

Management of Radiation Emergency Patients

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Radiation Emergency Assistance Center/Training Site

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reacts

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Terminal Objective

Understand how to handle and manage patients who are contaminated with radioactive materials while protecting healthcare providers

Enabling Objectives

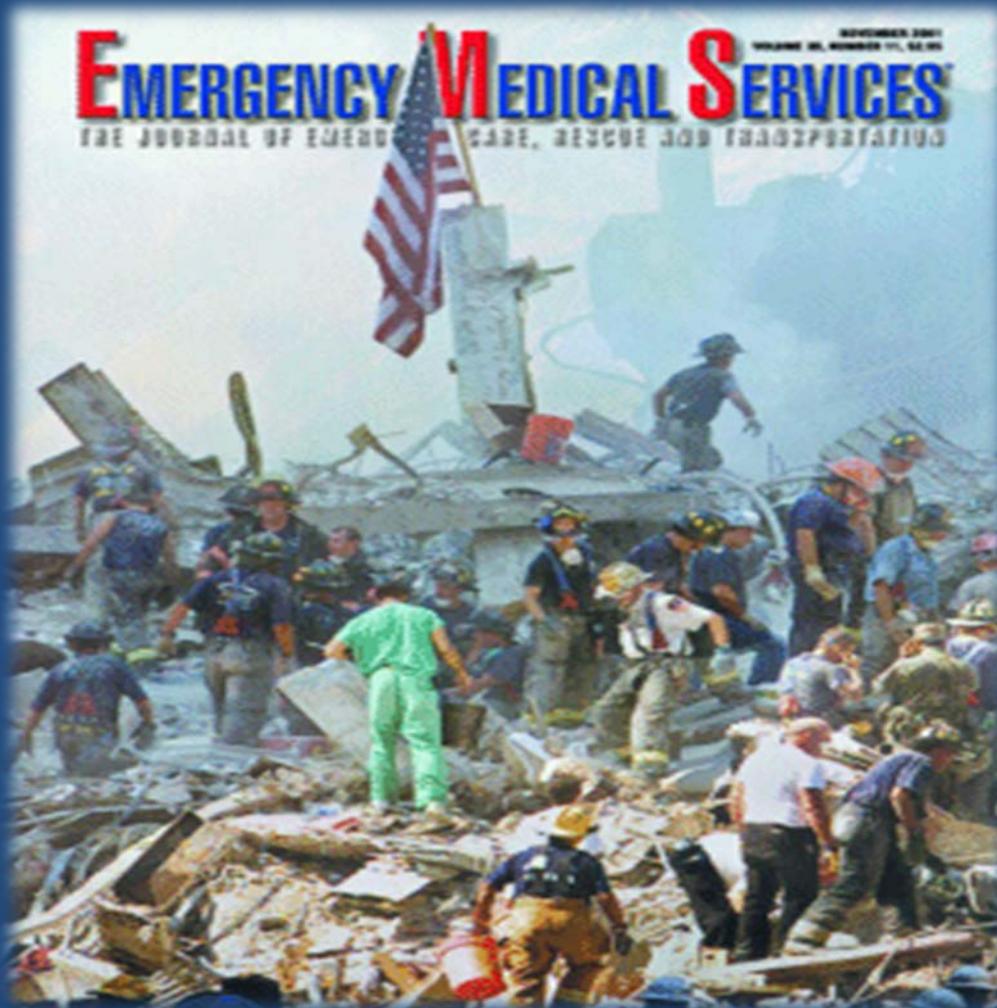
- Understand the appropriate priorities and adaptations required for the medical management of a patient contaminated with radioactive materials
- Describe the sequence of activities in the emergency care of the contaminated patient

Planning

- *Plans are of little importance, but planning is essential. – Winston Churchill*
- *Plans are nothing; planning is everything. – Dwight D. Eisenhower*
- *It's tough to make predictions, especially about the future. – Yogi Berra*

