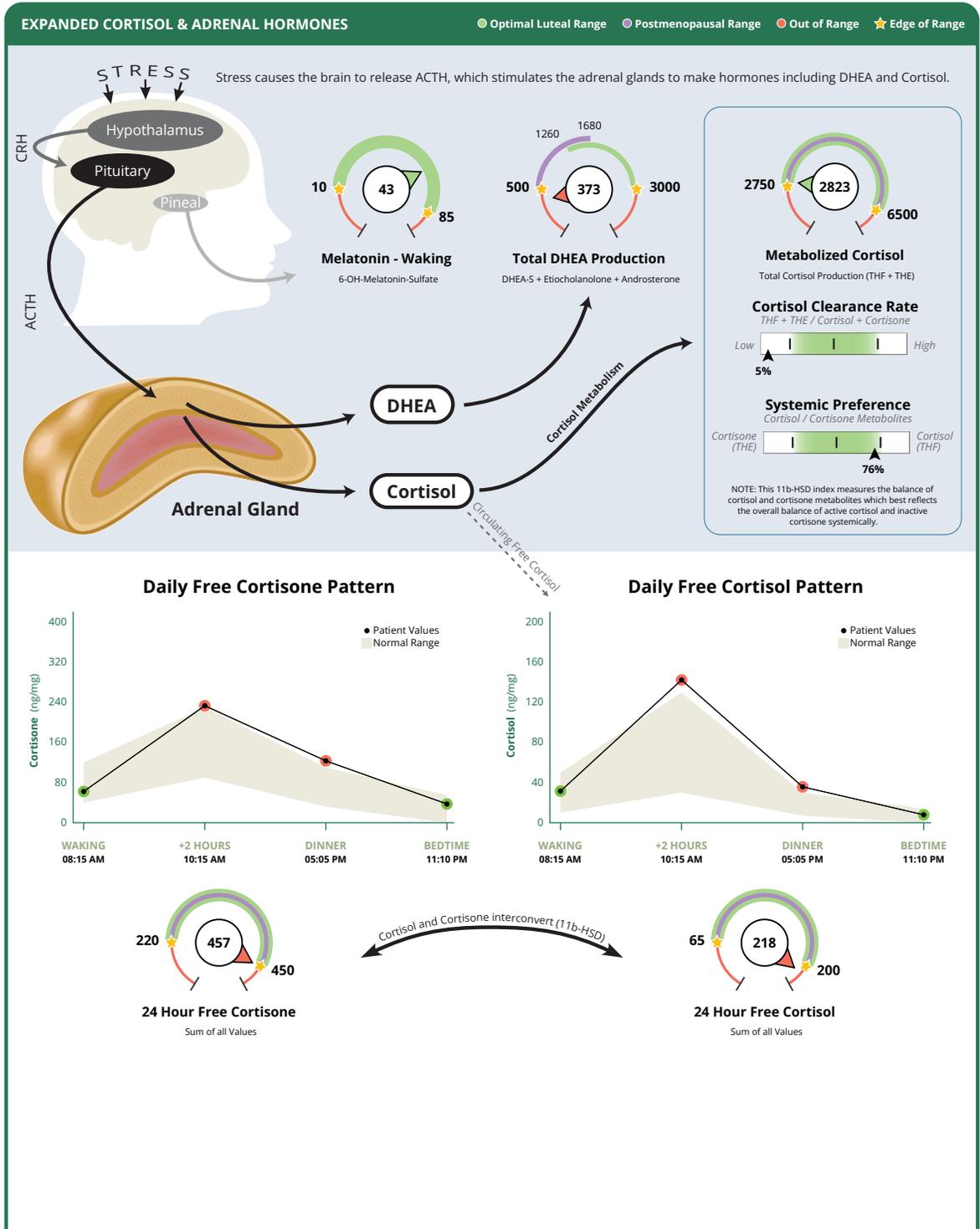
ADDITIONAL NORMAL RANGES	FOLLICULAR	OVULATORY	ON ORAL PG
b-Pregnanediol	100 - 300	100 - 300	2000 - 9000
a-Pregnanediol	25 - 100	25 - 100	580 - 3000
Estrone (E1)	4.0 - 12.0	22 - 68	N/A
Estradiol (E2)	1.0 - 2.0	4.0 - 12.0	N/A

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CASE 6: TANYA | PAGE 4 & 5, ADRENAL HORMONES



6



Case # 6

Tanya, Amenorrhea
123 A Street
Sometown, CA 90266

DOB: 1996-01-01

Age: 29

Sex: Female

Last Menstrual Period:

Collection Times:

2025-10-18 08:15AM (U1)
2025-10-18 10:15AM (U2)
2025-10-17 05:05PM (U3)
2025-10-17 11:10PM (U4)

Ordering Provider:

Precision Analytical

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U1) - Waking	Within range	31.5	ng/mg	10 - 50
Cortisol (U2) - +2 Hours	Above range	142.4	ng/mg	30 - 130
Cortisol (U3) - Dinner	Above range	35.8	ng/mg	7 - 30
Cortisol (U4) - Bedtime	Within range	7.9	ng/mg	0 - 14
Cortisone (U1) - Waking	Within range	62.3	ng/mg	40 - 120
Cortisone (U2) - +2 Hours	Above range	233.4	ng/mg	90 - 230
Cortisone (U3) - Dinner	Above range	123.4	ng/mg	32 - 110
Cortisone (U4) - Bedtime	Within range	37.4	ng/mg	0 - 55
24 Hour Free Cortisol (Sum of all Values)	Above range	217.6	ng/mg	65 - 200
24 Hour Free Cortisone (Sum of all Values)	Above range	456.5	ng/mg	220 - 450
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	0.90	mg/ml	0.2 - 2
Creatinine (U2) - +2 Hours	Within range	0.75	mg/ml	0.2 - 2
Creatinine (U3) - Dinner	Within range	1.28	mg/ml	0.2 - 2
Creatinine (U4) - Bedtime	Within range	0.80	mg/ml	0.2 - 2
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Within range	236.2	ng/mg	75 - 370
b-Tetrahydrocortisol (b-THF)	Low end of range	1125.0	ng/mg	1050 - 2500
b-Tetrahydrocortisone (b-THE)	Below range	1461.4	ng/mg	1550 - 3800
Metabolized Cortisol (THF + THE)	Low end of range	2823.0	ng/mg	2750 - 6500
DHEA-S	Below range	19.2	ng/mg	20 - 750
Cortisol Clearance Rate (CCR)	Below range	4.2		6 - 12.5



Ordering Provider:
Precision Analytical

PATIENT INFORMATION

Tanya, Amenorrhea
123 A Street
Sometown, CA 90266

Accession # 01124793

DOB: 1996-01-01
Age: 29
Sex: Female
Last Menstrual Period:

Collection Dates:
2025-10-17 (U3 U4)
2025-10-18 (U1 U2)

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	1.5	ug/mg	0 - 2.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Within range	0.72	ug/mg	0.12 - 1.2
Kynurenate	Within range	3.2	ug/mg	0.8 - 4.5
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Within range	6.3	ug/mg	0 - 12.5
Glutathione Marker - May be deficient if high				
Pyroglutamate	Below range	24.4	ug/mg	28 - 58
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Within range	19.9	ug/mg	0 - 100
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Below range	1.9	ug/mg	3 - 11
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	Below range	2.0	ug/mg	2.2 - 5.5
Neuroinflammation Marker				
Quinolate	Within range	3.4	ug/mg	0 - 9.6
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	Within range	42.8	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	1.5	ng/mg	0 - 5.2

- The pyroglutamate is low. Although the majority of patients have higher levels than this result, the significance of low urinary pyroglutamate has not been established in scientific literature.
- The HVA, a metabolite of dopamine, is below the normal range. This may be seen with low dopamine or with slow methylation. Review dopamine-related symptoms before initiating treatment.
- The VMA, a metabolite of epinephrine/norepinephrine, is below the normal range. This may be seen with low adrenal output. Reviewing cortisol may help determine the root cause.

CASE 7

SHREYA

A 47-YO FEMALE IN EARLY PERIMENOPAUSE

PATIENT HISTORY

CHIEF COMPLAINTS

- Short cycles (11-21 days)
- Breast tenderness
- Heavy bleeding
- Frequent waking at night
- Fatigue
- Anxiety

PAST MEDICAL HISTORY

- Cycles were regular (26-28 days) until ~2 years ago
- Has struggled with anxiety and sleep issues since her teenage years
- 1-2 alcoholic drinks 4x weekly

MEDICATIONS & SUPPLEMENTS

- Melatonin 2 mg for sleep
- Iron bisglycinate 65mg daily

PHYSICAL EXAM

- 5'6"; 141 lbs.; BMI 22.8
- BP 122/78 mm Hg
- Pulse 82

PERTINENT SERUM LABS

- Iron deficiency anemia
- FSH (day 3): 15 mIU/L



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Shreya, Perimenopause
123 A Street
Somertown, CA 90266

DOB: 1978-01-01
Age: 47
Sex: Female
Last Menstrual Period:

Case # 7

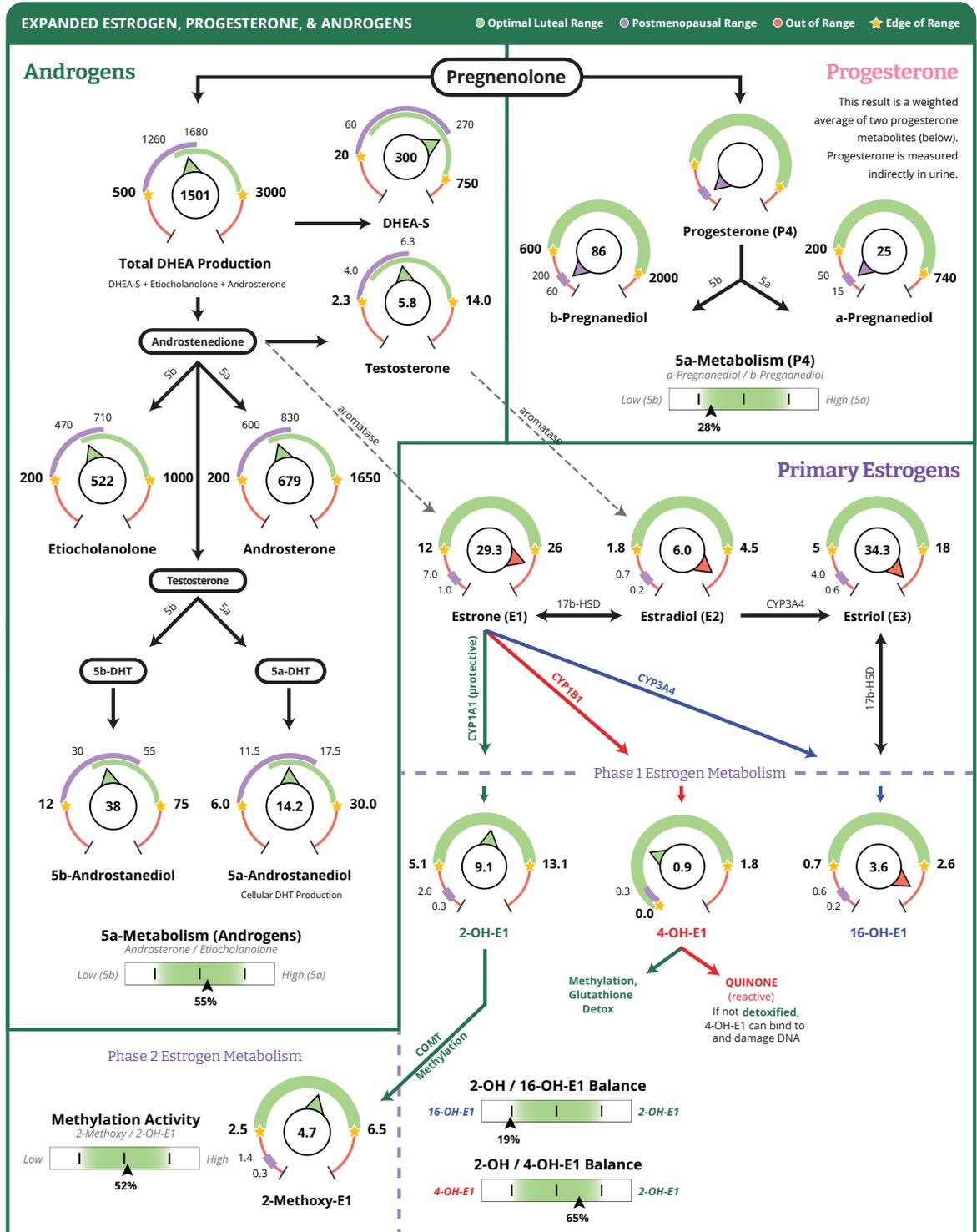
Collection Dates:
2025-10-07 (U3 U4)
2025-10-08 (U1 U2)

Hormone Testing Summary

● Optimal Luteal Range ● Postmenopausal Range ● 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.







Case # 7
 Shreya, Perimenopause
 123 A Street
 Sometown, CA 90266
DOB: 1978-01-01
Age: 47
Sex: Female
Last Menstrual Period:

Collection Times:
 2025-10-08 08:30AM (U1)
 2025-10-08 10:30AM (U2)
 2025-10-07 05:00PM (U3)
 2025-10-07 11:30PM (U4)

Ordering Provider:
 Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Below luteal range	85.7	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Below luteal range	24.5	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Above luteal range	29.34	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Above luteal range	6.02	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Above luteal range	34.3	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Within luteal range	9.14	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	0.87	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Above luteal range	3.55	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Within luteal range	4.66	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Within luteal range	1.09	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.31	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Above range	89.3	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Below range	2.57	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Within range	10.51	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Within range	0.51	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)					
Range					
DHEA-S	Within range	299.9	ng/mg	20 - 750	
Androsterone	Within range	678.8	ng/mg	200 - 1650	
Etiocholanolone	Within range	522.1	ng/mg	200 - 1000	
Testosterone	Within range	5.80	ng/mg	2.3 - 14	
5a-DHT	Within range	4.6	ng/mg	0 - 6.6	
5a-Androstanediol	Within range	14.2	ng/mg	6 - 30	
5b-Androstanediol	Within range	37.6	ng/mg	12 - 75	
Epi-Testosterone	Within range	12.4	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.

