Internal Affairs

■ How the *Urinary System* Works with Other Body Systems

□ How Other Systems Work with the *Urinary System*

Integumentary System

- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels

- Covers the body and protects it from excessive fluid loss
- Provides site for evaporative water loss
- Skin plays role in vitamin D synthesis, along with the kidneys

Skeletal System

- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels
- Kidneys activate vitamin D, enabling absorption of the calcium and phosphorus needed for bone growth and maintenance

- Supports and protects certain organs of the urinary system
- Stores calcium and phosphate ions

Muscular System

- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels

- Supports and protects certain organs of the urinary system
- Assists the storage and voiding of urine

Nervous System

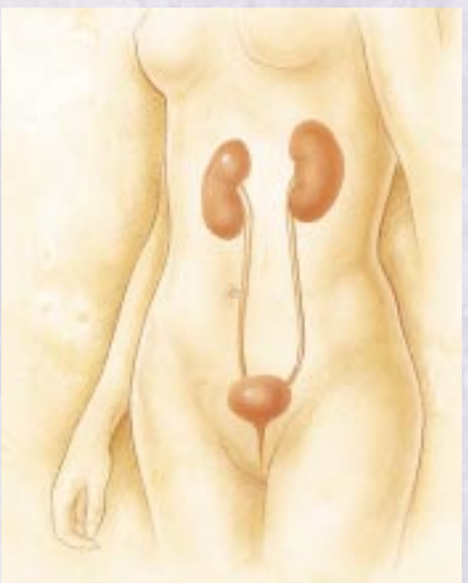
- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels

- Provides autonomic innervation to the urinary system
- Provides motor control of micturition

Endocrine System

- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels
- Kidneys produce the hormone erythropoietin

- Hormones help to regulate renal reabsorption of water and electrolytes



Circulatory System

- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels
- Regulates blood volume, pressure, and composition

- Transports O_2 and CO_2, nutrients, and fluids to and from the organs of the urinary system
- Blood pressure is vital for glomerular filtration

Lymphatic System

- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels
- Acidity of urine provides nonspecific defense against urinary tract infection

- Maintains a balanced amount of interstitial fluid within the organs of the urinary system
- Protects the urinary tract against infection

Respiratory System

- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels

- Provides O_2 and eliminates CO_2
- Kidneys may be damaged by inhaled toxic fumes

Digestive System

- Eliminates metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels
- Kidneys activate vitamin D, which is needed for the intestinal absorption of calcium and phosphorus

- Provides nutrients for growth, maintenance, and repair of the urinary system
- Liver, along with the kidneys, activates vitamin D
- Liver metabolizes blood-borne hormones to forms that can be excreted in urine

Reproductive System

- Eliminate metabolic wastes
- Maintains normal acid-base (pH), fluid, and electrolyte levels
- Urethra serves as common passageway for urine and sperm cells in males

- Provides organ (penis) in male for passage of urethra
- Enlarged prostate can cause urine retention and kidney damage in males
- Gravid uterus compresses urinary bladder and increases micturition frequency in females