First Things First

- Irradiation and/or contamination do not constitute a medical emergency
- First priority is to take care of the patient's life-threatening medical emergency



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First Responders



Use three pre-rolled sheets

First Responders



First Responders



Cut off clothes – Cut away from airway

First Responders



Roll Contaminated Clothing Away From Patient

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First Responders



Cover and Roll Contaminated
Clothing In Sheet #1

First Responders



Contaminated outer clothing contained
Roll entire bundle away from airway

First Responders



Place backboard under
Sheet 2



“Clean” patient is on
clean backboard

First Responders



Sheet 3 provides a clean surface

Leave at scene with clothing unless otherwise directed

Protocol for Radiation Accidents

- Activation & Notification (Alert Process)
- Information Synthesis
- ED Preparation (if able)
- Patient Processing
- Treatment
- Decontamination
- ED Discharge
- Clean-up & Recovery

Activation and Notification (Alert Process)

- Who activates Emergency Plan?
- Who is notified and by whom?
- Where, When, and How to report in?
- Assigned Position and Function?

Information Synthesis

- Scene communications
- Incident commander/POC/designee
- Location and Time of accident
- Mechanism of injury

Information Synthesis

- Number of patients and condition (Medical and Radiological)
- Identification of radioactive material
- Type(s) of radiation injury
- In-house (Nuc Med, RSO) or outside expertise (REAC/TS, State Rad Health, etc)

Receiving Area Preparation

- Establish security
- Designate Areas: entrance, reception-triage, bathroom-showers, treatment, holding
- Removal unnecessary items & personnel
- Floor covering (optional)
- Ventilation considerations





Mobilize the Staff

- Put on protective clothing
- Obtain survey instruments and perform operational checks
- Issue personal dosimeters, if available