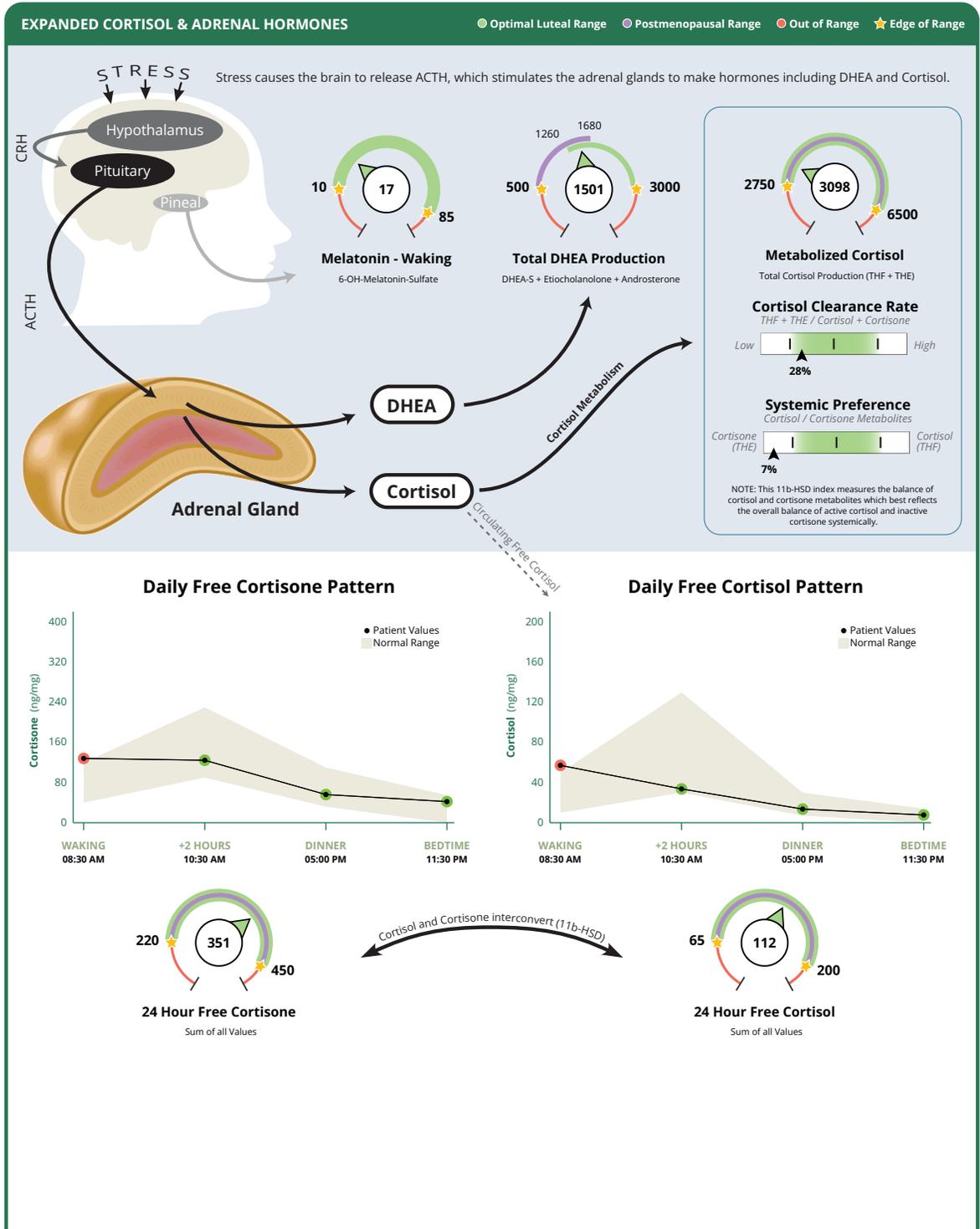
ADDITIONAL NORMAL RANGES	FOLLICULAR	OVULATORY	ON ORAL PG
b-Pregnanediol	100 - 300	100 - 300	2000 - 9000
a-Pregnanediol	25 - 100	25 - 100	580 - 3000
Estrone (E1)	4.0 - 12.0	22 - 68	N/A
Estradiol (E2)	1.0 - 2.0	4.0 - 12.0	N/A

PRECISION ANALYTICAL INC.
 CREATORS OF THE DUTCH TEST[®]
 Precision Analytical (Dawn Huo, Ph.D., Lab Director)
 3138 NE Rivergate Street
 McMinnville, OR 97128

Female Sample Report
 Accessioned - 10/15/2025
 Final Report - 2/12/2026

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 CLIA Lic. #38D2047310
 Report Version 1.6.0







Case # 7
 Shreya, Perimenopause
 123 A Street
 Sometown, CA 90266
DOB: 1978-01-01
Age: 47
Sex: Female
Last Menstrual Period:

Collection Times:
 2025-10-08 08:30AM (U1)
 2025-10-08 10:30AM (U2)
 2025-10-07 05:00PM (U3)
 2025-10-07 11:30PM (U4)

Ordering Provider:
 Precision Analytical

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U1) - Waking	Above range	57.2	ng/mg	10 - 50
Cortisol (U2) - +2 Hours	Low end of range	33.7	ng/mg	30 - 130
Cortisol (U3) - Dinner	Within range	13.6	ng/mg	7 - 30
Cortisol (U4) - Bedtime	Within range	7.7	ng/mg	0 - 14
Cortisone (U1) - Waking	Above range	128.3	ng/mg	40 - 120
Cortisone (U2) - +2 Hours	Within range	124.6	ng/mg	90 - 230
Cortisone (U3) - Dinner	Within range	56.2	ng/mg	32 - 110
Cortisone (U4) - Bedtime	Within range	42.1	ng/mg	0 - 55
24 Hour Free Cortisol (Sum of all Values)	Within range	112.2	ng/mg	65 - 200
24 Hour Free Cortisone (Sum of all Values)	Within range	351.2	ng/mg	220 - 450
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	0.47	mg/ml	0.2 - 2
Creatinine (U2) - +2 Hours	Within range	0.75	mg/ml	0.2 - 2
Creatinine (U3) - Dinner	Within range	0.31	mg/ml	0.2 - 2
Creatinine (U4) - Bedtime	Within range	0.26	mg/ml	0.2 - 2
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Low end of range	100.0	ng/mg	75 - 370
b-Tetrahydrocortisol (b-THF)	Below range	898.9	ng/mg	1050 - 2500
b-Tetrahydrocortisone (b-THE)	Within range	2098.7	ng/mg	1550 - 3800
Metabolized Cortisol (THF + THE)	Low end of range	3098.0	ng/mg	2750 - 6500
DHEA-S	Within range	299.9	ng/mg	20 - 750
Cortisol Clearance Rate (CCR)	Low end of range	6.7		6 - 12.5



