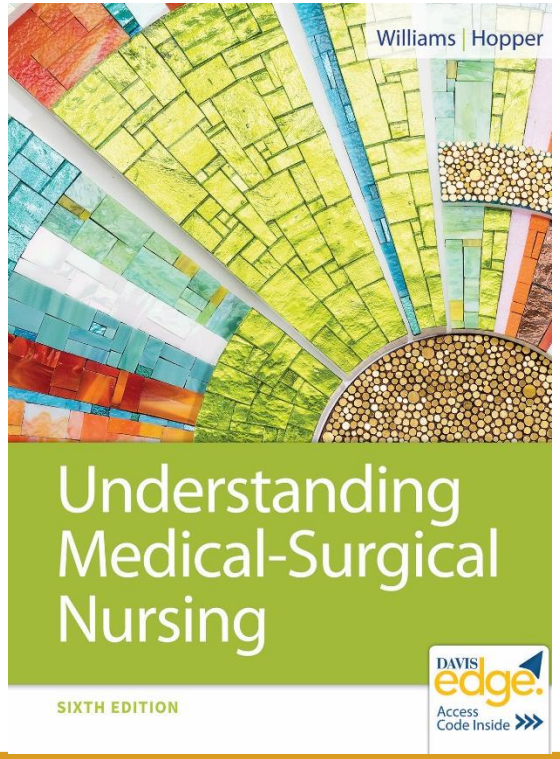


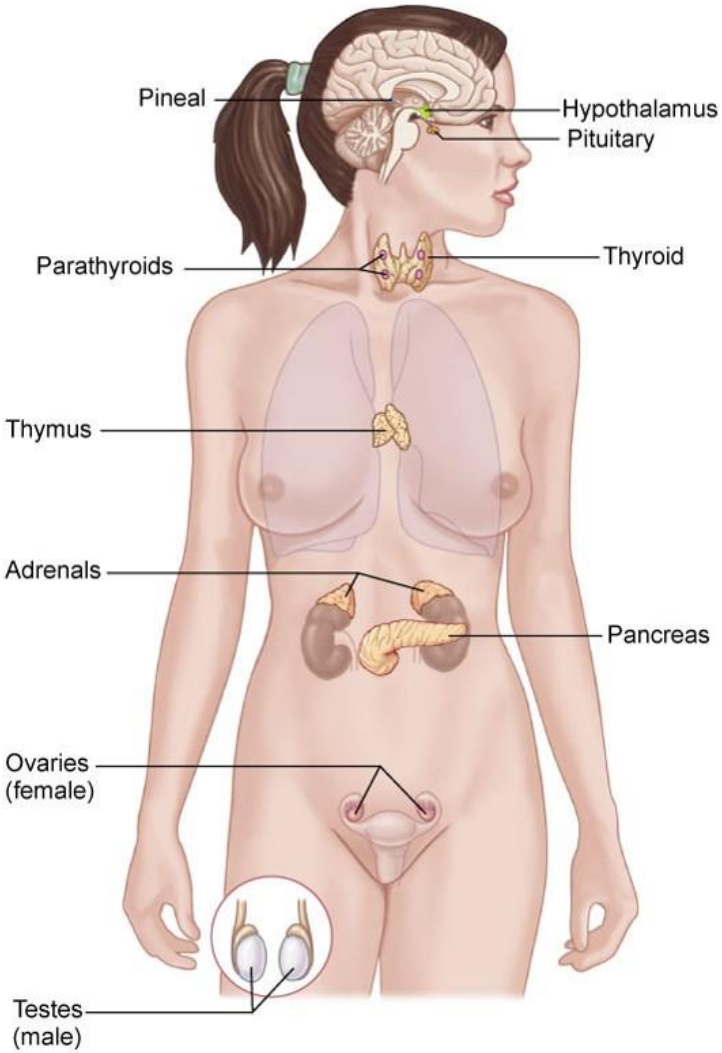
Chapter 38

Endocrine System Function and Assessment

Learning Outcomes

- Identify the glands of the endocrine system.
- Explain the function of each of the hormones in the endocrine system.
- Describe the effects of aging on endocrine system function.
- List data to collect when caring for a patient with a disorder of the endocrine system.
- Plan nursing care for patients undergoing testing for an endocrine disorder.