Donning PPE

Follow Your Protocol



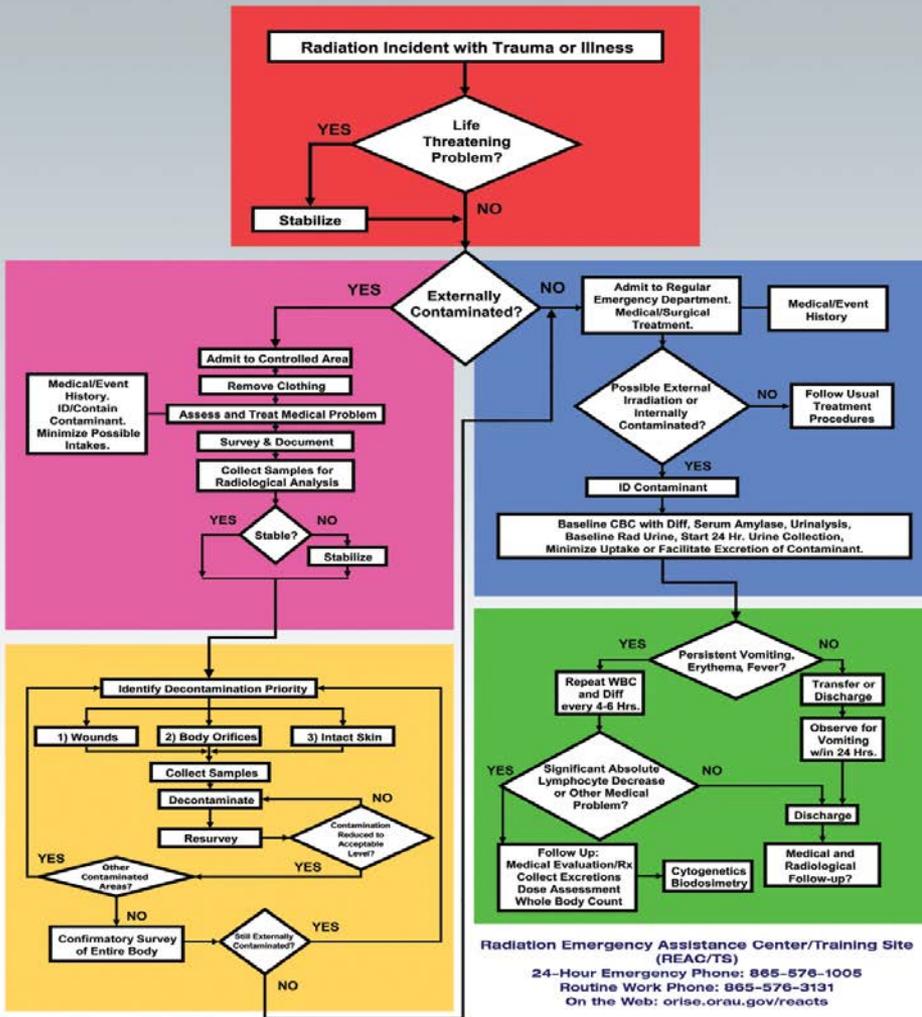
Donning PPE

(Follow Your Protocol)

- Put on outer garment or scrubs
- Put on shoe covers
- Put on inner gloves (can be helpful if different color from outer gloves)
- Tape sleeves and pants legs
- Outer gloves (two pair)
