



**Accession # 00268797**  
 Female Sample Report  
 123 A Street  
 Sometown , CA 90266



**Cortisol Awakening Response**

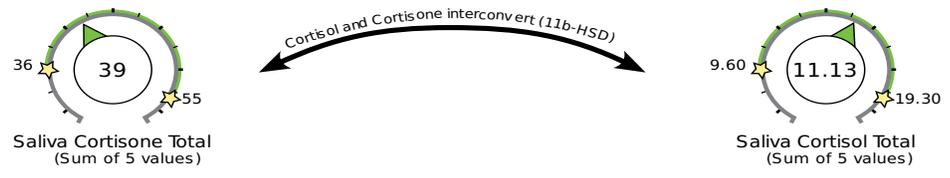
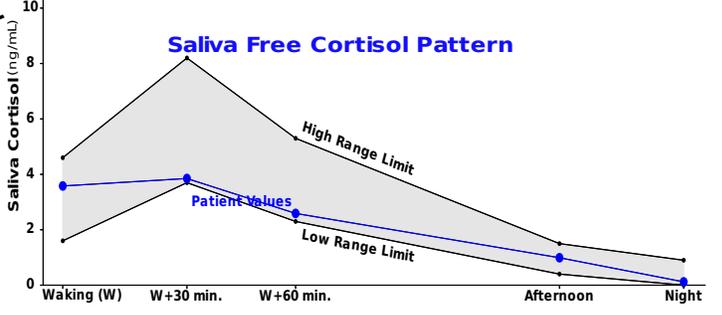
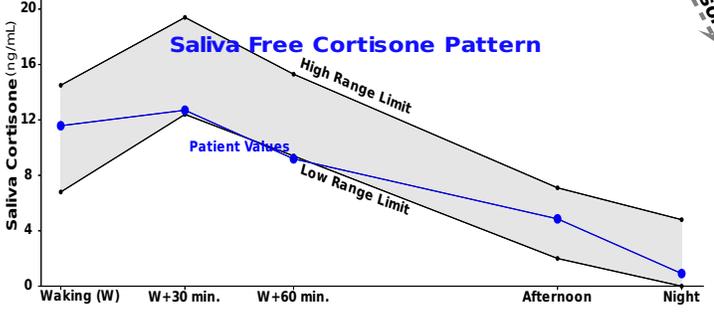
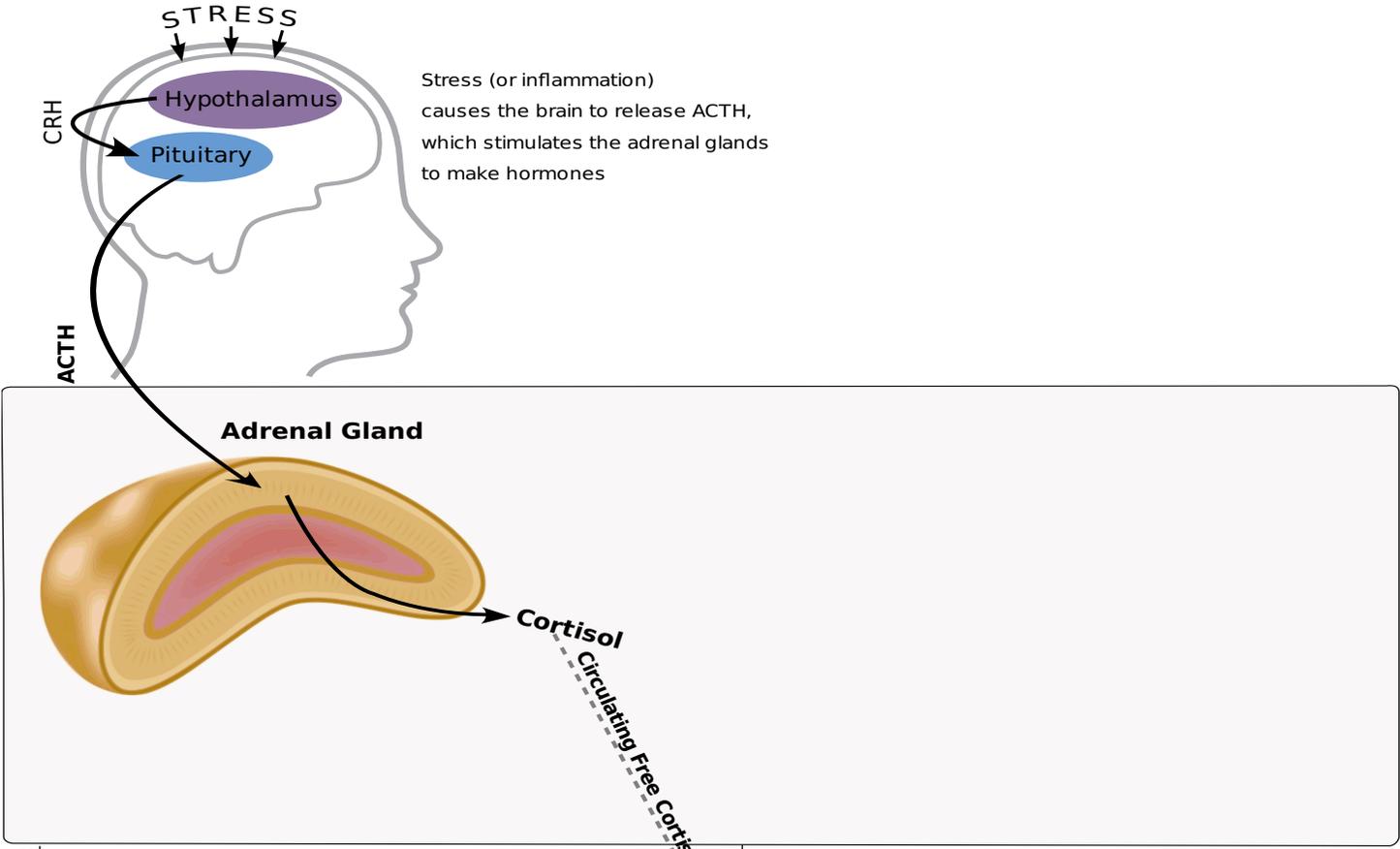
**Last Menstrual Period:**