PATIENT INFORMATION

Ordering Provider:
Precision Analytical

Shreya, Perimenopause
123 A Street
Somertown, CA 90266

DOB: 1978-01-01
Age: 47
Sex: Female
Last Menstrual Period:

Case # 7

Collection Dates:
2025-10-07 (U3 U4)
2025-10-08 (U1 U2)

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	1.8 ug/mg	0 - 2.5
Vitamin B6 Markers - May be deficient if high			
Xanthurenate	Within range	0.87 ug/mg	0.12 - 1.2
Kynurenate	Within range	3.2 ug/mg	0.8 - 4.5
Biotin Marker - May be deficient if high			
b-Hydroxyisovalerate	Within range	6.5 ug/mg	0 - 12.5
Glutathione Marker - May be deficient if high			
Pyroglutamate	Within range	39.3 ug/mg	28 - 58
Gut Marker - Potential gut putrefaction or dysbiosis if high			
Indican	Within range	71.8 ug/mg	0 - 100
Neuro-Related Markers (Urine)			
Dopamine Metabolite			
Homovanillate (HVA)	Within range	6.1 ug/mg	3 - 11
Norepinephrine/Epinephrine Metabolite			
Vanilmandelate (VMA)	Within range	3.4 ug/mg	2.2 - 5.5
Neuroinflammation Marker			
Quinolinate	Within range	4.5 ug/mg	0 - 9.6
Additional Markers (Urine)			
Melatonin - Waking			
6-OH-Melatonin-Sulfate	Low end of range	16.7 ng/mg	10 - 85
Oxidative Stress / DNA Damage			
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	2.8 ng/mg	0 - 5.2

CASE 8

ROB

A 49-YO MALE WITH SEXUAL DYSFUNCTION

PATIENT HISTORY

CHIEF COMPLAINTS

- Erectile dysfunction
- Inability to build muscle mass
- Exercise intolerance
- Fatigue
- Depression

PAST MEDICAL HISTORY

- Obesity, Metabolic syndrome
- Metabolic dysfunction-associated steatohepatitis (MASH)
- Essential hypertension
- Chronic low back pain

MEDICATIONS & SUPPLEMENTS

- Lisinopril 20mg QD

PHYSICAL EXAM

- 6'2"; 260 lbs.; BMI: 33.4
- BP 125/82 mm Hg (with medication)
- Pulse 78 bpm

PERTINENT SERUM LABS

- Fasting glucose 120 mg/dL **(H)**; A1C: 6.2 **(H)**
- AST (SGOT) 40 IU/L, ALT (SGPT) 52 IU/L **(high-end)**
- TGs: 280 mg/dL **(H)**, LDL 155 mg/dL **(H)**
- Total T: 325ng/dL **(Low-end)**; E2 HS: 55 pg/ml **(H)**



PATIENT INFORMATION

Ordering Provider:
Test Provider MD

Rob, Sexual Dysfunction

DOB: 1976-01-01
Age: 49
Sex: Male

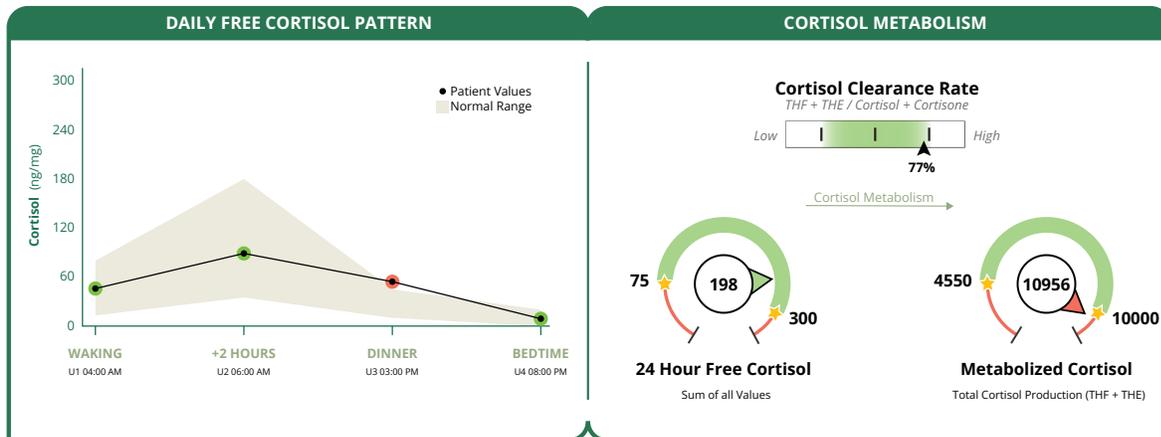
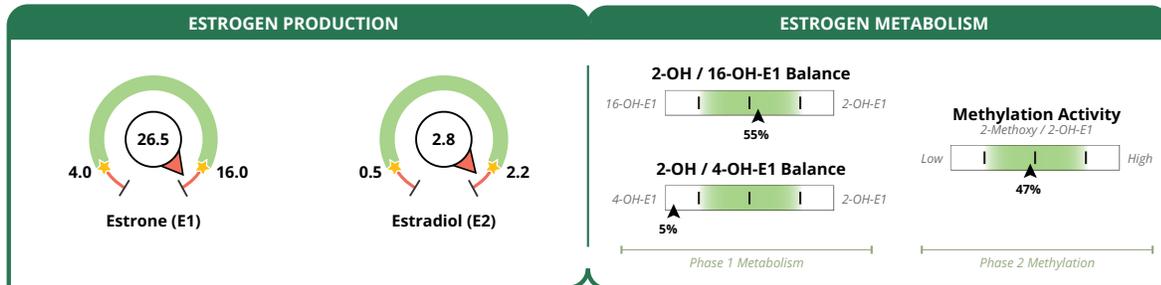
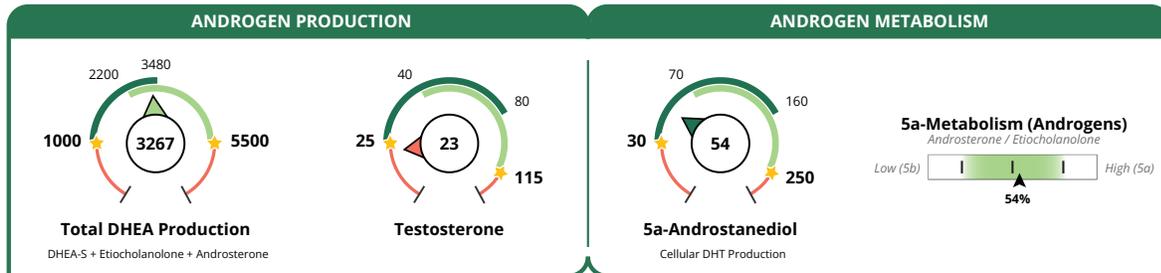
Case # 8

