

CANADIAN RADIATION EMERGENCY MEDICAL MANAGEMENT GUIDE

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Abstract

Following a radiological or nuclear emergency, such as the recent one that occurred in Fukushima, Japan, a large population may need to be monitored for potential radiation exposure or contamination. For those who suffered radiation injuries or radioactive contamination, timely medical treatment and long-term follow-up may be necessary. The Canadian Radiation Emergency Medical Management Guide is being developed for use by medical staff in hospitals, and personnel working in public health and emergency management in the federal, provincial, and municipal agencies. It focuses on population monitoring and medical management of a large population during a radiation emergency. The guide takes into consideration unique Canadian challenges such as sparse pockets of expertise and cold weather.

Key Words: Radiological emergency, nuclear emergency, population monitoring, medical management, radiation medicine

1. Call for a National Guide

During a radiological or nuclear (RN) emergency, a significant number of people, including first responders, may be exposed to radiation or contaminated by radioactive materials. Timely screening and management of the affected populations are important components of consequence management. While certain jurisdictions in Canada have developed or are developing health consequence management plans, there is no national guidance for radiation emergencies¹. A national guide on the medical management of radiation emergencies will provide a common framework from which hospitals and provincial/municipal public health and emergency management officials can base their response plans.

2. Objectives and Scope

The purpose of the Canadian Radiation Emergency Medical Management Guide (the “Guide”) is to provide easy to follow guidance for screening and managing populations that may have been exposed or contaminated during a radiological or nuclear emergency (called “radiation emergency” in the “Guide”). This guide is intended for medical responders and receivers, and public health and emergency management personnel in various jurisdictions and agencies across Canada. Technical flow-charts, guidelines, and procedures are listed separately as Annexes. Information contained in this guide can be adapted by users according to their own needs. The guide makes some general recommendations related to instrumentation, materials, and procedures, while recognizing that their practicability may vary across the country.

This guide addresses large scale radiation emergencies such as accidents in nuclear facilities and malevolent actions against civil society, where a significant number of first responders and general public could be affected. Catastrophic events such as a detonation of an improvised nuclear device (IND) or full-blown nuclear warfare are beyond the scope of this guide.

3. Major Contents

There are two major chapters in this guide – Pre-hospital medical response and population monitoring and In-hospital medical response. The guide begins by presenting information on radiation basics and describing a general response to radiation emergencies, while taking into consideration unique Canadian challenges such as sparse pockets of expertise and cold weather.

The chapter on pre-hospital medical response and population monitoring addresses the management of crowds, on-site medical response, the function and operation of community reception centers, screening populations for external or internal radioactive contamination, decontamination procedures, and transportation of patients to hospitals. Detailed procedures and flow-charts are included as Annexes.

The chapter on in-hospital medical response covers the hospital disaster planning, the preparation of the hospital emergency department for treating contaminated patients, triage of radiation casualties, patient decontamination, and medical management of radiation casualties, with emphasis on treating acute radiation syndrome, cutaneous radiation syndrome, and internal radioactive contamination. Specialized tests, procedures for assessing radiation dose, drug information, and flow-charts are listed as Annexes.

Following these two chapters, the guide addresses special needs populations that are more vulnerable in radiation emergencies, social and psychological support requirements, long-term monitoring of exposed/contaminated individuals, and protection of workers during radiation emergencies.

4. Reference Documents

Guidance documents and on-line resources on radiological population monitoring and medical management have been developed by government agencies in the United States²⁻⁴, while a handbook on triage, monitoring and treatment of people exposed to radiation has been developed by a group of experts in Europe⁵. In addition, international organizations such as the International Atomic Energy Agency (IAEA) and the International Commission on Radiological Protection (ICRP) have published guiding documents on this topic⁶⁻⁷. They are the most important references for this guide. A medical management tool for treating radiation injuries developed by colleagues in Canada is also referenced⁸.

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