Chapter 55
Care of the Patient with an Immune Disorder

Nature of Immunity

- Functions of the immune system
  - Protect against invading organisms
  - Removing damaged cells from the circulation
  - Serve as a surveillance network for recognizing and guarding against the development and growth of abnormal cells

Nature of Immunity

- **Immununity competence**
  - The immune system responds appropriately to a foreign stimulus

- **Immunity**
  - The quality of being unaffected by a particular disease or condition
Nature of Immunity

- Inappropriate responses of the immune system
  - Hyperactive response (allergy)
  - Immunodeficiency disorders (AIDS)
  - Autoimmune disorders (systemic lupus erythematosus)
  - Attacks foreign tissue (organ transplant rejection or transfusion reaction)

Nature of Immunity

- Innate (natural) immunity
  - First line of defense
  - Provides PROTECTION to invading pathogens
  - Composed of the skin, mucous membranes, cilia, stomach acid, tears, saliva, sebaceous glands, and secretions and flora of the intestines and vagina
  - Non-specific immunity

Nature of Immunity

- Adaptive (acquired) immunity
  - Second line of defense
  - Protects the internal environment
  - Composed of thymus, spleen, bone marrow, blood, and lymph
  - Produces antibodies in the cells after an infection or vaccination
Nature of Immunity

- Macrophages (phagocytes)
  - Engulf and destroy microorganisms that pass the skin and mucous membrane
  - Carry antigen to the lymphocytes
- Lymphokine
  - One of the chemical factors produced and released by T cells that attracts macrophages to the site of infection or inflammation
- Antigen
  - A substance recognized by the body as foreign that can trigger an immune response

B-CELLS

- B-CELLS PRODUCE ANTIBODIES IN LARGE NUMBERS THAT ATTACK BACTERIA
- MEMORY B-CELLS PROVIDE THE RECOGNITION OF THE PREVIOUS BACTERIA INVADER.
HELPER T-CELLS

- ATTACK SPECIFIC CELLS, CANCER CELLS AND VIRUSES.
- T-CELLS WILL TRIGGER MACROPHAGES AND WBC’S TO A SITE

REVIEW

- B-CELLS ARE RESPONSIBLE FOR ANTIBODY IMMUNITY TO BACTERIA
- T-CELLS PROVIDE CELL-MEDIATED IMMUNITY AGAINST VIRUSES AND CANCER CELLS

Complement System

- The complement system can destroy the cell membrane of many bacterial species, and this action attracts phagocytes to the area
Genetic Control of Immunity

- There is a genetic link to both well-developed immune systems and poorly developed or compromised immune systems.

Effects of Normal Aging on the Immune System

- Aging causes a decline in the immune system.
  - Higher incidence of tumors
  - Greater susceptibility to infections

Immune Response

- Immunization
  - A controlled exposure to a disease-producing pathogen which triggers antibody production and prevents disease
  - Provides protection for months to years
Immune Response

- Immunotherapy
  - Treatment of allergic responses that involves administering increasingly large doses of the offending allergens to gradually develop immunity
  - Preseasonal, coseasonal, or perennial
  - Severe side effect: anaphylaxis

Immune Response

- Hypersensitivity
  - An abnormal condition characterized by an excessive reaction to a particular substance

  - Hypersensitivity reaction
    - Harmless substances such as pollens, danders, foods, and chemicals are recognized as foreign
      - Exposures may occur by inhalation, ingestion, injection, or touch

Disorders of the Immune System

- Hypersensitivity (continued)
  - Clinical manifestations/assessment
    - Pruritus
    - Nausea
    - Sneezing
    - Excessive nasal secretions and tearing
    - Inflamed nasal membranes
    - Skin rash
    - Diarrhea
    - Cough; wheezes; impaired breathing
Disorders of the Immune System

- Hypersensitivity *(continued)*
  - Medical management/nursing interventions
    - Symptom management: antihistamines
    - Environmental control: avoidance of the allergen
    - Immunotherapy

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Disorders of the Immune System

- Anaphylaxis
  - Etiology/pathophysiology
    - System reaction to allergens
      - Venoms
      - Drugs—penicillin
      - Contrast media dyes
      - Insect slings
      - Foods

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Disorders of the Immune System

- Anaphylaxis *(continued)*
  - Medical management/nursing interventions
    - Epinephrine
    - Benadryl
    - IV access
    - Oxygen
    - Teaching: avoid allergen; use medic-alert ID; administration of epinephrine
Disorders of the Immune System

- Latex allergies
  - Allergic reaction when exposed to latex products
    - Caused by the chemicals used in the manufacturing process of latex gloves
    - Dryness; pruritus; fissuring and cracking of the skin followed by erythema, edema, and crusting

Disorders of the Immune System

- Immunodeficiency
  - An abnormal condition of the immune system
  - May cause recurrent infections, chronic infections, severe infections, and/or incomplete clearing of infections
  - Can be induced (chemotherapy)

Disorders of the Immune System

- Primary immunodeficiency disorders
  - B-cell deficiency
  - T-cell deficiency
  - Combined B-cell and T-cell deficiency
Disorders of the Immune System

- Secondary immunodeficiency disorders
  - Drug-induced immunosuppression
  - Stress
  - Malnutrition
  - Radiation
  - Surgical removal of lymph nodes, thymus, or spleen
  - Hodgkin's disease

Autoimmune Disorders

- Autoimmune
  - The development of an immune response to one's own tissues
  - Body is unable to distinguish "self" protein from "foreign" protein
  - Examples of disorder: pernicious anemia; Guillain-Barré syndrome; scleroderma; systemic lupus erythematosus

The 4 R's of the Immune Response

- RECOGNIZE
- RESPOND
- REMEMBER
- REGULATE
Class is excused

- Move immediately to a faucet and wash your hands vigorously