Review of Anatomy and Physiology



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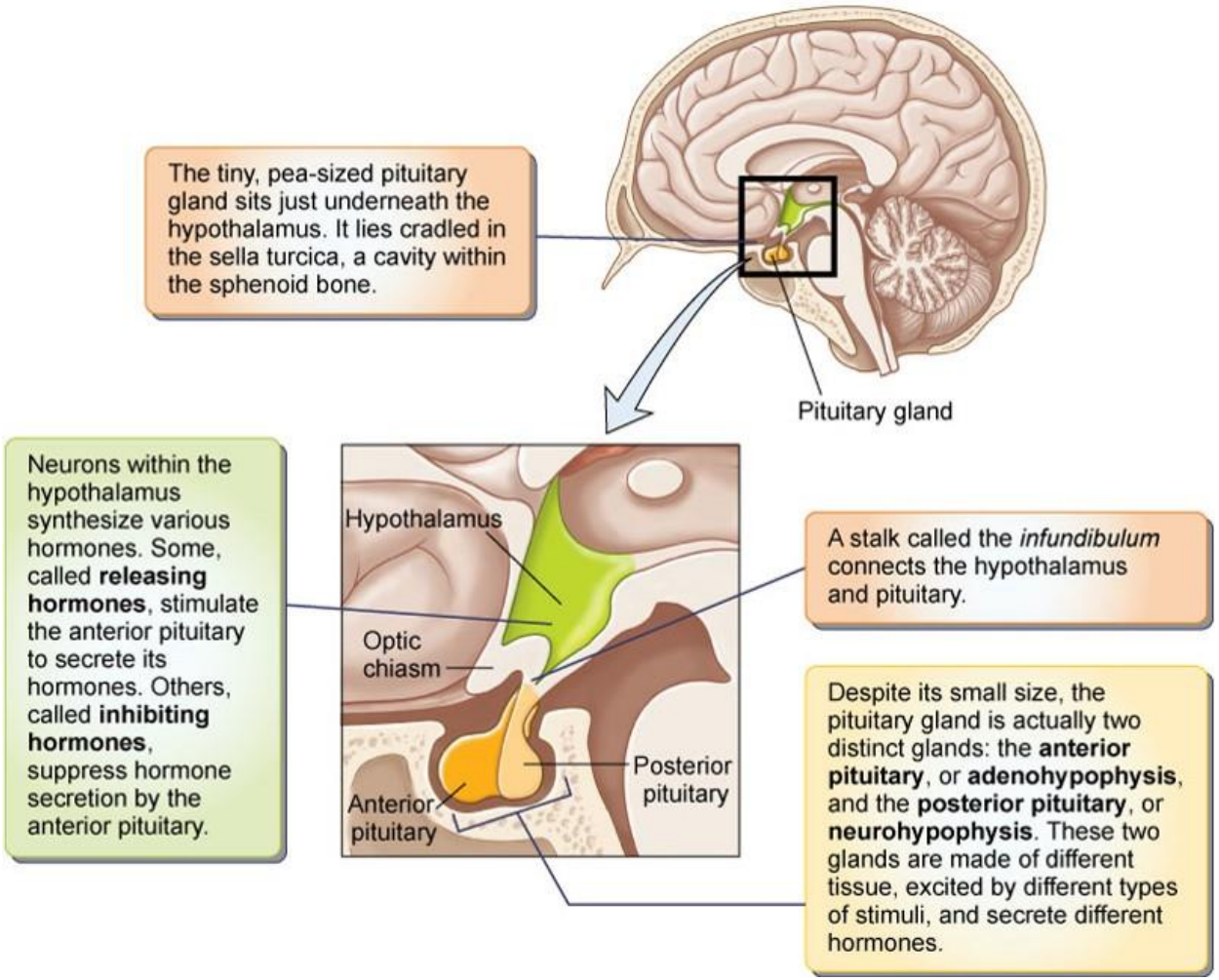