- Head cover
- Face shield
- Mask /airway protection



Radiation Patient Treatment



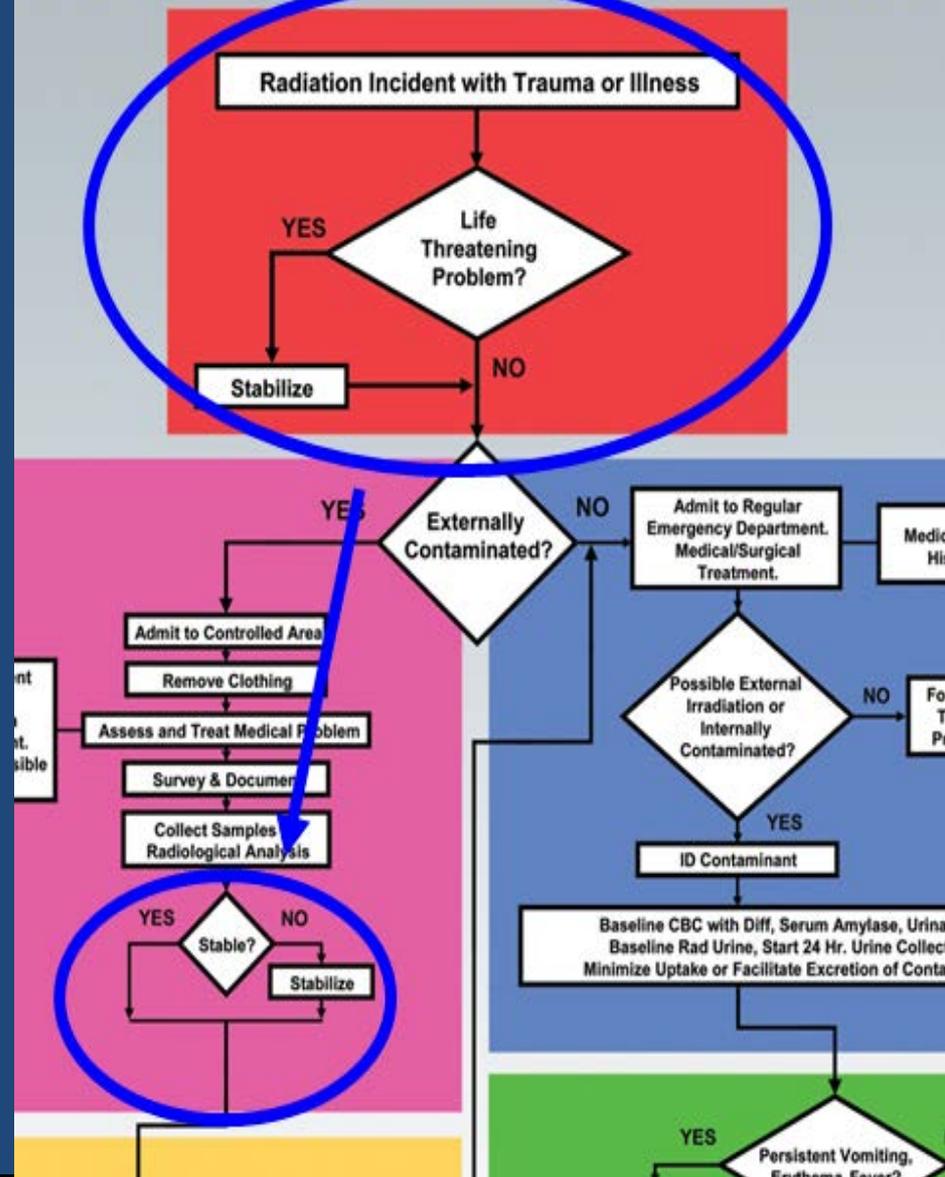
Radiation Emergency Assistance Center/Training Site (REAC/TS)
 24-Hour Emergency Phone: 865-576-1005
 Routine Work Phone: 865-576-3131
 On the Web: orise.orau.gov/reacts