Collection Dates:
2025-10-11 (U3 U4)
2025-10-12 (U1 U2)

Hormone Testing Summary

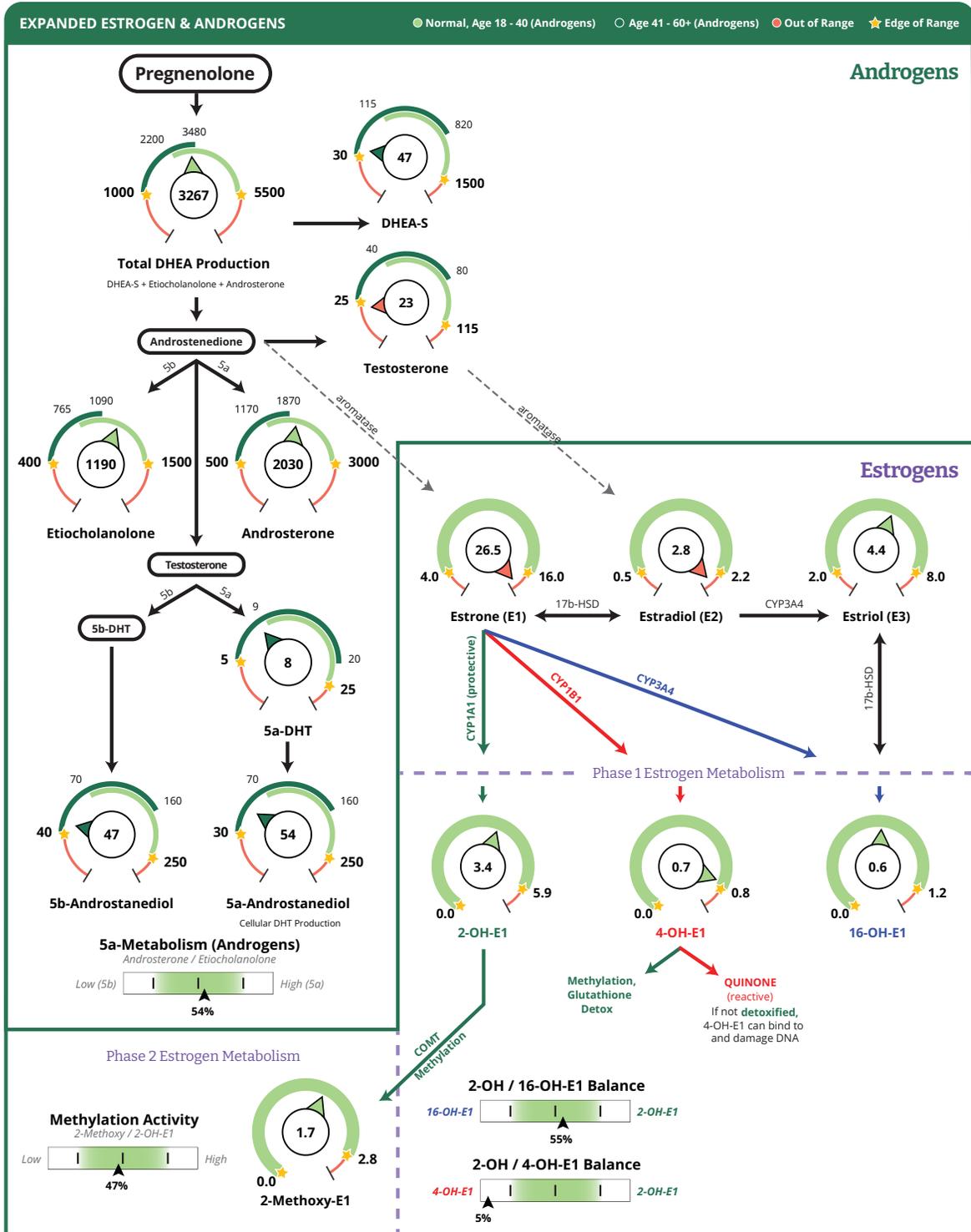
● Normal, Age 18 - 40 (Androgens) ● Age 41 - 60+ (Androgens) ● Out of Range ★ Edge of Range

