

Special Aspects of Bioterrorism in the Elderly

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Unique Effects of Bioterrorism on the Elderly

Physical needs

- Older people respond differently than younger people to infectious and toxic agents
- Older people often have comorbid conditions that increase their susceptibility to poor outcomes

Unique Effects of Bioterrorism on the Elderly

Physical needs

- Clinicians may not recognize infection or toxicity (e.g., 94 yr old CT woman with anthrax)
- Transportation may be disrupted, thereby exacerbating medical conditions

Unique Effects of
Bioterrorism on the Elderly

Psychological needs

- Little data available
- Certain older people who have lived through extreme stress may have greater resilience

Unique Effects of
Bioterrorism on the Elderly

Psychological needs

- However, new stresses may trigger traumatic memories and new symptoms of loss and grief
- Stress can cause delirium and can further impair cognitive function

Vulnerability to Infection and
Toxic Agents in the Elderly

- Compromised immune and detoxification systems; pre-existing, chronic illnesses

Vulnerability to Infection and Toxic Agents in the Elderly

- Infections and poisonings are associated with increased morbidity and mortality with age:
 - 90% of pneumonia and influenza deaths in 65 and older; 100% of SARS deaths in >50 yo; Dioxin deaths (diabetes, ischemic heart disease, and cancer) all increased with age

Vulnerability to Infection and Toxic Agents in the Elderly

- Infectious disease and toxic exposure in the elderly may be more difficult to detect: absence of fever; nonspecific symptoms; low suspicion
- Delay in diagnosis is more costly

Cardiovascular Effects of Infections and Toxins

- Hypoxemia
- Arrhythmias
- Cardiomyopathy
- Acute Coronary Syndrome
- Septic Shock
- Disseminated Intravascular Coagulopathy (DIC)
- Endocarditis

Pharmacokinetics (Body's effect)

- Absorption:
 - Dysphagia (↑ swallowing difficulty);
 - GI tract (↑ pH, ↓ blood flow);
 - Dermal changes (↓ thickness; ↓ blood flow; ↑ variable absorption)

Pharmacokinetics (Body's effect)

- Distribution:
 - ↓ muscle mass
 - ↑ body fat
 - ↓ total body water
 - ↓ albumin

Pharmacokinetics (Body's effect)

- Metabolism:
 - ↓ hepatic blood flow (40%)
 - ↓ or unchanged hepatic metabolism

Pharmacokinetics
(Body's effect)

- Excretion:
 - Renal (↓ mass; ↓ blood flow;
↓ Creat Cl)
 - GI tract(↓ motility, ↑ transit time)

Pharmacodynamics
(Drug's effect)

- On body's metabolism
- Toxicity (LD50)
- Altered sensitivity
 - Antihypertensives
 - Anticoagulants
 - Anticholinergics

Pharmacodynamics
(Drug's effect)

- On organ function
(pulmonary, renal, hepatic,
cardiovascular)
- Drug/drug interactions
- Drug/disease interactions

General Essentials

- Water - at least 3 gallons per person
- Food - Non-perishable, for humans and pets
- Manual can and bottle opener


General Essentials

- Flashlights - at least 2
- Batteries for flashlights and radio
- Battery-operated radio or television

General Essentials

- Clothing - comfortable, protective, in layers
- Other essential items (cell phone, some cash)

Medical Supplies

- Medications- prescription and other meds; First aid kit 
- Lists of:
 - 1) Medicines (including dosages, schedules and allergies)
 - 2) Medical devices (style and serial numbers)

Medical Supplies

- Lists of:
 - 3) Emergency contacts (MD, relative or friend)
 - 4) Local info sources (police/fire dept, AR depts. of emergency mgmt and homeland security, media emergency network)
 - 5) Medical insurance (Medicare cards)

Medical Supplies

- Extra batteries for assistive devices (eyeglasses, hearing aid, wheelchair)
- Extra other items (e.g., oxygen tank)

Shelter in Place

- Close all windows
- Turn off fans, heating and air conditioning
- Close fireplace damper
- Go to above ground room with fewest windows and doors

Shelter in Place

- Take essentials and medical supplies
- Close window shades, blinds, curtains
- Stay in room and listen to radio/television
- Stay calm

Effects of Bioterrorism in the Elderly

Short-term

- 90% have one or more symptoms of stress
- Displacement from home
- Interruption of needed services (home health, Meals on Wheels)

Effects of Bioterrorism in the Elderly

Long-term

- High anxiety levels
- Permanent loss of home
- Significant psychological impact

Reducing the Risk of Bioterrorism in the Elderly

- Help healthcare providers to recognize indications of a terrorist event or other public health emergency
- Delineate methods to meet the acute care needs of elderly patients, especially the cognitively impaired, in a safe and appropriate manner

Reducing the Risk of Bioterrorism in the Elderly

- Inform the public of appropriate actions and precautions that may be taken in such an event
- Ensure professional participation in a coordinated, multidisciplinary response to terrorist events
