Treatment

Combined Injury Management

1. Treatment Priorities

a. Contamination surveys and decon efforts should be secondary to patient stabilization

b. Airway, breathing, circulation

Resuscitation and Stabilization

Top Priority!

2. Triage Decisions

a. Treatment decisions based on prodromal phase of ARS:
   - Nausea, vomiting, fever (onset, severity)
   - Absolute lymphocyte counts

3. Combined Injury Management

a. Conducting a complete trauma survey

b. Taking an appropriately directed history

c. Conducting a contamination assessment

d. Ordering additional laboratory studies

4. Trauma Survey

a. Airway, breathing, circulation (ABC's)

b. Penetrating injuries

c. Blunt trauma and blast effect

d. Cause for impaired CNS functioning?
   - An altered mental status in the absence of traumatic head injury indicates a high dose of radiation exposure and poor prognosis.

5. Cutaneous Radiation Injury (CRI)

a. Less likely to be seen immediately
b. Immediate pain is rare finding
c. Itching, tingling, erythema, edema more common
d. Loss of hair occurs 2–3 weeks later
e. Ulcerations can appear months later
f. Initial skin damage may heal

Cutaneous Radiation Injury (CRI)

g. Avoid additional trauma
h. Outcome depends on total dose received and size of irradiated area

(See also:
"Cutaneous Radiation Injury: Fact Sheet for Physicians",
http://www.bt.cdc.gov/radiation/criphysicianfactsheet.asp)

6. Exposure History

a. Abbreviated medical history
b. Proximity to radiation source
c. Time initial exposure occurred
d. Duration of exposure
e. Time of onset of adverse health effects (vomiting)

7. Contamination Assessment

a. Patient stabilization first priority
b. Screen for contamination as part of survey

Patient being scanned with a G-M Rad detector

8. Unable to Determine Contamination

a. If personnel and survey instruments not available, assume victim is contaminated

b. Decontaminate by removing clothing

c. Delay further decontamination until patient stabilized per advanced trauma life support protocols

9. Laboratory Testing

a. Baseline CBC with differential

b. Track absolute lymphocyte count

How will you collect and label numerous specimens in a mass casualty event?

c. Serum amylase q24 hours

d. Type and cross match
   - If transfusions needed, use irradiated blood products

e. Collect and save additional blood samples in heparinized tubes for later analysis (Cytogenetic Dosimetry)

f. Urine analysis
   - 24-hour urine sample collection
   - Monitor excretion of radioactivity

10.Treatment Priorities

a. Treat serious injuries

b. Consider all open wounds as contaminated

c. During initial trauma survey and external decontamination, assume visible metal pieces to be radioactive: remove and store in shielded containers

Contaminated shrapnel being dropped into lead box

d. Is surgery indicated?

- Complete within 36-48 hours; prior to onset of thrombocytopenia, leukopenia and immunosuppression, anemia

- Patients at risk for prolonged and impaired tissue healing, delayed callous formation in fractures, and other post-operative complications

Atraumatic Irradiation Management

11. Atraumatic Irradiation Management	Treatment decisions based on a. Focused history (medical and exposure) b. Adverse health effects (24–48 hours) and findings on physical examination c. Contamination assessment d. Laboratory test results
12. Focused History	a. Location? (inside or outside) b. Vomiting/diarrhea? (onset; frequency of) c. Loss of consciousness? d. Decontamination?
13. Physical Findings	a. Rise in core body temp b. Witnessed vomiting c. Additional cues: • erythema of skin, mucosa • nausea / diarrhea • salivary gland inflammation • headache, fatigue, • altered sensorium
14. Contamination Assessment	a. Trained personnel conduct contamination assessment or use portal monitors b. Victims identified with external contamination may be able to self-decontaminate
15. Laboratory Testing	a. Baseline CBC with differential • Absolute lymphocyte count b. Serum amylase q24 hours • Sensitive but not specific c. Collect and save additional blood in heparinized tubes d. 24-hour urine sample for cases of internal contamination

16. SUMMARY

a. Combined injury vs. atraumatic irradiation
b. Traumatic injury management takes precedence over radiological decontamination
c. Distinguish between thermal/chemical burns and radiation injury
d. Exposure history
e. Physical findings – prodrome onset
f. Contamination survey
g. Laboratory findings

Source: "Radiological and Nuclear Terrorism: Medical Response to Mass Casualties", a self-study training program for clinicians, developed by the Centers for Disease Control and Prevention, 2006.

For copies of this product, email cdcinfo@cdc.gov.
To learn more about responding to a radiological incident, visit http://www.bt.cdc.gov/radiation