

# Internal Affairs

## ■ How the Respiratory System Works with Other Body Systems

## □ How Other Systems Work with the Respiratory System

### *Integumentary System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Nasal hairs and mucus prevent the entry of dust and other foreign material into respiratory tract

### *Skeletal System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Rib cage provides a protective enclosure for the lungs
- Movement of the ribs assists in respiration

### *Muscular System*

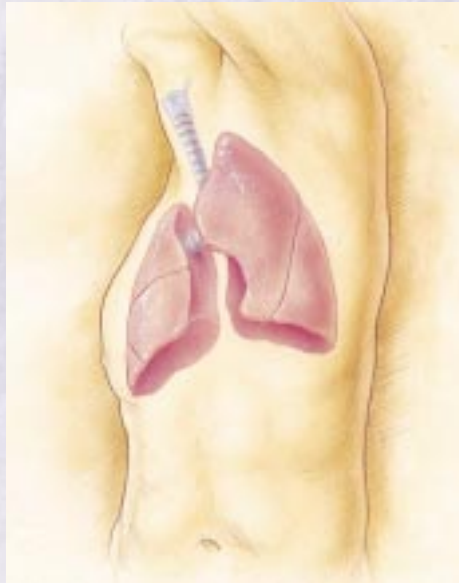
- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Respiratory muscles ventilate the lungs, control position of the larynx during swallowing, and control tension on the vocal cords during speech production
- Muscle activity stimulates pulmonary ventilation by generating CO<sub>2</sub>

### *Nervous System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Monitors respiratory volume and blood gas levels
- Brain stem centers control the rate and depth of breathing
- Phrenic, intercostal, and other nerves innervate respiratory muscles

### *Endocrine System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Epinephrine and norepinephrine dilate the bronchioles and stimulate ventilation



### *Circulatory System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Blood serves as the transport medium for respiratory gases

### *Lymphatic System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Tonsils in the pharynx house immune cells
- Prevents edema (retention of interstitial fluid)
- Protects against infection

### *Digestive System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Contraction of respiratory muscles can aid defecation
- Provides nutrients for growth and maintenance of the respiratory system

### *Urinary System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Expiratory effort against a closed glottis (Valsalva's maneuver) helps to empty the urinary bladder
- Disposes of metabolic wastes from respiratory organs
- Participates with lungs in regulation of blood pH

### *Reproductive System*

- Provides O<sub>2</sub> and eliminates CO<sub>2</sub>
- Valsalva's maneuver aids in childbirth
- Changes in respiratory rate and depth occur during sexual arousal