

# Wgt Loss

## Case Study: The Functional Health Report and Weight Loss



Patient LC date of birth 6/29/55 is a 61-year-old female. Her complaints are common, but certainly significant. She complains of weight gain, hypertension, and hypercholesterolemia. She tells her doc, "I just need some data to convince me to make better choices." While the data in terms of research abounds in terms of how important weight management is, it often isn't enough to make that personal connection for patients, and to bring home how important it is for their overall health. In fact, studies show that one of the biggest impacts on patient compliance is testing. If you asked people, "Is it important to maintain a healthy weight?" they would of course say, "yes." However, studies show they don't become compliant with plans until they see lab work that shows the impact that it is having on their body. The personalized data makes the concept real, and for many like this patient, just what they need to become motivated. In addition to compliance, understanding why one's metabolism is sluggish can be illustrated through the Functional Health Report (FHR) and give us direction as to what to emphasize in the patient's care.

# Health Improvement Plan



The Health Improvement Plan takes all the information on this report and focuses on the top areas that need the most attention.

## Hyperlipidemia

The results of this blood test indicate a tendency towards hyperlipidemia, which has been shown to increase the risk of developing atherosclerotic coronary artery disease. There is a need for cardiovascular support, especially support to help lower excessive blood fats.

### Rationale:

Cholesterol - Total ↑, LDL Cholesterol ↑

## Adrenal Stress

The results of this blood test indicate a tendency towards adrenal stress and adrenal hyperfunction and a need for adrenal gland support.

### Rationale:

Sodium ↑, Potassium ↓, Sodium/Potassium Ratio ↑

As illustrated with this patient, they are alerted right away that hyperlipidemia will be an important part of their health plan, in addition to working on adrenal stress. Both point us to a metabolic component at play as well. One reason for both high cholesterol as well as weight gain is poor thyroid function. Appropriate levels of thyroid hormones break cholesterol down, into the backbone product for making reproductive hormones. Low thyroid lowers metabolism and the breakdown of cholesterol.

Additionally, stress will directly inhibit metabolism as increases in cortisol can contribute to weight deposited around the middle. Also, lower levels of DHEA and epinephrine and norepinephrine will all contribute to weight gain. In fact, women who took DHEA for six months, with no changes in diet or lifestyle had decreased weight around the middle. DHEA also shows favorable outcomes helping to lower insulin resistance reducing weight in several ways.

## Suggested Individual Nutrient Recommendations

The Health Improvement Plan takes all the information on this report and focuses on the top areas that need the most attention.

### Glutathione Need

The results of this blood test indicate that this patient's glutathione levels might be lower than optimal and may show a need for glutathione supplementation.

#### Rationale:

GGT ↑

### DHEA Need

The results of this blood test indicate that this patient's DHEA levels might be lower than optimal and shows a need for DHEA supplementation.

#### Rationale:

DHEA-S, Female ↓

### B Vitamin Need

The results of this blood test indicate that this patient's B vitamin levels might be lower than optimal and shows a need for B complex supplementation.

#### Rationale:

Anion gap ↑

By looking at markers such as GGT on the FHR we will be aware of an increased need for glutathione. Glutathione is critical for mitochondrial function, and so increasing levels will increase mitochondrial activity or production of ATP. More efficient production of ATP allows us to smoothly convert carbohydrates, fats, and protein to energy, lowering the need to store these macronutrients as fat. Also, higher levels of glutathione will lower the need for the body to build a sink for toxicity, or an increase in adipocytes. Glutathione lowers toxic body burden preventing the body from increasing fat stores as a place to store toxins. B vitamins will serve as co-factors for the citric acid cycle, further increasing production of ATP.

# Blood Test Results Report



The Blood Test Results Report lists the results of the patient's Chemistry Screen and CBC and shows you whether or not an individual biomarker is outside of the optimal range and/or outside of the clinical lab range. The biomarkers appear in the order in which they appear on the lab test form.

<b>Above Optimal Range</b> 11 Current 0 Previous <span style="float: right;">↑</span>	<b>Above Standard Range</b> 5 Current 0 Previous <span style="float: right;">↑</span>	<b>Alarm High</b> <span style="float: right;">⚠</span> 1 Current 0 Previous
<b>Below Optimal Range</b> 3 Current 0 Previous <span style="float: right;">↓</span>	<b>Below Standard Range</b> 1 Current 0 Previous <span style="float: right;">↓</span>	<b>Alarm Low</b> <span style="float: right;">⚠</span> 0 Current 0 Previous