REAC/TS Radiation Patient Treatment algorithm

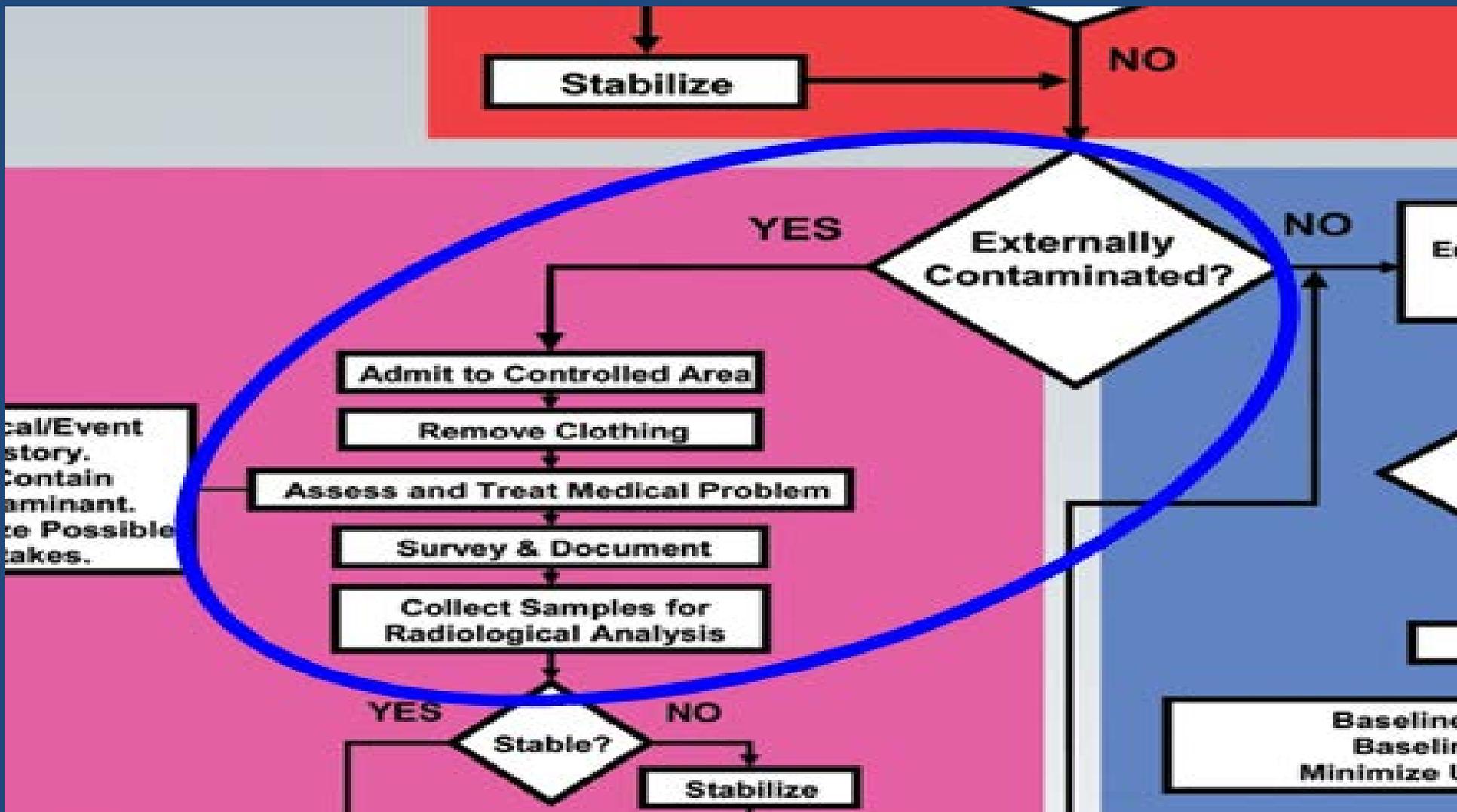
First Receivers

- If the patient is medically unstable at any time, stabilize first

Radiation Patient Treatment



External Contamination?



Patient Arrival and Stabilization

- Manage life threatening problems first
- Is patient contaminated?
- Remove patient's clothing and shoes
 - Double bag, label
 - Change gloves



Patient Arrival and Stabilization

- Roll outer contaminated clothing away from the “clean” skin, then change or survey gloves





- Complete log roll
- Roll sheet from head to feet
- Keep contaminated material away from patient's airway and “clean” skin



