PLAN FOR FACILITY IN A COMMUNITY HOSPITAL FOR HANDLING CONTAMINATED ACCIDENT VICTIM

A leader should be appointed to be responsible for developing the plan and training the staff in emergency drills. The person should be a physician or senior staff nurse on the staff, preferably with some experience with radiation, such as a specialist in nuclear medicine, radiation therapy, clinical laboratory, emergency medicine, or surgery. The leader should be responsible for selecting a team, arranging its training, and designing a plan to meet the spectrum of radiation accidents that might involve the hospital. The team leader in cooperation with the hospital administrator should select the decontamination site and arrange for its equipment. The hospital administrator is usually responsible for arranging lines of communication with police, fire departments, rescue squads, and ambulance services.

The team - This should include (a) someone able to read radiation monitoring instruments and interpret the readings, (b) a person who can arrange for bioassay of specimens, (c) persons who can decontaminate a patient, provide standard laboratory work, and render emergency medical services, including surgery.

The facility - The room selected for decontamination should be close to the emergency facility, if possible, but preferably accessible by an entrance not used for the usual emergency admission. The room should have running water and, if possible, a shower, and a patient table from which contaminated wash water can be collected and stored in plastic containers for later assay before disposal.

Supplies and Procedures - see attached lists

DECONTAMINATION SUPPLIES KEPT AT HOSPITAL

Items to be Included:

Plastic sheets (bed size)
Plastic laboratory aprons
2 sets of gowns and caps
2 sets of scrub suits
Rubber gloves and disposable plastic gloves
Shoe covers
Small steel drum (5 gal. size)
Disposable tissue, roll of absorbent paper
Commercially available detergents and soaps
Scrub brushes
Cotton tip applicators and test tubes
Conjunctival irrigation set and appropriate solutions
Small polyethylene plastic bottles (½ gal. size)
Polyethylene bags (10 gal. size)
Tags and gum labels, marking pencils
2 one-quart ice cream containers
Envelopes
Masking tape (2 inches wide)
Radioactive survey meter - for beta and gamma radiation
Hair clippers
Bath towels
Wash cloths
Sponge mop and bucket
Small filter paper and coin envelopes for sample collection
Assorted sponges
Pocket dosimeters, 200 mR and 10 R
Remote handling tongs
Absorbent paper floor cover (with Kraft backing)
Non-skid plastic floor covers
Stripping paint
Surgical equipment stand
Surgical drapes and towels
Surgical instruments
Double basin stand
Tourniquets
Nasal irrigation set
Waste disposal pails
Saline
Sterile water
Ophthalmic ointment
Bulb syringes
Tape recorders and cassettes
Polaroid camera, flash bulbs, and film
Emergency Log

HANDLING AND DECONTAMINATION OF CONTAMINATED VICTIMS

June 1, 1976

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FIRST AID MEASURES IN RADIATION ACCIDENTS (Preferably to be taken at or near site of accident)

1. Any life threatening medical or surgical problem has priority over contamination problem and should be taken care of first.

2. Reduce radiation exposure by:

   a. Removal of clothing

   b. Decontamination of skin and wounds

   c. Decorporation by DTPA of internal contamination

3. Arrange for hospitalization

   a. For medical/surgical conditions needing treatment

   b. Total body exposure (> 30% > 50 rem) requires medical evaluation

   c. Local exposure (<30% > 500 rem) requires medical evaluation

GENERAL CONSIDERATIONS IF CONTAMINATION WITH RADIONUCLIDES IS PRESENT

1. Administer DTPA within one hour of internal contamination, decontaminate, while other medical care is given to patient

2. Avoid if possible contamination of: patient, room, equipment and personnel

3. Avoid spreading of radioactive dust or aerosols (masks required)

4. Collect fluids, excreta, vomitus, towels, etc., in special containers, label properly for later radioassay. If DTPA is given, 24 hour urine specimen is needed for evaluation of the treatment.