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



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

- B6 Deficiency





Case # 8

Rob, Sexual Dysfunction

DOB: 1976-01-01

Age: 49

Sex: Male

Collection Times:

2025-10-12 04:00AM (U1)

2025-10-12 06:00AM (U2)

2025-10-11 03:00PM (U3)

2025-10-11 08:00PM (U4)

Ordering Provider:

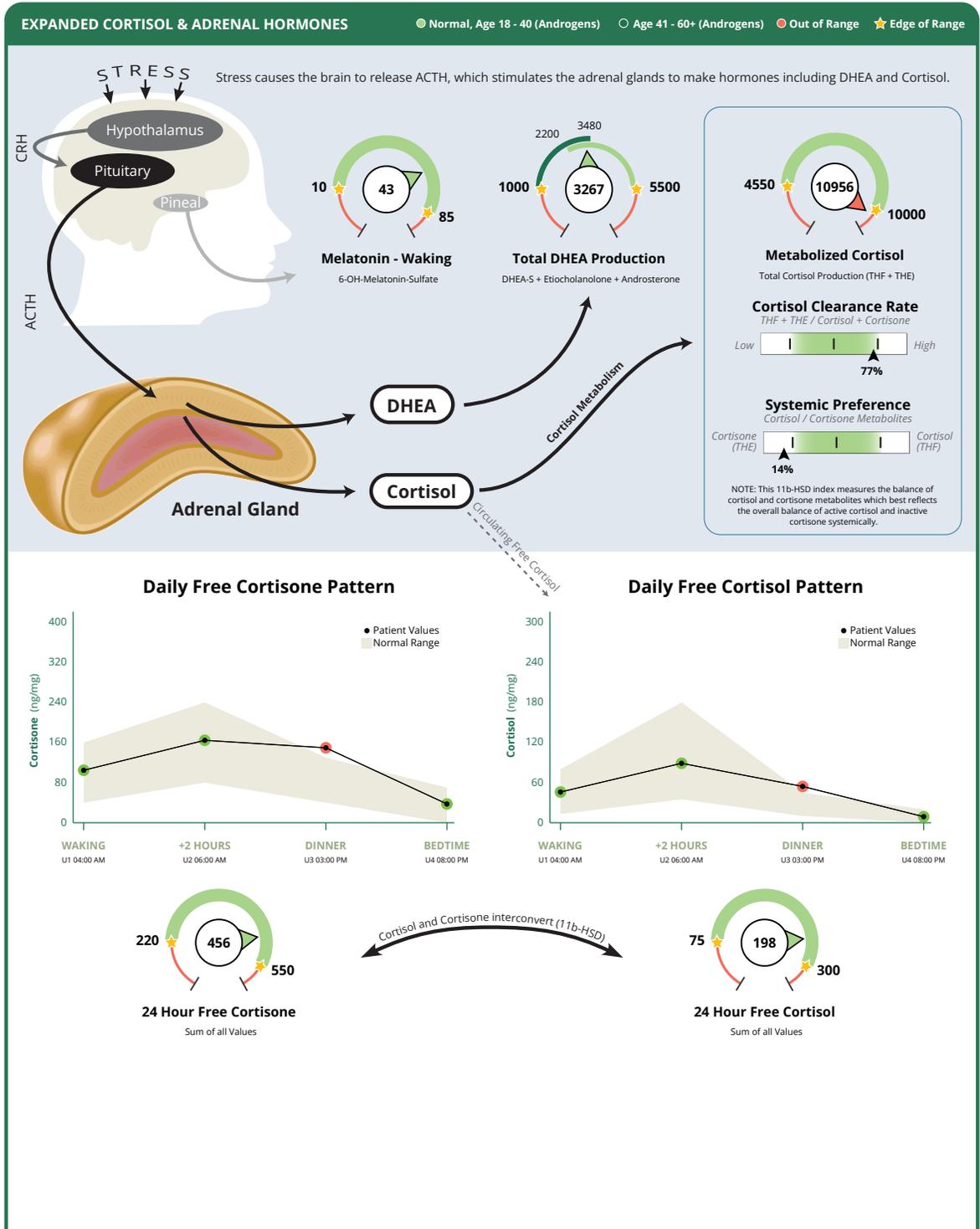
Test Provider MD

Sex Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Progesterone Metabolites (Urine)				
b-Pregnanediol	High end of range	370.6	ng/mg	75 - 400
a-Pregnanediol	High end of range	121.2	ng/mg	20 - 130
Estrogens and Metabolites (Urine)				
Estrone (E1)	Above range	26.48	ng/mg	4 - 16
Estradiol (E2)	Above range	2.84	ng/mg	0.5 - 2.2
Estriol (E3)	Within range	4.4	ng/mg	2 - 8
2-OH-E1	Within range	3.40	ng/mg	0 - 5.9
4-OH-E1	Within range	0.72	ng/mg	0 - 0.8
16-OH-E1	Within range	0.55	ng/mg	0 - 1.2
2-Methoxy-E1	Within range	1.74	ng/mg	0 - 2.8
2-OH-E2	Within range	0.52	ng/mg	0 - 1.2
4-OH-E2	High end of range	0.24	ng/mg	0 - 0.25
Total Estrogen	Above range	40.9	ng/mg	10 - 34
Metabolite Ratios (Urine)				
2-OH / 16-OH-E1 Balance	Within range	6.18	ratio	2.85 - 9.88
2-OH / 4-OH-E1 Balance	Below range	4.72	ratio	6.44 - 12.6
2-Methoxy / 2-OH Balance	Within range	0.51	ratio	0.4 - 0.7
Androgens and Metabolites (Urine)				
DHEA-S	Within range	46.7	ng/mg	30 - 1500
Androsterone	Within range	2030.3	ng/mg	500 - 3000
Etiocholanolone	Within range	1190.4	ng/mg	400 - 1500
Testosterone	Below range	22.53	ng/mg	25 - 115
5a-DHT	Within range	8.3	ng/mg	5 - 25
5a-Androstenediol	Within range	54.2	ng/mg	30 - 250
5b-Androstenediol	Within range	46.8	ng/mg	40 - 250
Epi-Testosterone	Within range	35.6	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.

CASE 8: ROB | PAGE 4 & 5, ADRENAL HORMONES



PRECISION ANALYTICAL INC. Precision Analytical (Dawn Huo, Ph.D., Lab Director)
3138 NE Rivergate Street
McMinnville, OR 97128

Male Sample Report
Accessioned - 11/20/2025
Final Report - 11/25/2025

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CLIA Lic. #38D2047310
Report Version 1.6.0



Case # 8

Rob, Sexual Dysfunction

DOB: 1976-01-01

Age: 49

Sex: Male

Collection Times:

2025-10-12 04:00AM (U1)

2025-10-12 06:00AM (U2)

2025-10-11 03:00PM (U3)

2025-10-11 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	45.9	ng/mg	13 - 80
Cortisol (U2) - +2 Hours	Within range	88.9	ng/mg	35 - 180
Cortisol (U3) - Dinner	Above range	54.3	ng/mg	10 - 45
