Exposure: Diagnose/Manage Acute Radiation Syndrome

Radiological/nuclear incident

How do you know a radiation incident has occurred?

Initial on-site activities

Perform lifesaving tasks before managing radiation problems

Evaluate for Contamination and/or Exposure

No contamination or exposure

Contamination Only

(What is Contamination?)

Exposure + Contamination

Exposure Only

(What is Exposure?)

Management Modifiers
- Burns
- Trauma
- Mace casualty
- Timing of surgery
- Blood products use
- At-risk/special needs populations

Evaluate for Acute Radiation Syndrome (ARS)
(What is ARS?)

Look for Signs of ARS
- Perform targeted physical examination

Estimate Dose from Exposure
- Use any clinical data available
  (Interactive Tools)
  - Lymphocyte depletion kinetics
  - Time to onset of vomiting
  - Additional symptoms
  - Chromosome analysis (dicentrics)

Dose reconstruction by patient location
- Match patient location to exposure map

Begin Assessment & Management
- Assess/manage 4 sub-syndromes of ARS:
  - Hematopoietic, gastrointestinal, cutaneous, neurovascular
- Does patient need outpatient or inpatient management? (Resources category tool)
- Plan for evolution of ARS over time
- Expect heterogeneity of signs/symptoms
- Consider using template for hospital orders

Special Issues
- Manage ARS with scarce resources
  (e.g., after nuclear detonation)
- Consider whole-cell cyclosporine to mitigate neutropenia if dose > 2 gray
- Consider multi-organ dysfunction and multi-organ failure syndromes of ARS
- Consider hematopoietic stem cell transplant for severe ARS

Survivors
- Discharge with appropriate follow-up instructions
- Update patient in incident database
- Radiation follow-up considerations
  - Whole-body dose
  - Immune status
  - Risk of cancer
  - Risk of specific organ dysfunction

Deceased
- Decedents with exposure only and no contamination require no special radiation precautions
- Register decedent in incident database

U.S. Department of Health & Human Services

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RADIATION EMERGENCY MEDICAL MANAGEMENT