Biomarker	Current	Previous		Optimal Range	Standard Range	Units
	Sep 12 2016	Not Available	Impr			
Glucose	87.00			72.00 - 90.00	65.00 - 99.00	mg/dL
Hemoglobin A1C	5.50			5.00 - 5.50	0.00 - 5.60	%
Insulin - Fasting	5.10		↑	0.00 - 5.00	2.00 - 19.00	μIU/ml
BUN	15.00			10.00 - 16.00	7.00 - 25.00	mg/dL
Creatinine	0.80			0.80 - 1.10	0.40 - 1.35	mg/dL
BUN/Creatinine Ratio	18.75		↑	10.00 - 16.00	6.00 - 22.00	Ratio
eGFR Non-Afr. American	80.00		↓	90.00 - 200.00	90.00 - 200.00	mL/min/1.73m2
eGFR African American	92.00			90.00 - 200.00	90.00 - 200.00	mL/min/1.73m2
Sodium	143.00		↑	135.00 - 142.00	135.00 - 146.00	mEq/L
Potassium	3.90		↓	4.00 - 4.50	3.50 - 5.30	mEq/L
Sodium/Potassium Ratio	36.66		↑	30.00 - 35.00	30.00 - 35.00	ratio
Chloride	106.00			100.00 - 106.00	98.00 - 110.00	mEq/L
CO2	25.00			25.00 - 30.00	19.00 - 30.00	mEq/L
Anion gap	15.90		↑	7.00 - 12.00	6.00 - 16.00	mEq/L

Lowering weight will improve hypertension, which in turn helps kidney function. Note the eGFR less than 80. This shows declining kidney function which is eased by improving hypertension. Increasing potassium relative to sodium will help with hypertension. This also shows us that there is adrenal fatigue, because optimal adrenals help the kidneys to reabsorb Potassium preventing an imbalance. Adrenal work should ease hypertension and help in weight loss.

TIBC	336.00		250.00 - 350.00	250.00 - 425.00	µg/dL
% Transferrin saturation	29.00		24.00 - 50.00	15.00 - 50.00	%
Cholesterol - Total	290.00 ↑		155.00 - 190.00	125.00 - 200.00	mg/dL
Triglycerides	69.00		50.00 - 100.00	0.00 - 150.00	mg/dL
LDL Cholesterol	195.00 ⚠		0.00 - 120.00	0.00 - 130.00	mg/dL
HDL Cholesterol	81.00 ↑		55.00 - 70.00	46.00 - 100.00	mg/dL
Cholesterol/HDL Ratio	3.60 ↑		0.00 - 3.00	0.00 - 5.00	Ratio
Triglyceride/HDL Ratio	0.85		0.00 - 2.00	0.00 - 3.30	ratio
TSH	2.05		1.00 - 3.50	0.40 - 4.50	µU/mL
Total T4	5.00 ↓		6.00 - 11.90	4.50 - 12.00	µg/dL
T3 Uptake	39.00 ↑		27.00 - 37.00	22.00 - 37.00	%
Free Thyroxine Index (T7)	1.95		1.70 - 4.60	1.40 - 3.80	Index
Hs CRP, Female	1.70 ↑		0.00 - 0.99	0.00 - 2.90	mg/L
ESR, Female	2.00		0.00 - 10.00	0.00 - 20.00	mm/hr
Homocysteine	8.50 ↑		0.00 - 6.00	0.00 - 10.30	µmol/L
Vitamin D (25-OH)	57.00		50.00 - 90.00	30.00 - 100.00	ng/ml
DHEA-S, Female	113.00 ↓		275.00 - 400.00	35.00 - 325.00	µg/dl
Total WBCs	6.30		5.30 - 7.50	3.80 - 10.80	k/cumm
RBC, Female	4.81 ↑		3.90 - 4.50	3.80 - 5.10	m/cumm
Hemoglobin, Female	14.20		13.50 - 14.50	11.70 - 15.50	g/dl
Hematocrit, Female	42.60		37.00 - 44.00	35.00 - 45.00	%
MCV	88.60		85.00 - 92.00	80.00 - 100.00	fL
MCH	29.50		27.00 - 31.90	27.00 - 33.00	pg

The FHR graphically displays the fact that LDL and Total Cholesterol need to be a primary focus, but in addition to that, we do see subclinical hypothyroidism. When a TSH is less than 2.5 this can be defined as subclinical hypothyroidism. A low T4 and low normal T3 also alert us to the fact that poor thyroid is playing a role in not only cholesterol, but weight gain as well. This will direct us to use therapies to increase thyroid function such as tyrosine and iodine to build thyroid hormone as well as Zinc and Selenium to improve conversion of T4 to T3. The FHR has helped to illustrate what is hindering her metabolic set point.

## Allergies

The results of this blood test indicate that this patient may be dealing with food or environmental sensitivities/allergies because a number of elements on a blood test, such as the ones listed below, may be out of optimal range in association with food allergies/sensitivities. We cannot tell what things your patient may be allergic to so you may want to do further testing or evaluation to rule this out. This may include doing an allergy elimination/challenge, more sophisticated immunological testing and/or gut function assessment because allergies may be a manifestation of a deeper gut issue such as intestinal hyperpermeability and/or malabsorption.