EXTERNAL CONTAMINATION

Before starting decontamination -
Assure the safety of the staff responsible for decontamination by protective clothing and masks.

Know:

- Where is the contaminated area of the body?
- Which is the hottest area?
- How extensive is the contamination?
- Is only clothing contaminated, the skin, the whole body, or wounds?
- What radionuclides are involved?

Decontamination (external)

1. Remove clothing

2. Wash patient with detergent and water for 2-3 minutes; use soft brush or pad; repeat 3-4 times. Avoid: thermal, mechanical, or chemical irritation. Measure activity in washing fluid.

3. If hair is contaminated, shampoo; clip hair if necessary.

FIRST AID MEASURES IN CONTAMINATED WOUNDS

Factors to be considered:

1. Extent and location of the wound

2. Properties of the radionuclide (solubility, toxicity, T-1/2)

Contamination with soluble radionuclides:

1. Immediate venous tourniquet

2. Clean with running water or 3% H_2O_2

3. Sterile dressing, monitor for activity

4. Decontaminate the area around the wound

5. Initiation of decorporation with DTPA* if indicated (Physician)

6. Decision concerning need for surgical decontamination

Contamination with insoluble radionuclides:

1. Don't stop bleeding, wash the wound

2. Sterile dressing

3. Decontamination of wound

4. Decision on surgical decontamination:

   a. Failing of conservative decontamination

   b. Insoluble radionuclide, toxic and with long T-1/2

   c. More than 500 mrem/year maximum

CHOICE OF AGENTS FOR DECONTAMINATION (if soap and water do not do the job)

1. Mixture of 50% Tide and 50% cornmeal made into paste with water

2. Mildly abrasive soap (Lava)

*For dose and frequency of administration, see under special consultant sources.

3. 30% Tide, 65% calgon, 5% carboxyl-methyl cellulose as a 5% solution in water

4. Chlorox - undiluted for small areas, otherwise dilute 1:4

5. Apply ammonium citrate or citric acid (3%), rub gently for about 5 minutes, wash with water

6. Rinse or soak in stable isotope solution

7. Remove outer layer of the skin with 4% potassium permanganate, remove stain with 4% sodium bisulfite (use this method only in extremely stubborn cases)

Decontamination should be as thorough as practicable

SPECIAL LABORATORY AND MEDICAL CONSULTANT SERVICES NEEDED

A. A case with incorporation of radioactive material but without surgical problems could be handled by a specialist in Nuclear Medicine or a Radiopathologist. For this type of problem equipment and facilities for in vivo and in vitro radioassay is needed. Arrangements should be made as part of the emergency response plan.* Disposal and/or storage of specimens could become a problem, which, however, will be handled by NRC officials.

B. In a case with internal contamination by inhalation the same specialists and techniques as outlined under "A" are needed. In vivo measuring of low energy x-rays requires special whole body counters.

C. For the treatment of contaminated wounds a surgeon familiar with surgical decontamination procedures should be available. Radioassay capabilities are needed as for "A" and "B." A wound monitor would be a special piece of equipment not needed in a general hospital.

For proper care of problems "B" and "C" either the patient may have to be moved to a major hospital center like REAC/TS or a specialist and wound probe may have to be brought to the community hospital. Arrangements for the latter should be made in advance and established by letter agreement.

*If the hospital has the responsibility to take care of patients with incorporation of transuranium elements, provisions for the availability and dose schedules of DTPA have to be made in advance through REAC/TS (telephone 615 576-3131)

The enclosed plan for handling and treating persons contaminated in radiation accidents is not a fixed set of rules. Obviously preparations and plans will vary for different nuclear installations and the hospitals taking the medical responsibilities for them.

The information is given to you only as a recommendation and a general overview of what is needed to provide proper help to contaminated accident victims. REAC/TS does not develop emergency response plans nor set up decontamination facilities for medical institutions.