Chapter 3

Emergency Preparedness

Drugs Are Powerful Tools

- Prevent or control global disease outbreaks
  - Biological, chemical, or nuclear attacks

Medical Personnel Need to Identify, Isolate, and Treat Global Diseases

- Could overwhelm health-care resources
- Catastrophic loss of life could result

Key Roles of Nurse in Preparing for and Responding to Bioterrorist Act

- Education
  - Emergency management
- Resources
  - Contacts in health and law enforcement

Key Roles of Nurse in Preparing for and Responding to Bioterrorist Act

- Diagnosis and treatment
  - Signs, symptoms, and treatment of chemical/biological agents
- Planning
  - Emergency-management plans

Strategic National Stockpile (SNS)

- Managed by the US Centers for Disease Control and Prevention (CDC)
  - Stockpile consists of antibiotics, vaccines, and medical, surgical, and client supplies
  - Deploys materials to communities
SNS Has Two Components

- Push package—first component
  - Supplies and pharmaceuticals for unknown chemical or biological threat.
  - Arrives within 12 hours after attack
- Vendor-managed inventory (VMI) package—second component
  - Supplies and pharmaceuticals for specific chemical or biological agent.
  - Arrives within 24 to 36 hours

Anthrax

- Caused by *Bacillus anthracis*.
- Bacterium can form spores.
  - Spores can be viable in soil for hundreds or thousands of years.

Transmitted to Humans

- Exposure to open wound
- Through contaminated food
- By inhalation

Clinical Manifestations of Anthrax

- Cutaneous anthrax
  - Small skin lesions that turn into black scabs
- Gastrointestinal anthrax
  - Sore throat, difficulty swallowing
  - Cramping, diarrhea, abdominal swelling

Clinical Manifestations of Anthrax (continued)

- Inhalation anthrax
  - Initially fatigue and fever
  - Then persistent cough and shortness of breath

Treatment for Anthrax

- Ciprofloxacin (Cipro)
  - Prophylaxis—500 mg PO, every 12 hours for 60 days
  - Confirmed case—400 mg IV, every 12 hours
- Other antibiotics that are effective
  - Penicillin, vancomycin, ampicillin, erythromycin, tetracycline, and doxycycline
- Combination of ciprofloxacin and doxycycline approved
  - For inhalation anthrax
Polio and Smallpox Viruses

- Most likely used in bioterrorist act

Advantages of Vaccination

- Stimulate immune system to produce antibodies to prevent disease

Disadvantages of Vaccination

- Safety concerns
- Effectiveness unknown
- Requirement for some vaccines for series of shots and boosters
- Concern about effectiveness against mutant strains of viruses

Nerve Agents and Treatment

- GA (Tabun), GB (Sarin), GD (Soman), VX treatment
  - Give atropine injection
  - Flush eyes with water
  - Apply sodium bicarbonate or 5% liquid bleach solution to skin
  - Do not induce vomiting

Blood Agents and Treatment

- Hydrogen cyanide treatment
  - Flush eyes and wash skin with water
  - Give oxygen and amyl nitrate if mist inhaled
  - If ingested, give 1% sodium thiosulfate to induce vomiting
- Cyanogen chloride treatment
  - Give oxygen and amyl nitrate
  - Give milk or water; do not induce vomiting

Choking/Vomiting Agents and Treatment

- Phosgene treatment
  - Provide fresh air, and administer oxygen
  - Flush eyes with normal saline or water
  - Keep client warm and calm
- Adamsite (DM) treatment
  - Rinse nose and throat with saline, water, or 10% solution of sodium bicarbonate
  - Treat skin with borated talcum powder
Blister/Vesicant Agents and Treatment

• Phosgene oxime treatment
  – Flush affected areas with large amounts of water
  – If ingested, do not induce vomiting

Blister/Vesicant Agents and Treatment (continued)

• Mustard-Lewisite mixture (HL), nitrogen mustard (HN-1, HN-2, HN-3), sulfur-mustard agents treatment
  – Flush affected areas with water
  – Treat skin with 5% solution of sodium hypochlorite or household bleach
  – For skin contact with Lewisite, treat with 10% solution of sodium carbonate
  – For ingestion of Lewisite give milk to drink; do not induce vomiting

Immediate Symptoms of Acute Radiation Exposure

• Occur hours or days after exposure
• Nausea, vomiting, diarrhea

Later Symptoms of Acute Radiation Exposure

• Weight loss, anorexia, fatigue, bone-marrow suppression

Survivors of Acute Radiation Exposure

• High risk for developing cancers, particularly leukemia

Potassium Iodide (KI)

• Potassium Iodide (KI) Prevents Radioactive Iodine (I-131) from Entering Thyroid Gland