### Rationale:

Eosinophils ↑

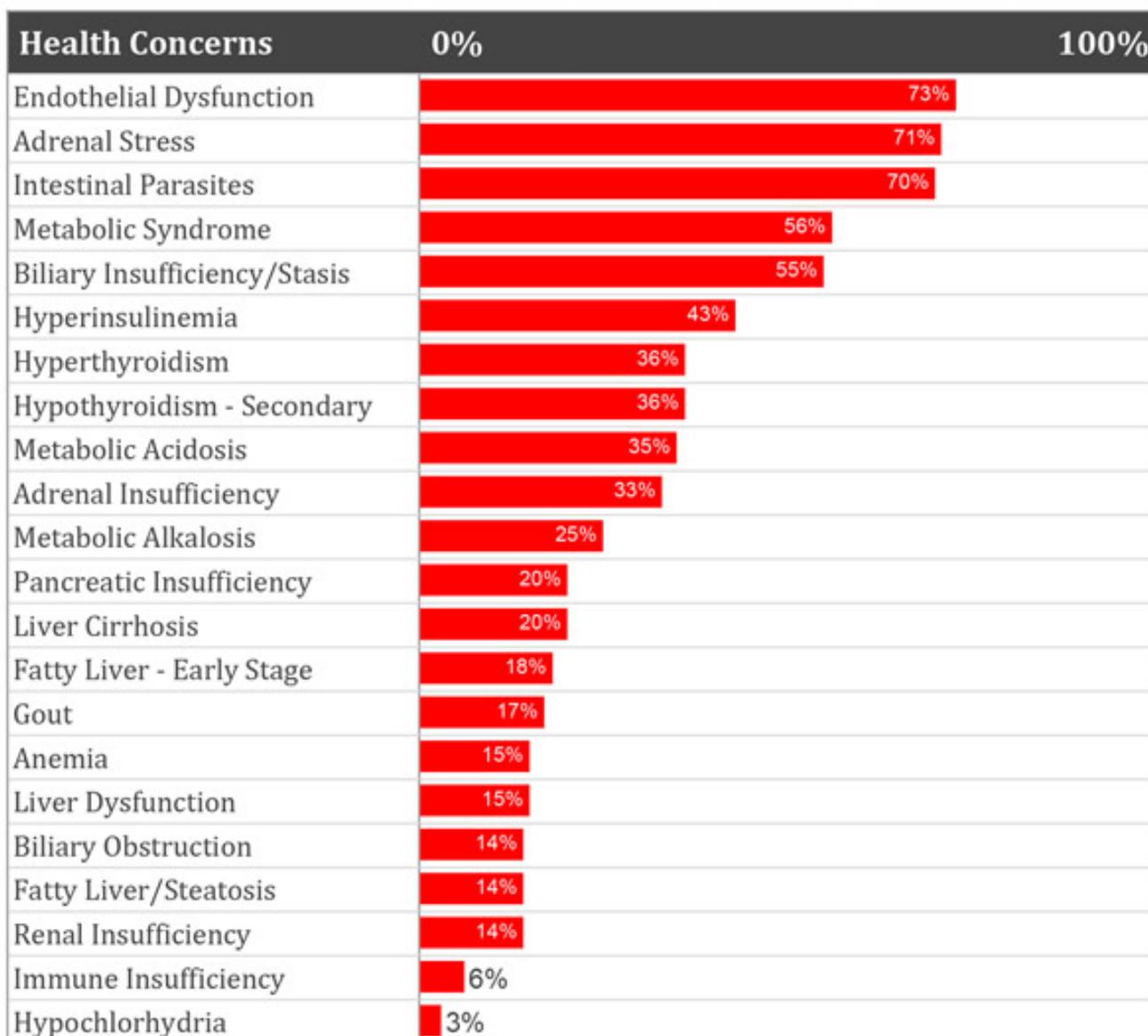
## Additional Lipid Testing

The results of this blood test indicate that this patient may be dealing with hyperlipidemia, which may be causing the elements listed below to be outside the optimal range. If you haven't done so already, you may want to consider running additional lipid tests such as the Cardio IQ (TM) Lipoprotein Fractionation Test to get more information on the nature of the hyperlipidemia and its associated cardiovascular disease risk. The Cardio IQ (TM) Lipoprotein Fractionation Test precisely quantifies lipoprotein fractions across the entire lipoprotein spectrum; this comprises VLDL, IDL, LDL, and HDL particles.

### Rationale:

Cholesterol - Total ↑, LDL Cholesterol ↑

Now that we know that cholesterol is elevated, the additional testing reminds us that we should identify how much impact this cholesterol elevation will have. By looking at particle size and oxidation levels we can determine how detrimental cholesterol elevations are to health. As our knowledge of lipids has advanced, we now realize that fractionation of particle size can give important clues as to how atherogenic LDL is as well as HDL. Given her HDL is elevated it is important to know what type of HDL she has. Also, we can look at oxidized LDL, as this is the true plaque former. This guides us clinically because if we see lots of oxidized LDL we know that there is a more severe impact and we know to treat with different antioxidants like CoQ10 and Vitamin E.



Ultimately, we can use our clinical dysfunction report to help the patient move through parts of therapy in a step-wise fashion. This means that health can be broken down into manageable pieces so that the individual has worked on whole body health. The Functional Health Report helps to identify individual road blocks with metabolism so that therapies are most effective and the patients note improvement. By identifying cause of metabolic disturbance, better patient outcomes are achieved.

# Blood Analysis