- Remove contaminated material from immediate area

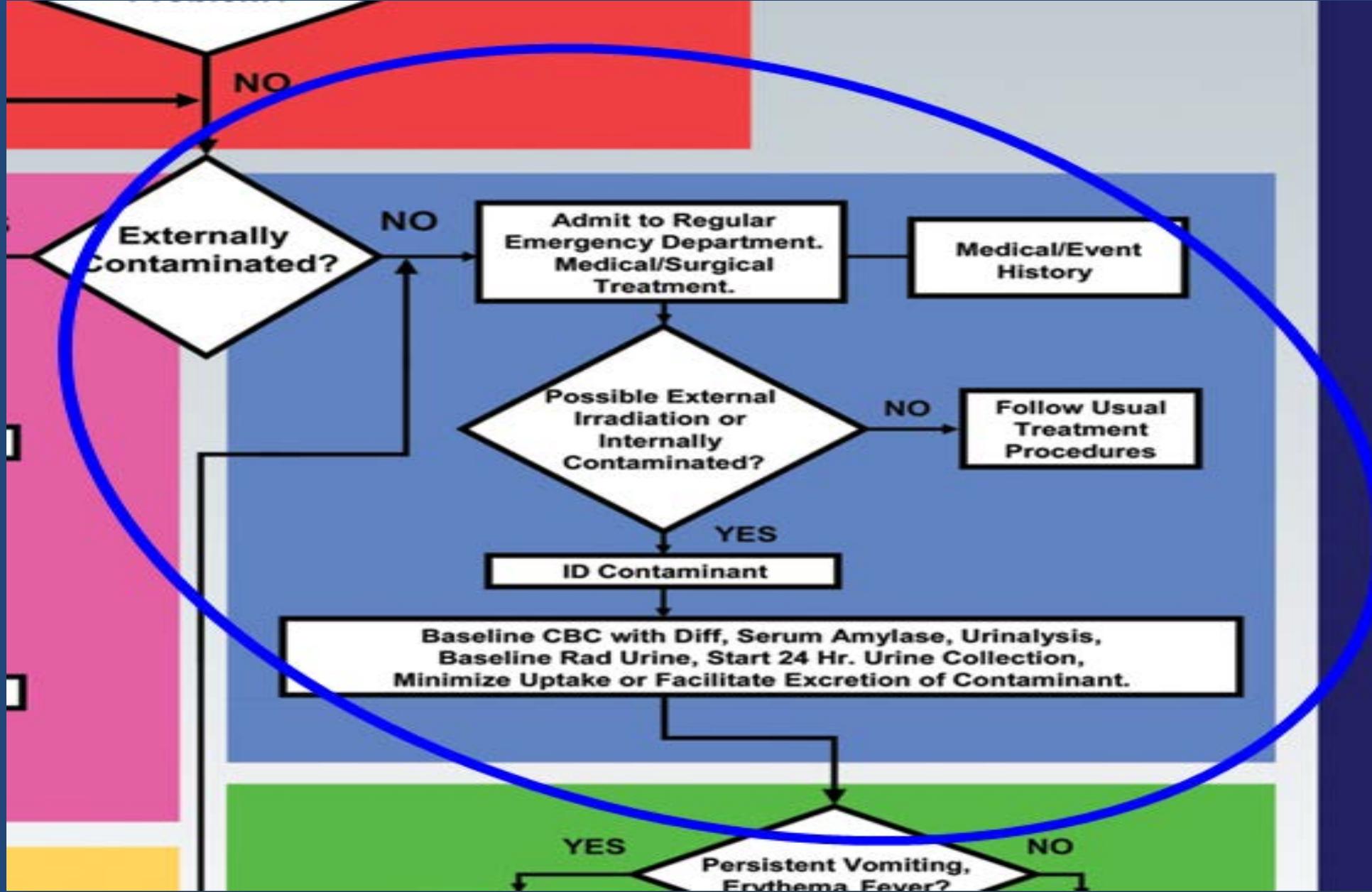
- Survey patient's back for contamination



Is there still contamination after removal clothing, sheets, etc.?

- If on face, is it on nasal swabs, in mouth, or in wound?
 - If on nasal swabs, represents ~ 10% of inhaled amount if done within first 30-60 minutes
 - If in mouth, may indicate significant ingestion as mouth will clear quickly





Is there suspected internal contamination?

- Consult with Health Physics, Radiation Safety, REAC/TS for dose estimation
- Consider medical countermeasures for possible internal contamination
- If in wound:
 - As always, explore the wound; local anesthetic
 - Irrigate (if actinides, may use DTPA)
 - Debridement
 - Closure

