Canadian Radiation Emergency Medical Management Guide

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Background1

- Emergency population monitoring and medical management

- Currently available resources
  - US CDC Population Monitoring Guide
  - US DHHS: Radiation Emergency Medical Management
  - US REAC/TS: The Medical Aspects of Radiation Incidents
  - TMT Handbook: Triage, Monitoring and Treatment of People …
  - IAEA EPR-Medical (2005): Generic procedures for medical response during a nuclear or radiological emergency
  - Several NCRP documents

Background2

But, in Canada…

- Only a training package: The Medical Emergency Treatment for Exposure to Radiation (METER)
- CMAJ 183(9), June 14, 2011 “Canada ill-prepared for radiation emergencies” (by Roger Collier): Health Canada has no formal guidelines for radiation emergency medical management

Objectives, Scope, Project and Team

- A national guide with comprehensive coverage of monitoring and treatment but clear, simple, and easy to use for public health, emergency response, and hospital professionals

- For large scale emergencies such as RDD or NPP incidents, but not for nuclear detonations such as an IND

- Led by Health Canada and Department of National Defence, supported by:
  - Other federal agencies
  - Provinces
  - Municipalities
  - Hospitals

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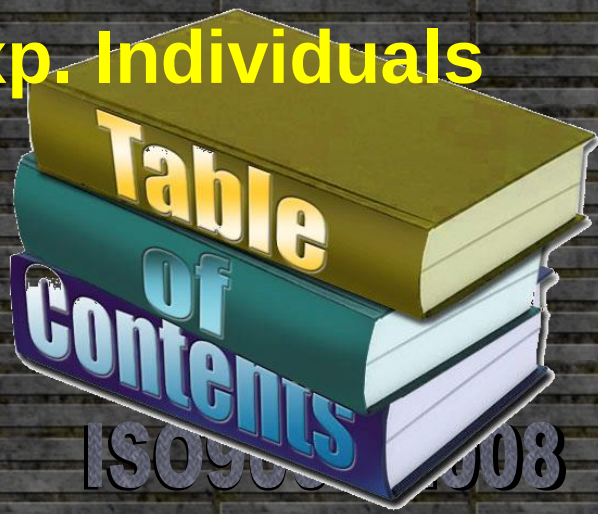
Contents

- Chapter 1: Introduction
- Chapter 2: Rad. and Rad. Emergencies
- Chapter 3: Management of Rad. Emergencies
- Chapter 4: Pre-hospital Medical Response and Population Monitoring
- Chapter 5: In-hospital Medical Response
- Chapter 6: Follow-up of Pot. Exp. Individuals
- Chapter 7: At-Risk Populations



Chapter 2: Rad. and Rad. Emergencies

2.1 Radiation Basics
2.2 Radiation Health Effects and Radiation Protection
2.3 Radiation Detection and Measurement
2.4 Radiation Emergency Scenarios
- Spill of a radioactive material
- Loss of a radiation source
- Radiological exposure device (RED)
- Radiological dispersal device (RDD)
- Contamination of food and water supplies
- Accidents at nuclear facilities
- Deliberate attacks on nuclear facilities

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Chapter 3: Responding to Rad. Emergencies

3.1 Key Considerations in Responding to a Radiation Emergency
- The Canadian Context
- Scarce Resources

3.2 First Responders and Medical Receivers
- General guidance for first responders and medical receivers
- Guidelines for personal protection
- Procedure for contamination survey
- Procedure for contamination control and decontamination