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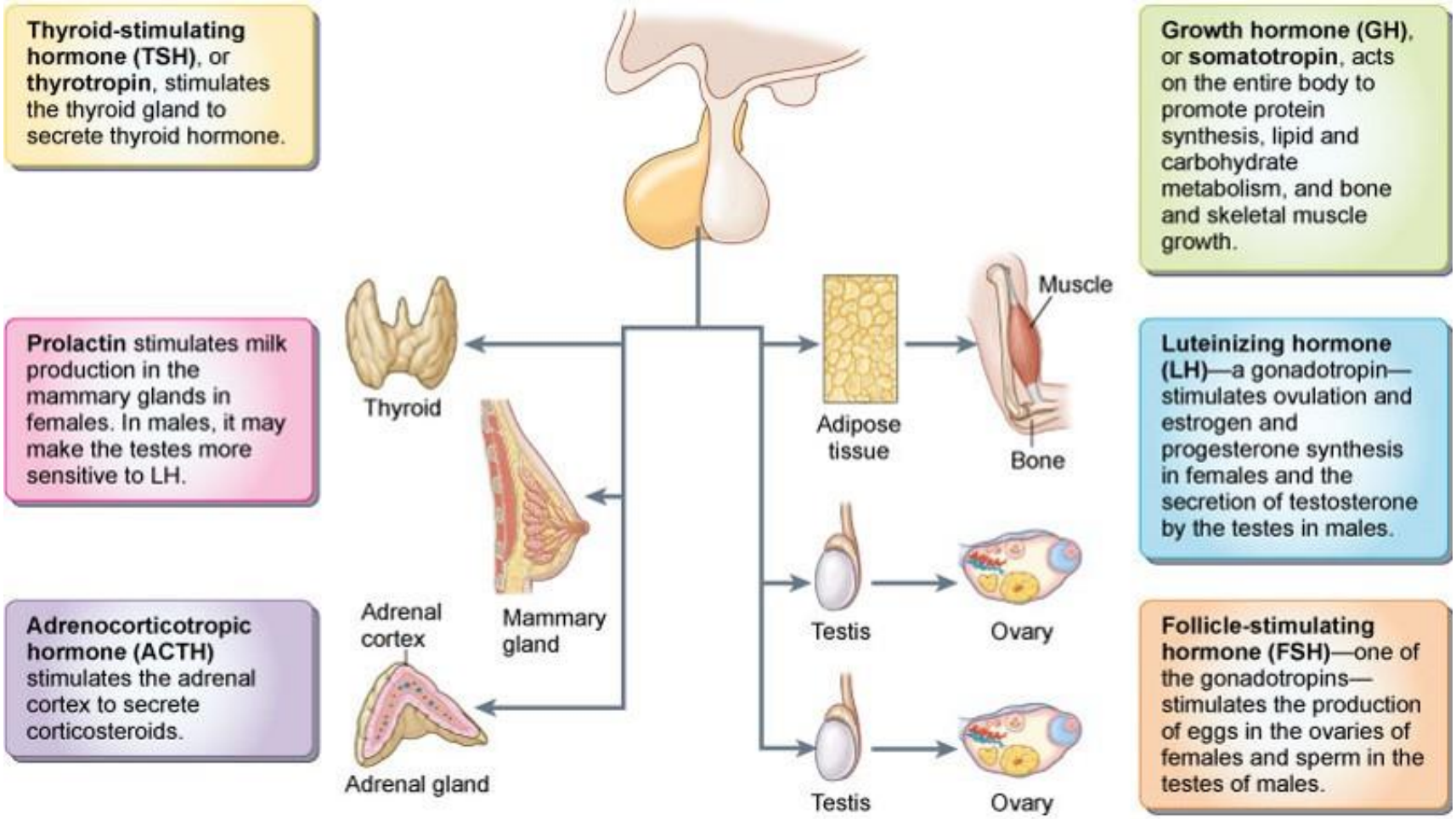