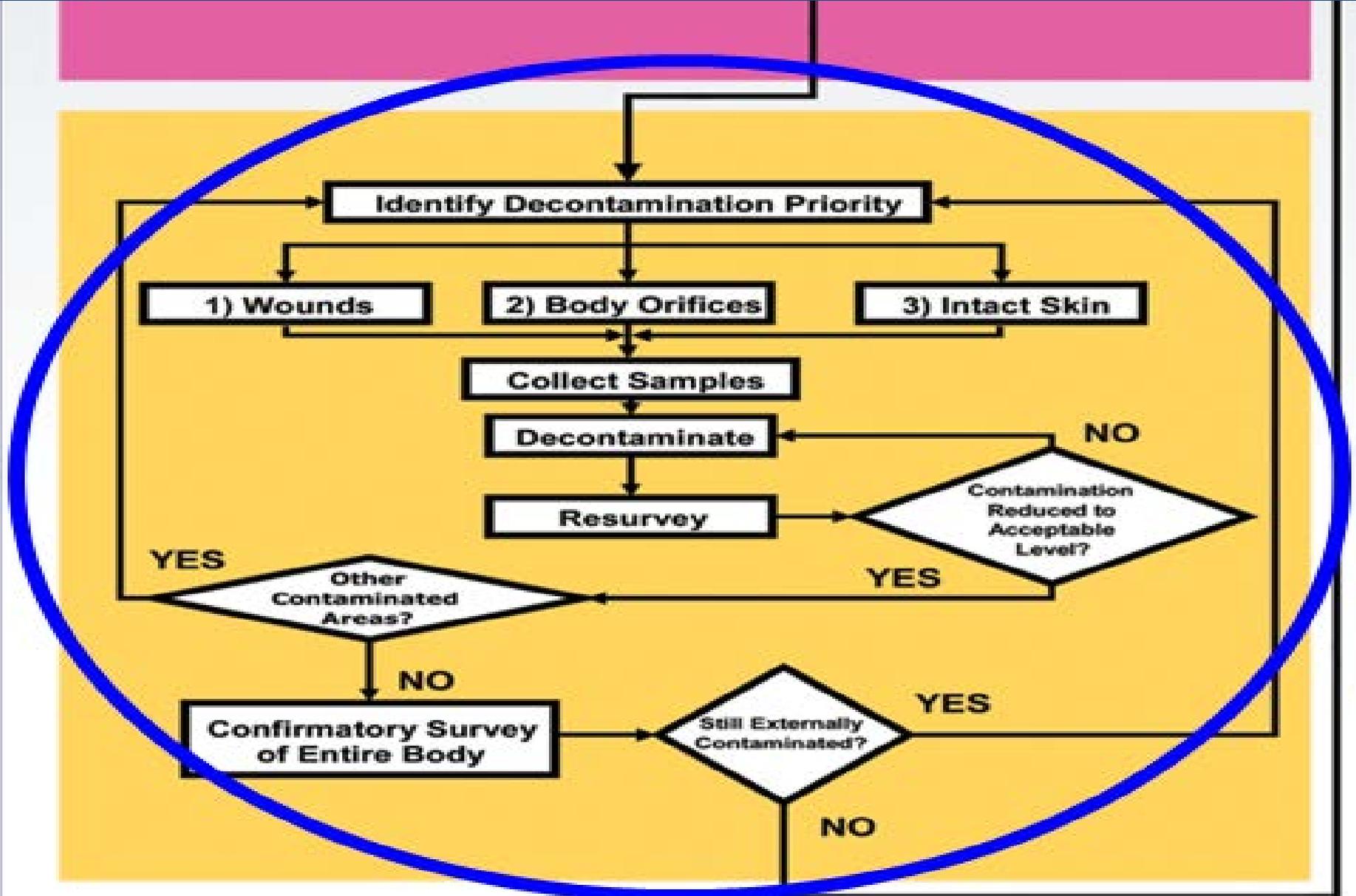
Use ALARA Principles





- Survey and define area of contamination at wound site

- Document background and initial wound reading





- Direct irrigation run off into lined garbage can







- Blot wound one time with each 4x4

- Do not spread contamination by using same gauze in multiple areas

- Cover and protect wound

- Remove drapes and pads



- Place clean chucks or pads
- Remove contaminated trash from immediate patient area



- Repeat survey
- Repeat decon efforts until
 - no improvement
 - skin irritation
 - 2-3 times background
 - OR, if patient becomes unstable



Doffing (Removing) PPE

- Outer booties (if worn)
- Outer gloves
- Pass dosimeter across control line (if used)
- Remove tape at cuffs and sleeves
- Head cover and face protection
- Outer garments (over shoe covers)
- Remove one shoe cover at a time/survey bottom of shoe/step across control line
- Remove inner gloves/drop back into contaminated trash
- Total body survey (If time/patient condition permits)

Chernobyl: 26 Apr 86

- 2 operators killed in explosion*
- 134 cases ARS in emergency workers
 - 28 died within first 3 weeks; 6 were firemen
 - 19 died 1987-2004 from various causes*
- **No known significant dose to medical providers**