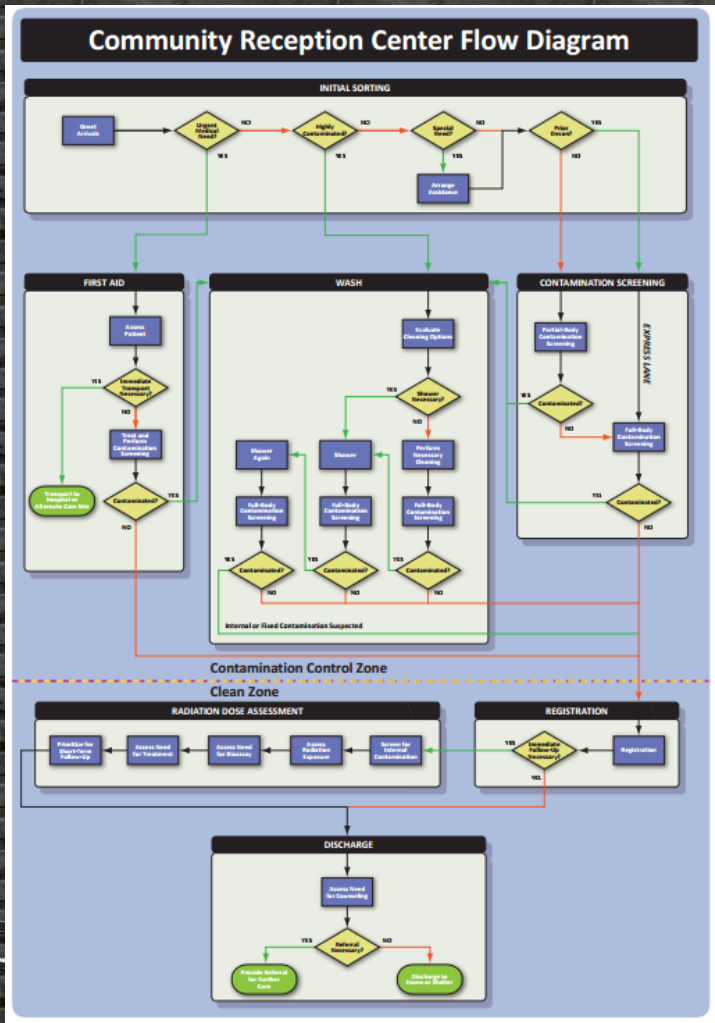
3.3 Role and Responsibilities of Federal, Provincial, and Local Public Health Agencies
- PNEP
- Provincial Plans

3.4 International Assistance

Chapter 4: Pre-Hospital Medical Response and Population Monitoring

4.1 On-site Medical Response
- Initial actions of medical and radiation safety personnel
- Medical triage
- Transport of patients

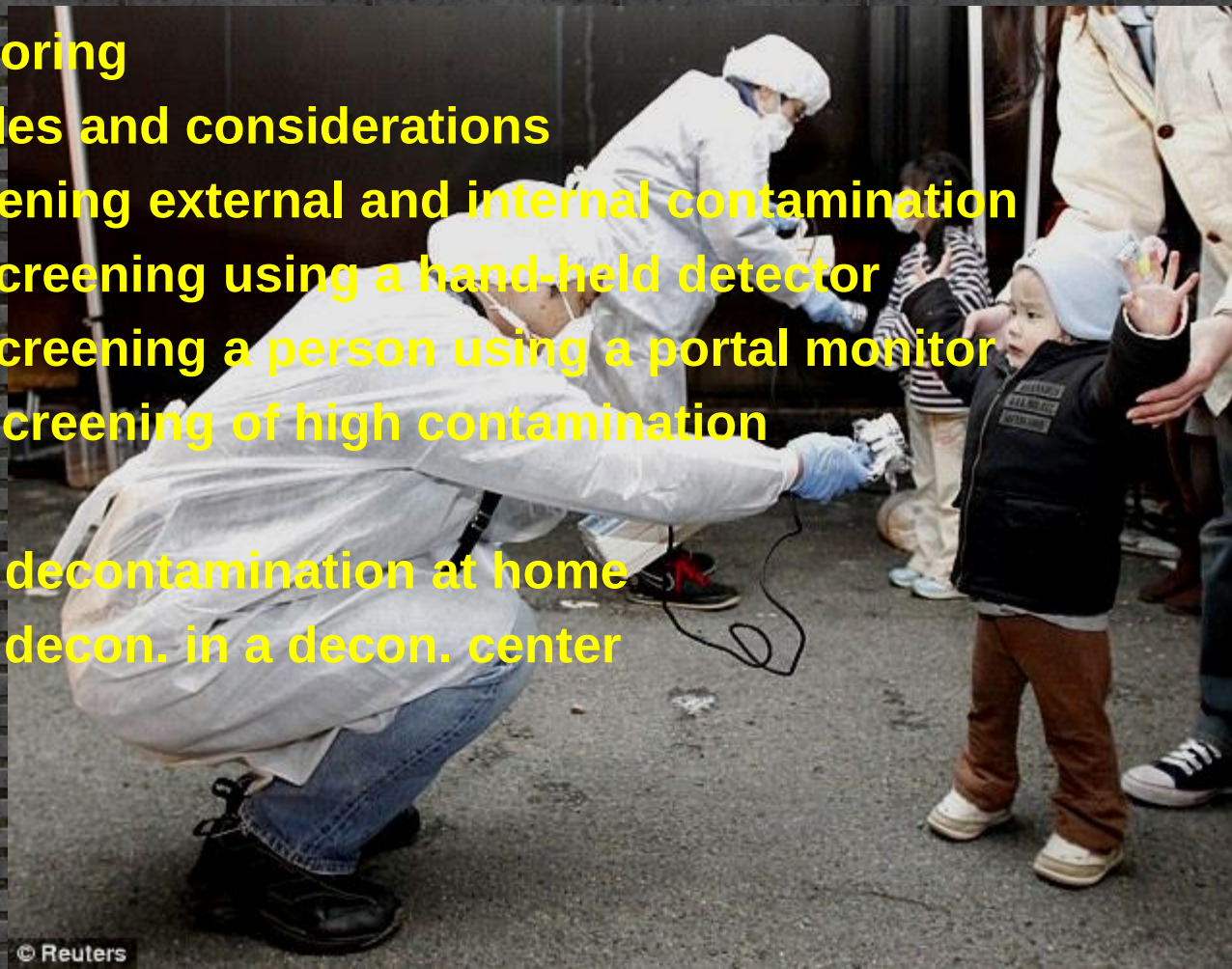
4.2 Community Reception Centers (from: US CDC)
- Initial Sorting
- First aide
- Contamination screening
- Wash Station
- Registration
- Radiation Dose Assessment
- Discharge