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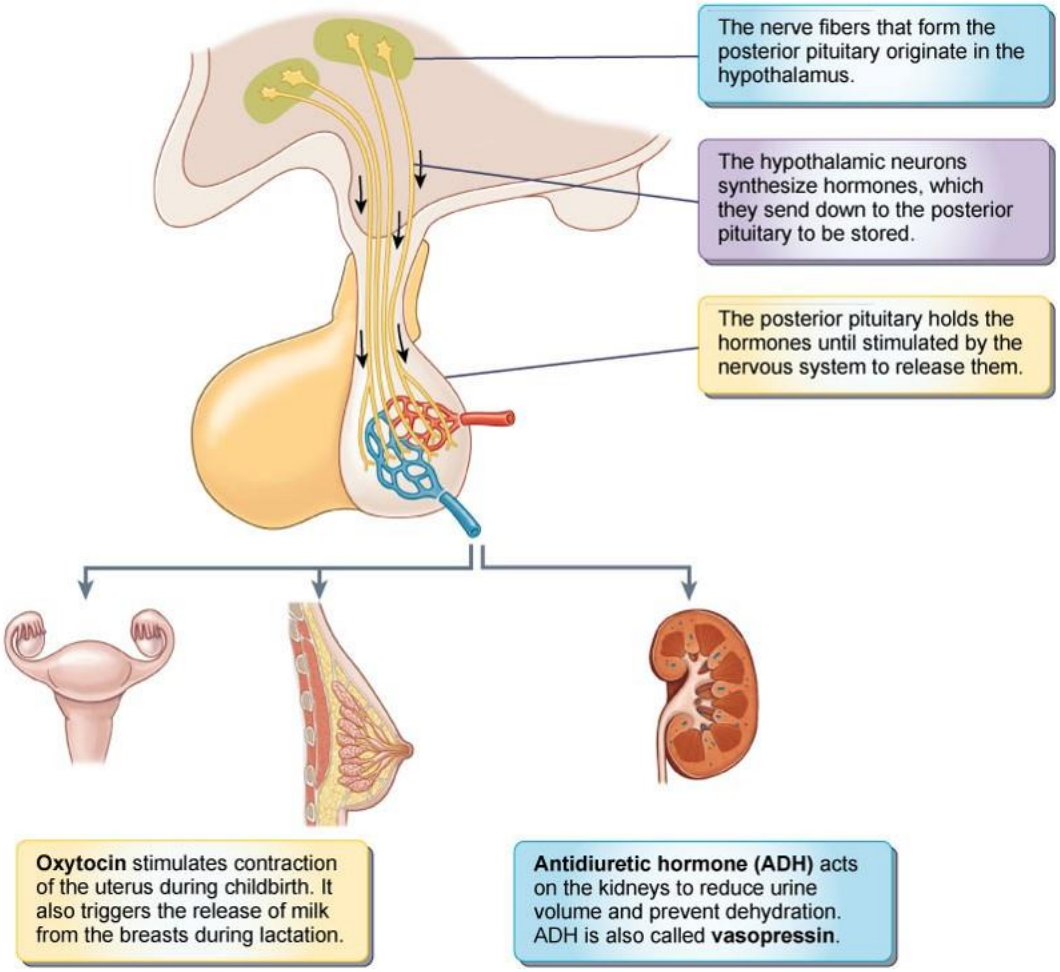

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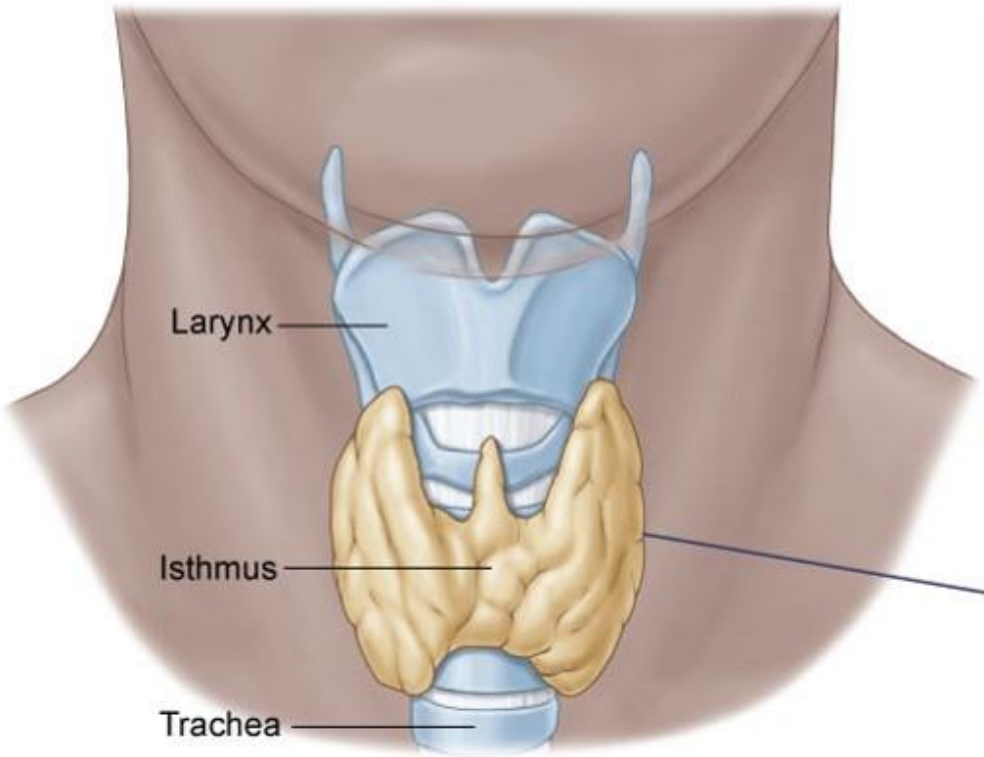
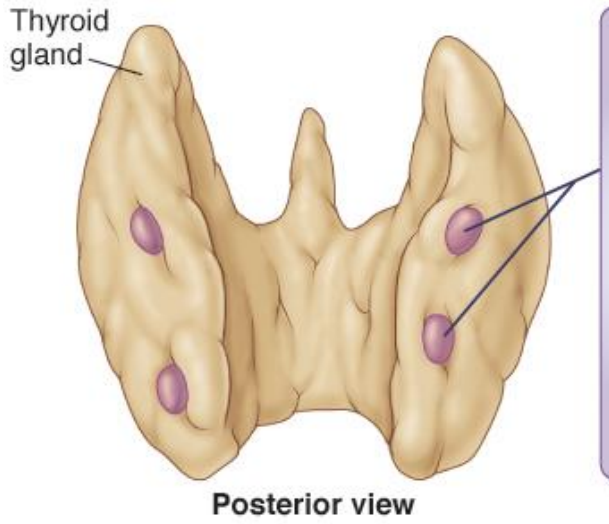


