Confirmation and Sources of Assistance and Support (cont.)

- For help in projecting clinical effects, contact
  - nuclear medicine physician
  - Medical Radiological Advisory Team (MRAT) at Armed Forces Radiobiology Research Institute (AFRRI) 301-295-0530
- Obtain complete blood count
  - absolute lymphocyte count <1000 mm³ suggests moderate exposure
  - absolute lymphocyte count <500 mm³ suggests severe exposure
  - Acute, short-term rise in neutrophil count
- Swab both nostrils
- Collect 24 hour stool if GI contamination is possible
- Collect 24 hour urine if internal contamination with radionuclides is possible
- CDC ATSDR Hotline 770-488-7100

Decontamination Considerations

- Exposure to a beam of radiation generally does not contaminate a patient. Patient contamination generally results from contact with radioactive particles.
- Treating contaminated patients before decontamination may contaminate the facility: plan for decontamination before arrival
- Exposure without contamination requires no decontamination (RSO measurement)
- Exposure with contamination requires Standard Precautions, removal of patient clothing, and decontamination with soap and 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

Treatment Considerations

- If life-threatening conditions are present, treat them first
- If external radioactive contaminants are present, decontaminate
- If radioiodine (reactor accident) is present, consider protecting the thyroid gland with prophylactic potassium iodide if within first few hours only (ineffective later). (Table 3)

Institutional Reporting

- If reasonable suspicion of a radiation event, contact hospital leadership (Chief of Staff, Hospital Director, etc)
- Immediately discuss hospital emergency planning implications

Public Health Reporting

- Contact local public health office (city, county or state)
- If needed, contact the FBI (for location of nearest office, see http://www.fbi.gov/contact/fo/fo.htm)

TERRORISM WITH IONIZING RADIATION GENERAL GUIDANCE
Pocket Guide

Confirmation and Sources of Assistance and Support

- Contact radiation safety officer (RSO) for help

Diagnosis: Be Alert to the Following

- Acute radiation syndrome (table 1) follows a predictable pattern after substantial exposure or catastrophic events
- Victims may also present individually, as described in table 2, over a longer period of time after exposure to contaminated sources hidden in the community
- Specific syndromes of concern, especially with a 2-3 week prior history of nausea and vomiting, are
  - thermal burn-like skin lesions without documented heat exposure
  - immunological dysfunction with secondary infections
  - a tendency to bleed (epistaxis, gingival bleeding, petechiae)
  - marrow suppression (neutropenia, lymphopenia, and thrombocytopenia)
  - hair loss

Understanding Exposure

- Exposure may be known and recognized or clandestine as
  - large radiation exposures, such as a nuclear bomb or catastrophic damage to a nuclear power station
  - small radiation source emitting continuous gamma radiation producing chronic intermittent exposures (such as radiological sources from medical treatment or industrial devices.)
  - skin contamination with radioactive material ("external contamination")
  - internal radiation from absorbed, inhaled, or ingested radioactive material ("internal contamination")

Confirmation and Sources of Assistance and Support

- Contact radiation safety officer (RSO) for help

Continued on back

August 2003

VA access card: http://www.oqp.med.va.gov/cpg/cpg.htm
DoD access card: http://www.qmo.amedd.army.mil

Produced by the Employee Education System for the Office of Public Health and Environmental Hazards, Department of Veterans Affairs.
# TABLE 1: ACUTE RADIATION SYNDROME

<table>
<thead>
<tr>
<th>Phase of Syndrome</th>
<th>Feature</th>
<th>Subclinical range</th>
<th>Sublethal range</th>
<th>Lethal range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0 – 100 rad or cGy</td>
<td>100-200 rad 1-2 Gy</td>
<td>200-600 rad 2-6 Gy</td>
</tr>
<tr>
<td>Prodromal Phase</td>
<td>Nausea, vomiting</td>
<td>none</td>
<td>5-50%</td>
<td>50 - 100%</td>
</tr>
<tr>
<td></td>
<td>Time of onset</td>
<td>3-6 hrs</td>
<td>&gt;24 hrs</td>
<td>2-4 hrs</td>
</tr>
<tr>
<td></td>
<td>Duration</td>
<td>&lt;24 hrs</td>
<td>&gt;24 hrs</td>
<td>&lt;48 hrs</td>
</tr>
<tr>
<td></td>
<td>Lymphocyte count</td>
<td>Unaffected</td>
<td>Minimally decreased</td>
<td>&lt; 1000 at 24 hr</td>
</tr>
<tr>
<td></td>
<td>CNS function</td>
<td>No impairment</td>
<td>No impairment</td>
<td>Cognitive impairment for 6-20 hrs</td>
</tr>
<tr>
<td>Latent Phase (subclinical)</td>
<td>Absence of Symptoms</td>
<td>&gt; 2 wks</td>
<td>7-15 days</td>
<td>0-7 days</td>
</tr>
<tr>
<td>Acute Radiation Illness or &quot;Manifest illness&quot; phase</td>
<td>Signs and symptoms</td>
<td>none</td>
<td>Moderate leukopenia</td>
<td>Severe leukopenia, purpura, hemorrhage</td>
</tr>
<tr>
<td></td>
<td>Time of onset</td>
<td>&gt; 2 wks</td>
<td>2 days - 2 wks</td>
<td>1-3 days</td>
</tr>
<tr>
<td></td>
<td>Critical period</td>
<td>none</td>
<td>4-6 wks - Most potential for effective medical intervention</td>
<td>2-14 days</td>
</tr>
<tr>
<td></td>
<td>Organ system</td>
<td>none</td>
<td>Hematopoietic and respiratory (mucosal) systems</td>
<td>GI tract Mucosal systems</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>%</td>
<td>0</td>
<td>&lt;5%</td>
<td>45-60 days</td>
</tr>
<tr>
<td>Mortality</td>
<td>None</td>
<td>Minimal</td>
<td>Low with aggressive therapy</td>
<td>High</td>
</tr>
</tbody>
</table>

### TABLE 2: SYMPTOM CLUSTERS AS DELAYED EFFECTS AFTER RADIATION EXPOSURES

<table>
<thead>
<tr>
<th>Headache</th>
<th>Fatigue</th>
<th>Weakness</th>
<th>Partial and full thickness skin damage</th>
<th>Hair loss</th>
<th>Ulceration</th>
<th>Lymphopenia</th>
<th>Neutropenia</th>
<th>Thrombopenia</th>
<th>Purpura</th>
<th>Opportunistic infections</th>
</tr>
</thead>
</table>

### TABLE 3: POTASSIUM IODIDE DOSAGES:

The dose of potassium should be taken once a day until a risk of significant exposure to radiiodines no longer exists.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants &lt; 1 month</td>
<td>16 mg</td>
</tr>
<tr>
<td>Children 1 months-3 yrs</td>
<td>32 mg</td>
</tr>
<tr>
<td>Children 3-18 yrs</td>
<td>65 mg</td>
</tr>
<tr>
<td>Adults</td>
<td>130 mg</td>
</tr>
</tbody>
</table>

* For information regarding preparation of potassium iodine solution: [http://www.fda.gov/cder/drugprepare/kiprep.htm](http://www.fda.gov/cder/drugprepare/kiprep.htm)