Chapter 4: Pre-Hospital Medical Response and Population Monitoring

4.3 Population Monitoring
- Guiding principles and considerations
- Criteria for screening external and internal contamination
- Procedure for screening using a hand-held detector
- Procedure for screening a person using a portal monitor
- Guidelines for screening of high contamination

4.4 Decontamination
- Instructions for decontamination at home
- Instructions for decon. in a decon. center



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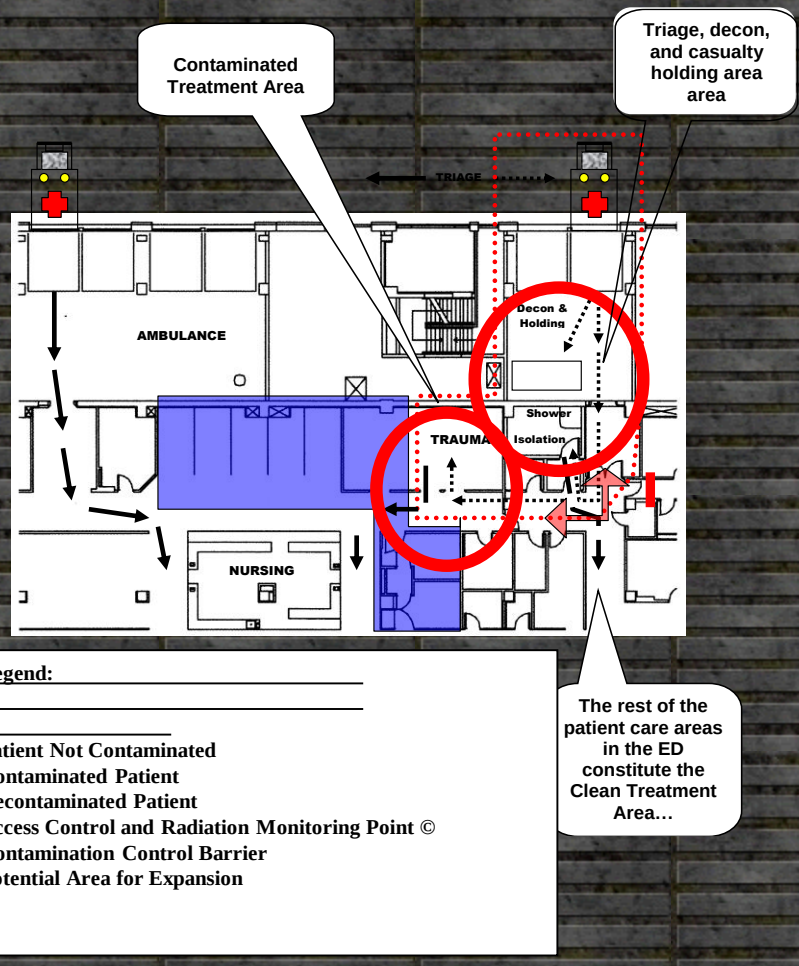
Chapter 5: In-Hospital Medical Management

5.1 General Issues
- Hospital disaster plan for RE
- Psychological support to staff

5.2 ED Preparation
- Reception and triage area
- Contaminated treatment area
- Decontamination area

5.3 Medical management of rad. emergencies
- Life threatening medical conditions
- Exposed but not contaminated
- External contamination
- Internal contamination