**Ordering Physician:**  
 Precision Analytical

**DOB:** 1953-10-10  
**Age:** 63  
**Gender:** Female

**Collection Times:**  
 2017-08-09 06:01AM (S)  
 2017-08-09 06:31AM (S)  
 2017-08-09 07:01AM (S)  
 2017-08-09 05:01PM (S)  
 2017-08-09 10:01PM (S)  
 2017-08-09 01:30AM (S\*)

Category	Test		Result	Units	Normal Range
<b>Free Cortisol and Cortisone (Saliva)</b>					
	Saliva Cortisol - Waking (W)	Within range	3.58	ng/mL	1.6 - 4.6
	Saliva Cortisol - W+30 min.	Low end of range	3.85	ng/mL	3.7 - 8.2
	Saliva Cortisol - W+60 min.	Low end of range	2.59	ng/mL	2.3 - 5.3
	Saliva Cortisol - Afternoon	Within range	0.99	ng/mL	0.4 - 1.5
	Saliva Cortisol - Night	Low end of range	0.12	ng/mL	0 - 0.9
	Saliva Cortisone - Waking (W)	Within range	11.58	ng/mL	6.8 - 14.5
	Saliva Cortisone - W+30 min.	Low end of range	12.7	ng/mL	12.4 - 19.4
	Saliva Cortisone - W+60 min.	Below range	9.19	ng/mL	9.4 - 15.3
	Saliva Cortisone - Afternoon	Within range	4.86	ng/mL	2 - 7.1
	Saliva Cortisone - Night	Low end of range	0.91	ng/mL	0 - 4.8
	Saliva Cortisol Total	Low end of range	11.13	ng/mL	9.6 - 19.3
	Saliva Cortisone Total	Low end of range	39.24	ng/mL	36 - 55
<b>Additional Cortisol and Cortisone (Saliva)</b>					
	* Saliva Cortisol - Insomnia	Above range	2.1	ng/mL	0 - 0.9
	* Saliva Cortisone - Insomnia	Above range	10.4	ng/mL	0 - 4.8