Thyroid tissue is made of tiny sacs called **thyroid follicles**. Each follicle is filled with a thick fluid called **thyroid colloid**. The cells lining the sacs secrete the two main thyroid hormones: **T_3 (triiodothyronine)** and **T_4 (thyroxine)**. Unlike other glands, the thyroid gland can store the hormones for later

The thyroid gland resides in the neck, just below the trachea, where it is wrapped around the anterior and lateral portions of the trachea.

Review of Anatomy and Physiology (continued_5)



The parathyroid glands are embedded in the posterior corners of the lobes of the thyroid. Most people have four parathyroid glands, but the number of glands, as well as their locations, can vary.

PTH inhibits new bone formation while stimulating the breakdown of old bone, causing calcium (and phosphate) to move out of bone and into the blood.

PTH encourages the kidneys to reabsorb calcium—blocking its excretion into the urine—while promoting the secretion of phosphate. PTH also prompts the kidneys to activate vitamin D, necessary for intestinal absorption of calcium.

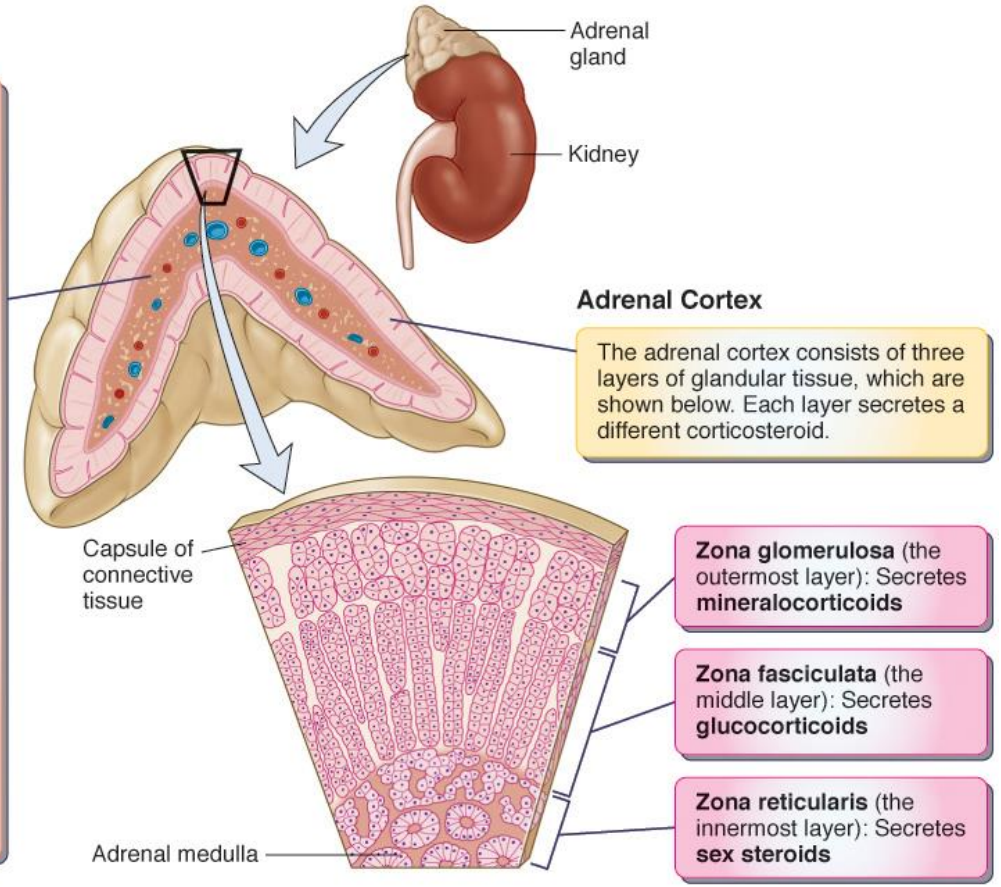
After its activation by the kidneys, vitamin D allows the intestines to absorb calcium from food; the calcium is transported through intestinal cells and into the blood.