Chapter 5: In-Hospital Medical Management

5.4 Treatment of Internal Contamination

- Internal contamination pathways
- Methods for identifying and quantifying internal contamination
- Reducing exposure from internal contamination
- Trigger to treat
- Specialized tests for internal contamination

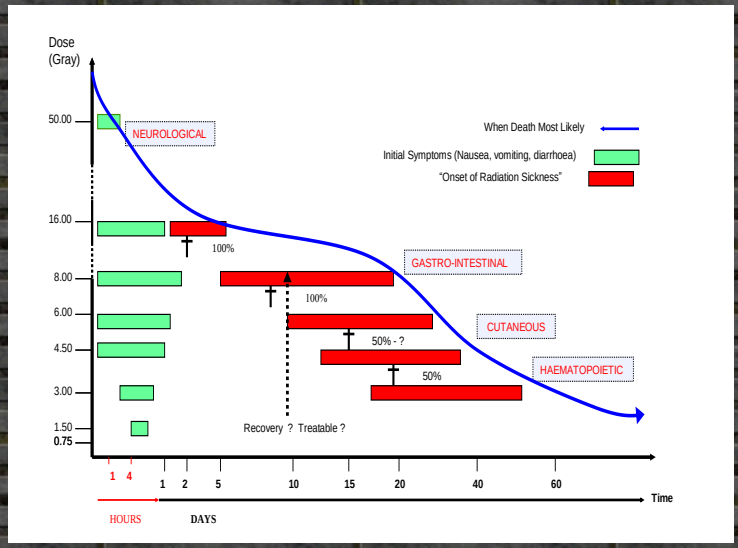
Contaminant	Treatment	Dose and Administration
Co-60, Ir-192, Pu-238, Am-241	DTPA	1g iv Ca-DTPA on day 1, followed by 1 g iv Zn-DTPA - slow iv push or iv infusion over 30 min diluted in 100-250 ml 5% dextrose in water Nebulized inhalation is an alternate route.
Sr-90, Ra-226	Barium sulphate Sodium alginate Ca-gluconate	· 300g PO single dose · 5g PO bid, then 1 g qid with water (Gaviscon) · 2.5g IV infusion over 4 h diluted in 500ml of 5% dextrose in water; daily up to six days
I-131	Potassium Iodide	Age dependent dose; 130mg po for adults
Cs-137	Prussian Blue	1 g tid PO
Po-210	Dimercaprol Penicillamine	· 2.5 mg/kg IM q4h for 2 d, then bid for 1 d, then daily for days 5-10 · 250 mg PO daily between meals and at bedtime; may increase to 4-5 g daily in divided doses

Chapter 5: In-Hospital Medical Management

5.5 Treatment of ARS
- Characteristics of ARS
- General principles for managing ARS
- Specialized test: DCA

5.6 Treatment of CS
- Response of skin to radiation
- Clinical course of CS
- Assessment of cutaneous radiation injury
- Managing radiation burns

5.7 Treatment of other injuries
- LRI
- multi-organ failure
- combined injury



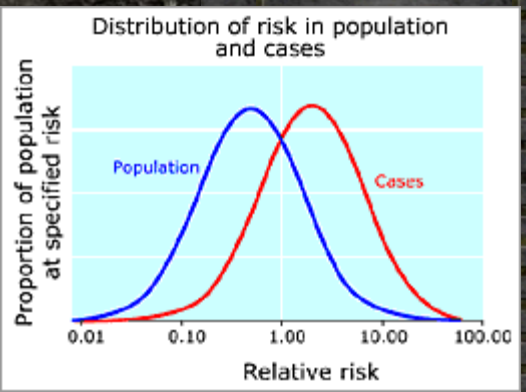
Chapter 6: Follow-up of Potentially Exposed Individuals

6.1 Follow-up for psychological support

6.2 Follow-up for medical reassessment

6.3 Follow-up for delayed effects

- Medical monitoring
- Epidemiological study



Chapter 7: At-risk Populations

7.1 Children
- Vulnerability
- Planning phase
- Response phase
- Recovery phase

7.2 Pregnant Women

7.3 The elderly and persons with physical or mental disabilities

7.4 Ethnic groups with linguistic or culture barriers

7.5 Aboriginal communities

7.6 Owners of pets or farm animals

Summary

- Psychosocial aspects and protection of workers are covered in various chapters.
- National and international review will be conducted this summer.
  - Simultaneous process to save time
- The document is expected to be published by the end of 2012.
  - First draft is completed and has entered initial review phase.
  - 160 pages

THE END