chapter **48**

# Antihistamines and Allergic Disorders

## *Objectives*

**AFTER STUDYING THIS CHAPTER, THE STUDENT WILL BE ABLE TO:**

1. Delineate effects of histamine on selected body tissues.
2. Differentiate histamine receptors.
3. Describe the types of hypersensitivity or allergic reactions.
4. Discuss allergic rhinitis, allergic contact dermatitis, and drug allergies as conditions for which antihistamines are commonly used.
5. Identify the effects of histamine that are blocked by histamine-1 receptor antagonist drugs.
6. Differentiate first- and second-generation antihistamines.
7. Describe antihistamines in terms of indications for use, adverse effects, and nursing process implications.
8. Discuss the use of antihistamines in special populations.

**Critical Thinking Scenario**

You are working at the college health center. John, a freshman, comes to the clinic complaining of seasonal pollen allergies that have worsened significantly since his relocation at college. He has been self-treating with over-the-counter (OTC) medications a friend in the dorms gave him.

**Reflect on:**

- Assessment of John's allergy history and factors that may have increased John's allergic response
- Appropriate teaching about the allergic response and how antihistamines work
- Informed use of OTC allergy medications to manage symptoms, including side effects and interactions
- Nonpharmacologic methods to prevent or limit allergic reactions

## OVERVIEW

Antihistamines are drugs that antagonize the action of histamine. Thus, to understand the use of these drugs, it is necessary to understand histamine and its effects on body tissues, characteristics of allergic reactions, and selected conditions for which antihistamines are used.

## HISTAMINE AND ITS RECEPTORS

Histamine is the first chemical mediator to be released in immune and inflammatory responses. It is synthesized and stored in most body tissues, with high concentrations in tissues exposed to environmental substances (eg, the skin and mucosal surfaces of the eye, nose, lungs, and gastrointestinal [GI] tract). It is also found in the central nervous system (CNS). In these tissues, histamine is located mainly in secretory granules of mast cells (tissue cells surrounding capillaries) and basophils (circulating blood cells).

Histamine is discharged from mast cells and basophils in response to certain stimuli (eg, allergic reactions, cellular injury, extreme cold). Once released, it diffuses rapidly into other tissues, where it interacts with histamine receptors on target organs, called $H_1$ and $H_2$. $H_1$ receptors are located mainly on smooth muscle cells in blood vessels and the respiratory and GI tracts. When histamine binds with these receptors and stimulates them, effects include:

- Contraction of smooth muscle in the bronchi and bronchioles (producing bronchoconstriction and respiratory distress)
- Stimulation of vagus nerve endings to produce reflex bronchoconstriction and cough
- Increased permeability of veins and capillaries, which allows fluid to flow into subcutaneous tissues and form edema