Review of Anatomy and Physiology (continued_6)

Adrenal Medulla

The adrenal medulla contains modified neurons (called *chromaffin cells*) that act as part of the sympathetic nervous system. These cells secrete **catecholamines** (specifically, epinephrine and norepinephrine) in response to stimulation. Catecholamines:

- Prepare the body for physical activity by increasing heart rate and blood pressure, stimulating circulation to the muscles, and dilating the bronchioles; to maximize blood flow to the areas needed for physical activity, they also inhibit digestion and urinary production.
- Boost glucose levels (a source of fuel) by breaking down glycogen into glucose (**glycogenolysis**) and converting fatty acids and amino acids into glucose (**gluconeogenesis**).



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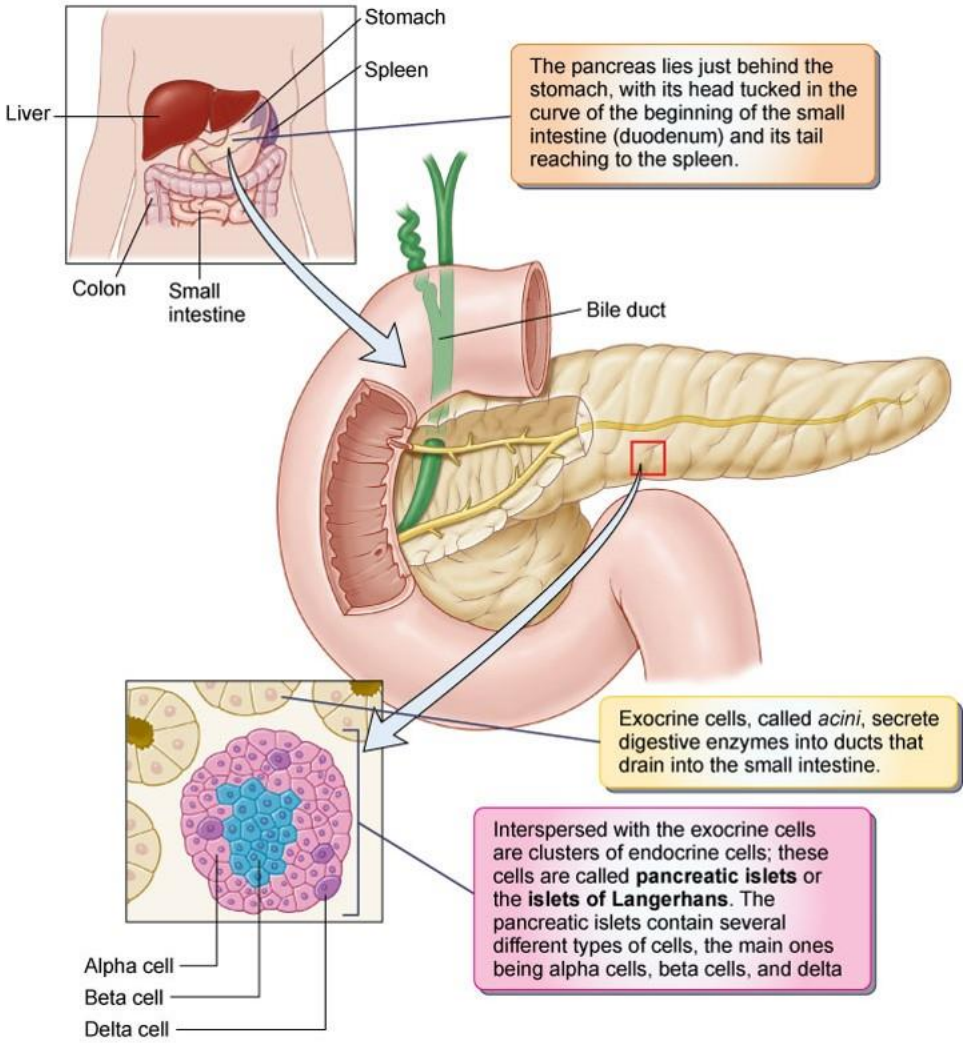