Cortisol (U4) - Bedtime	Within range	9.0	ng/mg	0 - 20
Cortisone (U1) - Waking	Within range	104.6	ng/mg	40 - 160
Cortisone (U2) - +2 Hours	Within range	164.4	ng/mg	80 - 240
Cortisone (U3) - Dinner	Above range	149.4	ng/mg	40 - 130
Cortisone (U4) - Bedtime	Within range	37.4	ng/mg	0 - 70
24 Hour Free Cortisol (Sum of all Values)	Within range	198.2	ng/mg	75 - 300
24 Hour Free Cortisone (Sum of all Values)	Within range	455.8	ng/mg	220 - 550
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	1.32	mg/ml	0.3 - 3
Creatinine (U2) - +2 Hours	Within range	1.59	mg/ml	0.3 - 3
Creatinine (U3) - Dinner	Within range	1.38	mg/ml	0.3 - 3
Creatinine (U4) - Bedtime	Within range	1.52	mg/ml	0.3 - 3
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	High end of range	674.0	ng/mg	175 - 700
b-Tetrahydrocortisol (b-THF)	Within range	3442.2	ng/mg	1750 - 4000
b-Tetrahydrocortisone (b-THE)	Above range	6839.6	ng/mg	2350 - 5800
Metabolized Cortisol (THF + THE)	Above range	10956.0	ng/mg	4550 - 10000
DHEA-S	Within range	46.7	ng/mg	30 - 1500
Cortisol Clearance Rate (CCR)	High end of range	16.8		8.5 - 17.5



PATIENT INFORMATION

Case # 8

Ordering Provider:
Test Provider MD

Rob, Sexual Dysfunction

DOB: 1976-01-01
Age: 49
Sex: Male

Collection Dates:
2025-10-11 (U3 U4)
2025-10-12 (U1 U2)

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	0.9	ug/mg	0 - 3.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Within range	0.68	ug/mg	0.2 - 1.9
Kynurenate	Above range	7.3	ug/mg	1 - 6.6
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Within range	12.1	ug/mg	0 - 18
Glutathione Marker - May be deficient if high				
Pyroglutamate	Within range	44.6	ug/mg	38 - 83
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Within range	70.2	ug/mg	0 - 131
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Within range	5.9	ug/mg	4 - 16
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	Within range	4.6	ug/mg	2.5 - 7.5
Neuroinflammation Marker				
Quinolinate	Within range	7.5	ug/mg	0 - 12.5
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	Within range	43.2	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	2.7	ng/mg	0 - 8.8

- The kynurenate is above the range. This may indicate a vitamin B6 deficiency. B6 is essential for phase 2 methylation (estrogen detoxification), neurotransmitter synthesis, and other key metabolic processes. Tryptophan taken within 72 hours before testing can also raise kynurenate without indicating a true B6 deficiency.