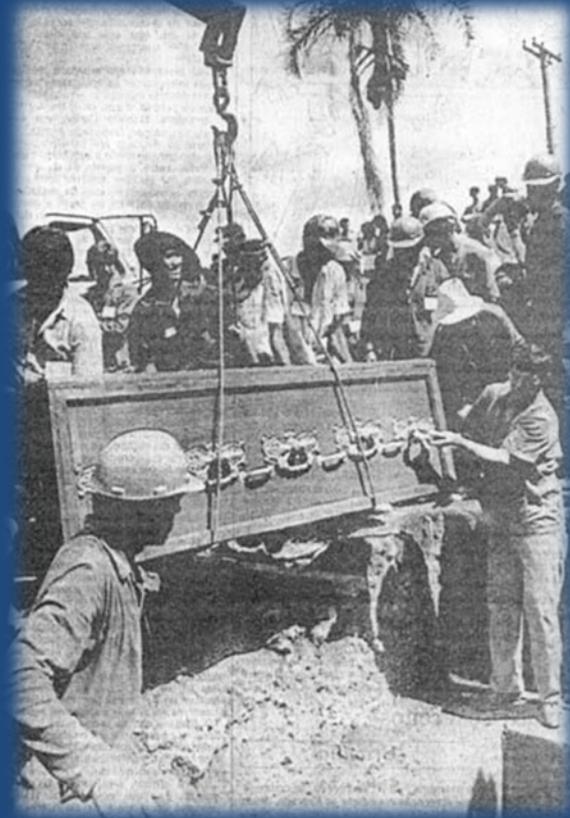


*World Health Organization, 2006

Goiania, Brazil

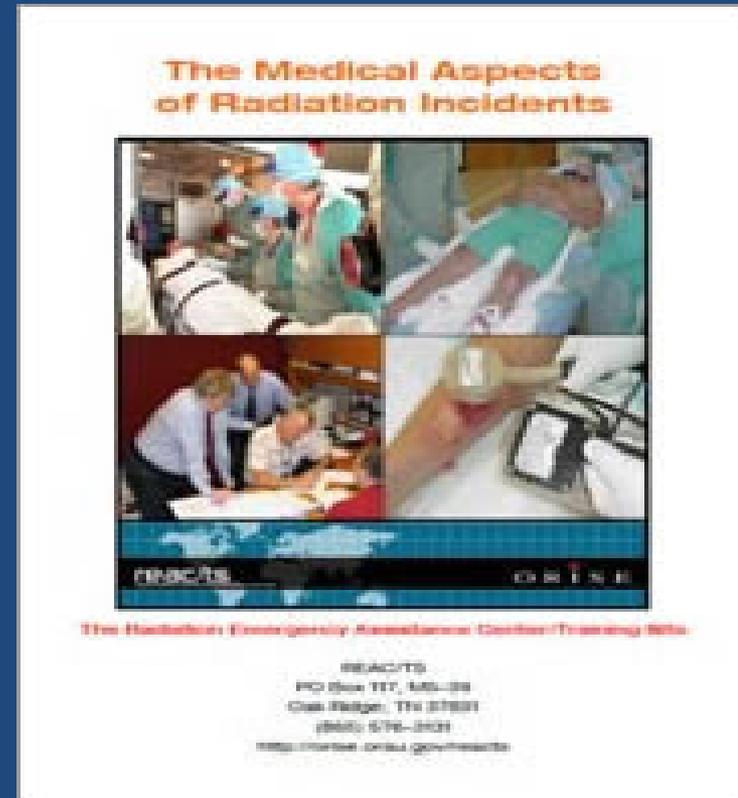
13 Sep 87

- 4 people die from exposure to Cs^{137}
- Youngest victim with highest known internal contamination, ever
- No clinically significant dose to medical providers



REACTS: ORISE.ORAU.GOV/REACTS

- Download E-Pub
 - The Medical Aspects of Radiation Incidents



***QUESTIONS?
THANK YOU!***

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