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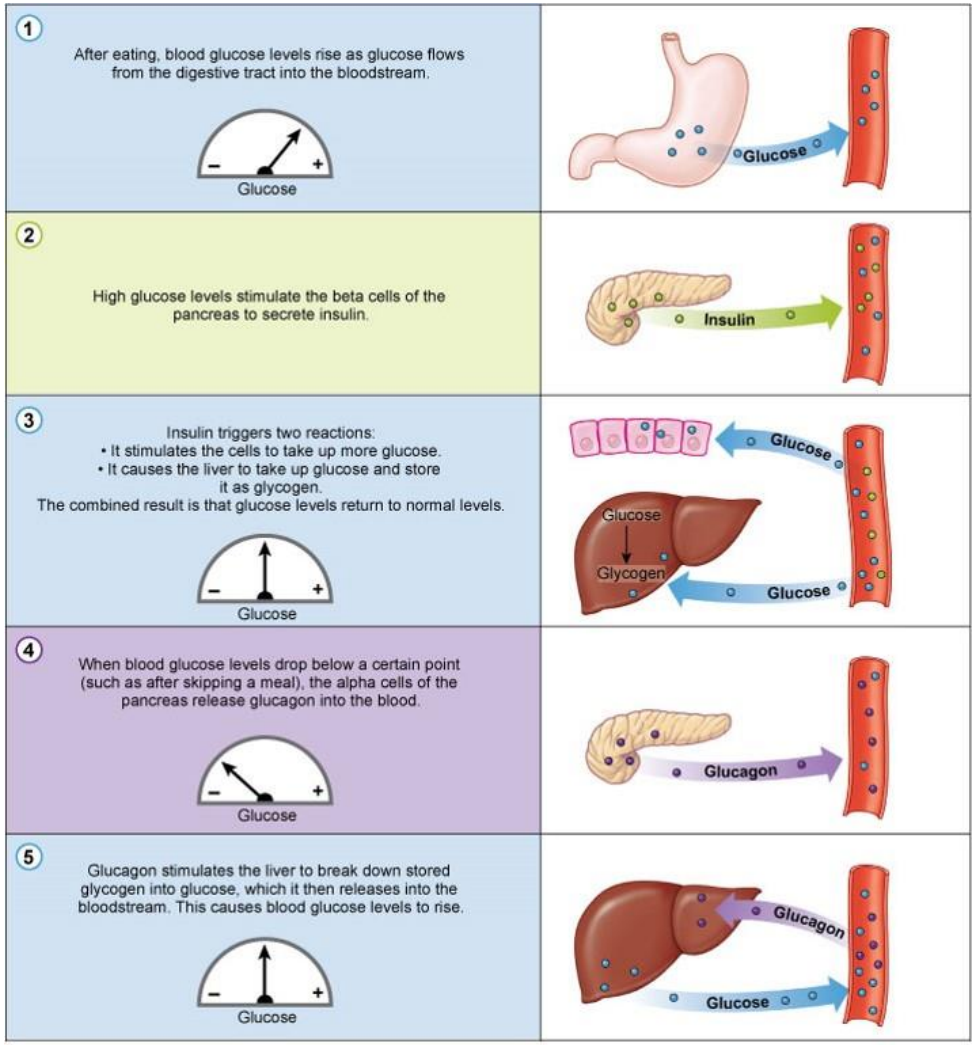
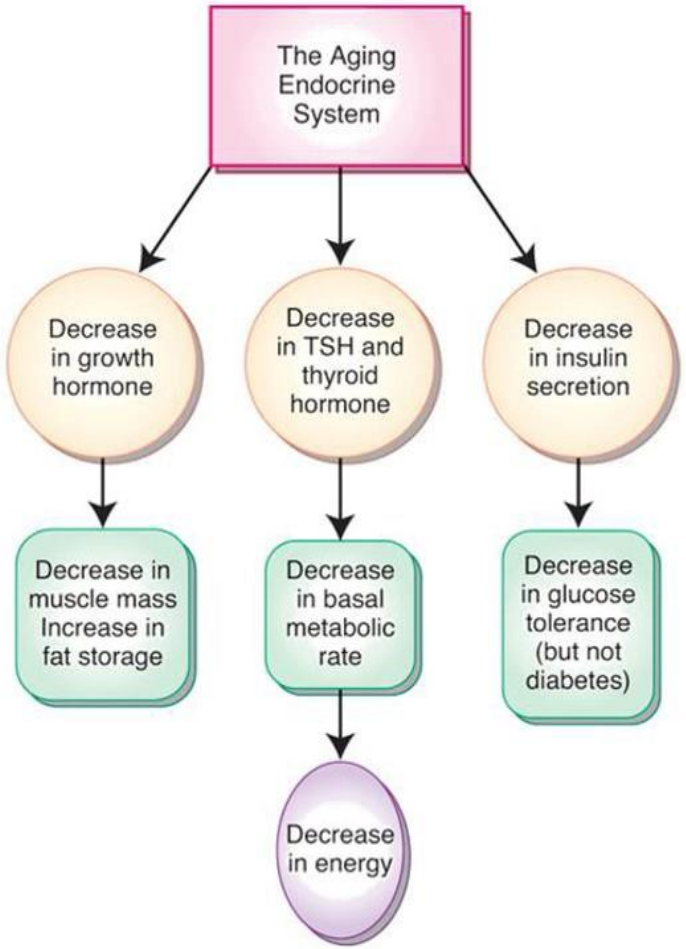