- The patient submitted an Insomnia salivary sample. The cortisol result for this sample was 2.10ng/mL (expected range 0-0.9) The cortisone result for this sample was 10.4 ng/mL (expected range 0-4.8)

The Cortisol Awakening Response (CAR) is the rise in salivary cortisol between the waking sample and the sample collected 30 (as well as 60) minutes later. This "awakening response" is essentially a "mini stress test" and is a useful measurement in addition to the overall up-and-down (diurnal) pattern of free cortisol throughout the day. **This patient shows a waking cortisol of 3.58 and an increase to 3.85 after 30.0 minutes. This is an increase of 0.27ng/mL or 7.5%.** Expected increases differ depending on the methods used. Preliminary research shows that 50-160% or 1.5-4.0ng/mL increases are common with samples collected 30 minutes after waking. These guidelines are considered research only. **This patient shows a salivary cortisol of 2.59 measured 60 minutes after waking. Generally this result is a little higher than the waking sample but is not in this case. To date, data suggests that expected results may be 0-70% higher, and this guideline is considered for research only.**

# Provider Notes

## DUTCH Adrenal

The HPA-Axis refers to the communication and interaction between the hypothalamus (H) and pituitary (P) in the brain down to the adrenal glands (A) that sit on top of your kidneys. When a physical or psychological stressor occurs, the hypothalamus tells the pituitary to make ACTH, a hormone. ACTH stimulates the adrenal glands to make the stress hormone, cortisol and to a lesser extent DHEA and DHEA-S. Normally, the HPA-axis production follows a daily pattern in which cortisol rises rather rapidly in the first 10-30 minutes after waking (this is the C.A.R.) in order to help with energy, then gradually decreases throughout the day so that it is low at night for sleep. The cycle starts over the next morning. Abnormally high activity occurs in Cushing's Disease where the HPA-axis is hyper-stimulated causing cortisol to be elevated all day. The opposite is known as Addison's Disease, where cortisol is abnormally low because it is not made appropriately in response to ACTH's stimulation. These two conditions are somewhat rare. Examples of more common conditions related to less severely abnormal cortisol levels include fatigue, depression, insomnia, fibromyalgia, anxiety, inflammation and more.

Only a fraction of cortisol is "free" and bioactive. This fraction of cortisol is very important, but levels of metabolized cortisol best represent overall production of cortisol therefore both should be taken into account to correctly assess adrenal function.

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

- **The overall up-and-down pattern of free cortisol throughout the day, looking for low and high levels:**

Abnormal results should be considered along with related symptoms.

- **The sum of the free cortisol as an expression of the overall tissue cortisol exposure:**

This total of five free cortisol measurements is the best way to assess the total of free cortisol throughout the day, but do be aware that it is heavily weighted towards the morning production since three of five measurements are made within the first hour of the day.

- **The Cortisol Awakening Response (CAR):**

The unique feature of the DUTCH Plus is the inclusion of the CAR assessment. The response to waking adds one more piece to HPA-axis function. In some cases overall levels of free cortisol may be normal, but the response to stress may be under or overactive. Reasons for a lower CAR might include: an underactive HPA Axis, excessive psychological burnout, seasonal affective disorder (SAD), sleep apnea or poor sleep in general, PTSD, and "chronic fatigue" patients. An elevated CAR can be a result of an over-reactive HPA axis, ongoing job-related stress (anticipatory stress for the day), glycemic dysregulation, pain (ie. waking with painful joints or a migraine), and general depression (not SAD). Scientific literature points to the magnitude of the morning cortisol increase as being connected to HPA-axis health whether the overall production of cortisol is low, normal or high.

**- The patient submitted an Insomnia salivary sample. The cortisol result for this sample was 2.10ng/mL. The cortisone result was 10.4 ng/mL. Ranges can be found in the table on the last page.**

