− Metabolic & Endocrine Health

The endocrine system is the collection of glands, each of which secretes different types of hormones that regulate metabolism, growth and development, tissue function, sexual function, reproduction, sleep and mood, among other things.

The endocrine system is made of eight major glands, which are groups of cells that produce and secrete chemicals. A gland selects and removes materials from the blood, processes them, and secretes the finished chemical product for use somewhere in the body. Almost every organ and cell in the body is affected by the endocrine system.

A group of glands that signal each other in sequence are usually referred to as an axis. One example is the hypothalamic-pituitary-adrenal axis, which coordinates interactions among the hypothalamus, the pituitary gland and the adrenal, also called "suprarenal" glands, which are small, conical organs on top of the kidneys.

The endocrine system sends signals throughout the body, much like the nervous system, but unlike the immediate responses triggered by the nervous system, the effects can take a few hours or weeks. Hormones released from endocrine tissue into the bloodstream where they travel to target tissue to elicit a response.

Endocrine glands are vascular and generally do not have ducts, using intracellular vacuoles, or granules, to store hormones. They differ from, exocrine glands — salivary glands, sweat glands and glands within the gastrointestinal tract — which have ducts or a hollow lumen.

The endocrine system gets some help from organs such as the kidney, liver, heart and gonads, which have secondary endocrine functions. The kidney, for example, secretes hormones such as erythropoietin and renin.

Diabetes & Insulin Resistance

Insulin resistance is a condition in which the body produces insulin but does not use it effectively. When people have insulin resistance, glucose builds up in the blood instead of being absorbed by the cells, leading to type 2 diabetes or pre-diabetes. Most people with insulin resistance don't know they have it for many years—until they develop type 2 diabetes, a serious, lifelong disease. The good news is that if people learn they have insulin resistance early on, they can often prevent or delay diabetes by making changes to their lifestyle.

When people that do not have diabetes eat, the pancreas automatically produces the right amount of insulin to move glucose from blood into the cells. In people with diabetes, however, the pancreas either produces little or no insulin, or the cells do not respond appropriately to the insulin that is produced. Glucose builds up in the blood, overflows into the urine, and passes out of the body in the urine. Thus, the body loses its main source of fuel even though the blood contains large amounts of glucose. The three main types of diabetes are: type 1 diabetes, type 2 diabetes and gestational diabetes

+ GLUCOSE (mg/dL)	71	Range: 65-99

− Liver Health

The liver is one of the largest internal organs and is an important in your health. It is part of the digestive system and is connected to the small intestine by the bile duct. The liver is a multitasking organ, with many functions. Nearly all the blood that leaves the stomach and intestines passes through the liver for processing.

The liver is involved in these a group of body functions that include:

- Production of clotting factors, blood, proteins, bile, and greater than a thousand enzymes.
- Storage of energy from the food to provide fuel for muscles.
- Uses the cholesterol in the blood.
- Regulates the level of blood sugar and hormones in the body.
- Removes poisons such as drugs and alcohol from the blood.

Liver Enzymes and Function Tests

Liver Enzymes and Function tests are used to see how well your liver is working. Your liver is the largest organ inside your body and it helps your body digest food, store energy, and remove poisons.

There are many kinds of liver diseases. Viruses cause some of them, like hepatitis A, hepatitis B and hepatitis C. Others can be the result of drugs, poisons or drinking too much alcohol. If the liver forms scar tissue because of an illness, it's called cirrhosis. Jaundice, or yellowing of the skin, can be one sign of liver disease. Cancer can also affect the liver. You could also inherit a liver disease such as hemochromatosis.

+ PROTEIN, TOTAL (g/dL)	7.1	Range: 6.1-8.1	
+ ALBUMIN (g/dL)	4.8	Range: 3.6-5.1	
+ GLOBULIN (g/dL (calc))	2.3	Range: 1.9-3.7	
+ ALBUMIN/GLOBU... ((calc))	2.1	Range: 1.0-2.5	
+ BILIRUBIN, TOTAL (mg/dL)	0.3	Range: 0.2-1.2	
+ ALKALINE PHOSP... (U/L)	81	Range: 31-125	
+ AST (U/L)	19	Range: 10-30	
+ ALT (U/L)	15	Range: 6-29	

− Kidney & Urinary Health

The kidney and urinary tract make up the urinary / renal system that cleanses the blood and rids the body of excess water and waste in the form of urine. The urinary tract consists of two kidneys, two ureters (one from each kidney), tubes that drain urine from the kidneys into the bladder (a storage sac), and the urethra. Muscles help control the release of urine from the bladder.

The kidneys receive blood from the aorta, filter it, and send it back to the heart with the right balance of chemicals and fluid for use throughout the body. The urine created by the kidneys is moved out of the body via the urinary tract.

The kidneys control the quantity and quality of fluids within the body. They also produce hormones and vitamins that direct cell activities in many organs; the hormone renin, for example, helps control blood pressure. When the kidneys are not working properly, waste products and fluid can build up to dangerous levels, creating a life-threatening situation. Among the important substances the kidneys help to control are sodium, potassium, chloride, bicarbonate (HCO3-), pH, calcium, phosphorus, and magnesium.

Kidney Function Metabolic

+ UREA NITROGEN ... (mg/dL)	16	Range: 7-25
+ CREATININE (mg/dL)	0.96	Range: 0.50-0.97
+ EGFR (mL/min/1.73m2)	78	Range: > OR = 60
+ BUN/CREATININE... ((calc))	SEE NOTE:	Range: 6-22

− Electrolytes

Electrolytes are electrically charged minerals that are found in body tissues and blood in the form of dissolved salts. They help move nutrients into and wastes out of the body's cells, maintain a healthy water balance, and help stabilize the body's pH level. The electrolyte panel measures the main electrolytes in the body: sodium (Na+), potassium (K+), chloride (Cl-), and bicarbonate (HCO3-; sometimes reported as total CO2).

Electrolytes

+ SODIUM (mmol/L)	138	Range: 135-146
+ POTASSIUM (mmol/L)	4.4	Range: 3.5-5.3
+ CHLORIDE (mmol/L)	102	Range: 98-110
+ CARBON DIOXIDE (mmol/L)	30	Range: 20-32
+ CALCIUM (mg/dL)	9.8	Range: 8.6-10.2