

Chemical, Biological and Radiologic Terrorism

CBR casualties can present as trauma victims!

Chemical, Biological Weapons:

Diagnosis: Be alert to the following -

- Groups of individuals becoming ill around the same time
- Sudden increase of illness in previously healthy individuals
- Sudden increase in the following non-specific illnesses:
 - Pneumonia, flu-like illness, or fever with atypical features
 - Bleeding disorders
 - Unexplained rashes, and mucosal or dermal irritation, blisters, sloughing
 - Neuromuscular illness, unexplained weakness in previously healthy individuals
 - Simultaneous disease outbreaks in human and animal populations
 - Unusual temporal or geographic clustering of illness (for example, patients who attended the same public event, live in the same part of town, etc.).

Confirmation and technical support

- Alert laboratory, consult infectious disease specialist
- Alert Trauma Director, hospital leadership, to consider Code Orange, Disaster Plan
- Call San Diego County Division of Community Epidemiology: Mon-Fri - (619) 515-6620, Weekends, after hours - (858) 565-5255
- Epidemiology will call FBI: (858) 499-7904 or (858) 565-1255 & CDC :(800) 311-3435
- For help in clinical diagnosis call CDC hotline (770-488-7100)

Decontamination considerations

- Decontamination is best done before patient enters hospital, treating patients in ER or Trauma bay before decontamination may contaminate hospital
- Clothing removal & biosafety bagging is recommended, patient is washed off in shower outside ER
- **Standard Precautions (Mask, gown and gloves) should be worn for all trauma victims**
- Follow infection control practices in Table 1
- Handle equipment used according to standard infection control practices

Treatment considerations

- See Tables 1 and 2
- The terrorist may be one of the initial/index cases!

Terms to know:

Shelter in Place: means during a chemical, biological or radiological emergency, the hospital will seal off external air sources and limit external access. Admissions and visitors may require decontamination. The hospital will maintain an normal business function.

Code Orange: Internal hospital Emergency

Code Triage: Mass Casualty

Bioterrorism Readiness Web sites:

www.bt.cdc.gov

www.usamriid.detrick.army.mil

www.bt.cdc.gov/ResourcesInternal.asp

www.cdc.gov/ncidod/diseases/bioterr.htm

www.cdc.gov/ncidod/dbmd/anthrax.htm

www.cdc.gov/ncidod/diseases/foodborn/botu/htm

www.cdc.gov/ncidod/srp/drugservice/immunodrugs.htm

www.fema.gov

www.hopkins-id.edu/bioterr/bioterr_1.html

www.sandia.gov

www.hopkins-biodefense.org

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Radiologic Weapons:

Diagnosis: Be alert to the following -

Acute radiation syndrome follows predictable pattern (Table 3), symptoms of concern:

- 2-3 week prior history of nausea and vomiting
- thermal burn-like skin effects without thermal exposure
- immune dysfunction with secondary infections
- tendency to bleed (epistaxis, gingival bleeding, petechiae)
- marrow suppression (neutropenia, lymphopenia, thrombocytopenia)
- epilation (hair loss)

Radiation exposure may be known and recognized or clandestine through

- large recognized exposures, such as a nuclear bomb or damage to a nuclear power station
- small radiation source emitting continuous gamma radiation producing group or individual chronic intermittent exposures (such as radiological sources from medical treatment devices or environmental water or food pollution)

Radiation exposure may result from any one or combination of the following

- external sources (such as radiation from an uncontrolled nuclear reaction or radioisotope outside the body)
- skin contamination with radioactive material (“external contamination”) OR internal radiation from absorbed, inhaled, or ingested radioactive material (“internal contamination”)

Confirmation and technical support

- Contact radiation safety officer (RSO) for help, consult nuclear medicine physician
- Medical Radiological Advisory Team (MRAT) at Armed Forces Radiobiology Research Institute (AFRRI) 301-295-0530 will offer advice.
- Alert Trauma Director, hospital leadership, to consider Code Orange, Disaster Plan
- Obtain CBC:
 - absolute lymphocyte count <1000 mm³ suggests moderate exposure
 - absolute lymphocyte count <500 mm³ suggests severe exposure
 - Acute, short-term rise in neutrophil count suggests exposure
- Swab mucosa (all body orifices – each nostril, both ears, mouth, rectum) for counts
- Collect 24-hour stool if GI contamination considered.
- Collect 24-hour urine if contamination is considered

Decontamination considerations

- Exposure without contamination requires no decontamination (RSO measurement)
- Exposure with contamination requires Standard Precautions, removal of patient clothing, and decontamination with water
- For internal contamination, contact the RSO and/or Nuclear Medicine Physician
- Patient with life-threatening condition: treat, then decontaminate
- Patient with non-life-threatening condition: decontaminate, then treat

Adapted from the Pocket Guides, Office of Quality and Performance, Department of Veterans Affairs

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Treatment considerations

- If radioiodine (reactor accident) is present, consider giving prophylactic potassium iodide (Lugol's Solution) within first 24 hours only (ineffective later)

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