9.7: Glossary

**A1C:** A lab test used to assess long-term blood glucose levels over 3 months. The general A1C target level is less than 7%.

**Adrenal cortex:** A component of the hypothalamic-pituitary-adrenal (HPA) axis that produces the steroid hormones important for the regulation of the stress response, blood pressure and blood volume, nutrient uptake and storage, fluid and electrolyte balance, and inflammation.

**Adrenal medulla:** Neuroendocrine tissue composed of postganglionic sympathetic nervous system (SNS) neurons that are stimulated by the autonomic nervous system to secrete hormones epinephrine and norepinephrine.

**Aldosterone:** A mineralocorticoid released by the adrenal cortex that controls fluid and electrolyte balance through the regulation of sodium and potassium.

**Antidiuretic hormone (ADH):** ADH is released by the posterior pituitary in response to stimuli from osmoreceptors indicating high blood osmolarity. Its effect is to cause increased water reabsorption by the kidneys. As more water is reabsorbed by the kidneys, the greater the amount of water that is returned to the blood, thus causing a decrease in blood osmolarity. ADH is also known as vasopressin because, in very high concentrations, it causes constriction of blood vessels, which increases blood pressure by increasing peripheral resistance.

**Basal insulin:** Long-acting (insulin glargine or insulin detemir) or intermediate-acting (NPH) insulin.

**Basal Metabolic Rate:** The amount of energy used by the body at rest.

**Blood osmolarity:** The concentration of solutes (such as sodium and glucose) in the blood.

**Diabetes insipidus (DI):** A disease characterized by underproduction of ADH that causes chronic dehydration.
Endocrine gland: Gland that secretes hormones that target other organs.

Exocrine gland: Gland that secretes digestive enzymes.

General adaptation syndrome (GAS): The pattern in which the body responds in different ways to stress: the alarm reaction (otherwise known as the fight-or-flight response,) the stage of resistance, and the stage of exhaustion.

Glycolysis: Stimulated by insulin, the metabolism of glucose for generation of ATP.

Goiter: A visible enlargement of the thyroid gland when there is hyperstimulation of TSH due to deficient levels of T3 and T4 hormones in the bloodstream or an autoimmune reaction in which antibodies overstimulate the follicle cells of the thyroid gland, causing hyperthyroidism.

Hormones: Chemical signals sent by the endocrine organs and transported via the bloodstream throughout the body where they bind to receptors on target cells and induce a characteristic response.

Humoral stimuli: Changes in blood levels of non-hormone chemicals that cause an endocrine gland to release or inhibit a hormone to maintain homeostasis. For example, high blood sugar causes the pancreas to release insulin.

Hyperglycemia: Elevated blood glucose levels.

Hyperparathyroidism: A disorder caused by an overproduction of PTH that results in excessive calcium resorption from bone, causing significantly decreased bone density and spontaneous fractures, decreased responsiveness of the nervous system, and calcium deposits in the body’s tissues and organs, impairing their functioning.

Hyperthyroidism: Abnormally elevated blood level of thyroid hormones T3 and T4, often caused by a pituitary tumor, thyroid tumor, or autoimmune reaction in which antibodies overstimulate the follicle cells of the thyroid gland.

Hypoglycemia: A blood glucose level below 70 mg/dL; severe hypoglycemia refers to a blood glucose level below 40.

Hypoparathyroidism: Abnormally low blood calcium levels caused by parathyroid hormone deficiency, which may develop following thyroid surgery. Low blood calcium can cause muscle twitching, cramping, spasms, or convulsions; severe deficits can paralyze muscles, including those involved in breathing, and can be fatal.

Hypothalamic-pituitary-adrenal (HPA) axis: The hypothalamus stimulates the release of ACTH from the pituitary, which then stimulates the adrenal cortex to produce the hormone cortisol and steroid hormones important for the regulation of the stress response, blood pressure and blood volume, nutrient uptake and storage, fluid and electrolyte balance, and inflammation.

Hypothalamus–pituitary complex: The “command center” of the endocrine system that secretes several hormones that directly produce responses in target tissues, as well as hormones that regulate the synthesis and secretion of hormones of other glands. In addition, the hypothalamus–pituitary complex coordinates the messages of the endocrine and nervous systems.

Hypothyroidism: Abnormally low blood levels of thyroid hormones T3 and T4 in the bloodstream.

Insulin: A hormone that facilitates the uptake of glucose into skeletal and adipose body cells.
Mineralocorticoids: Hormones released by the adrenal cortex that regulate body minerals, especially sodium and potassium, that are essential for fluid and electrolyte balance. Aldosterone is the major mineralocorticoid.

Negative feedback loop: Characterized by the inhibition of further secretion of a hormone in response to adequate levels of that hormone.

Neural stimuli: Released in response to stimuli from the nervous system. For example, the activation of the release of epinephrine and norepinephrine in the fight-or-flight response is stimulated by the sympathetic nervous system.

Osmoreceptors: Specialized cells within the hypothalamus that are sensitive to the concentration of sodium ions and other solutes in the bloodstream.

Parathyroid hormone (PTH): The hormone released by parathyroid glands and is involved in the regulation of blood calcium levels.

Prandial insulins: During or relating to the eating of food.

Tropic hormones: Hormones that turn on or off the function of other endocrine glands, including ACTH, FSH, LH, and TSH.

Type 1 diabetes: An autoimmune disease that affects the beta cells of the pancreas so they do not produce insulin; thus, synthetic insulin must be administered by injection or infusion.

Type 2 diabetes: A condition where the body’s cells become resistant to the effects of insulin. Over time, the beta cells become exhausted and if blood glucose levels cannot be controlled through a healthy diet and exercise, then oral diabetic medication must be implemented and eventually insulin administration may be required.