Effects of Aging



Nursing Assessment

- Health history
  - Neuromuscular
  - Weight change
  - Excessive thirst or urination
  - Heat or cold tolerance
  - Mood and memory
  - Family history

Physical Assessment

- Vital signs
- Weight
- Skin changes
- Tremor
- Affect
- Exophthalmos
- Fat pads
- Thyroid size

Common Laboratory Tests

- Thyroid tests
  - Thyroid-stimulating hormone (T S H)
  - Triiodothyronine (T3) and thyroxine (T4)
- Parathyroid tests
  - Parathyroid hormone (P T H)
  - Calcium
  - Phosphorus

Common Laboratory Tests (continued_1)

- Pituitary tests
  - Growth hormone (G H)
  - Antidiuretic hormone (A D H)
  - Urine specific gravity
  - Adrenocorticotropic hormone (A C T H)
- Adrenal tests
  - Cortisol
  - 24-hour urine for vanillylmandelic acid (V M A)

Common Laboratory Tests (continued_2)

- Pancreatic function tests (diabetes)
  - Fasting blood glucose
  - Oral glucose tolerance
  - Glycosylated hemoglobin

Review Question

Which hormone increases water retention by the kidneys?

1. Growth hormone (G H)
2. Antidiuretic hormone (A D H)
3. Thyroid-stimulating hormone (T S H)
4. Follicle-stimulating hormone (F S H)

Review Question Answer

Correct Answer: **2**

Review Question (continued_1)

Which hormone raises serum calcium level?

1. Calcitonin
2. Thyroxine
3. Insulin
4. Parathyroid hormone

Review Question Answer (continued_1)

Correct Answer: **4**

Review Question (continued_2)

Which hormone increases heart rate and blood glucose?

1. Epinephrine
2. Insulin
3. Aldosterone
4. Prolactin

Review Question Answer (continued_2)

Correct Answer: **1**

Review Question (continued_3)

Excess of which hormone can cause weight loss?

1. ADH
2. Cortisol
3. Aldosterone
4. Thyroxine

Review Question Answer (continued_3)

Correct Answer: **4**

Review Question (continued_4)

Excess of which hormone is associated with moon face and buffalo hump?

1. Cortisol
2. Glucagon
3. Growth hormone
4. Calcitonin

Review Question Answer (continued_4)

Correct Answer: **1**