

# The Role of the World Health Organization in Strengthening Capacity of the Member States for Preparedness and Response to Radiation Emergencies

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## Background

Years have passed after the horrifying times in history, healing scars left by the atomic bombing of Hiroshima and Nagasaki in Japan and by the Chernobyl disaster in Ukraine. Both events taught the international community their lessons. Aside from political and moral lessons learnt from these events, a fundamental scientific knowledge on health effects of ionizing radiation has been acquired and continues to build on the experience coming from Japan and Chernobyl.

A new concept of international cooperation was developed and implemented after the Chernobyl accident. Two international conventions were adopted in 1987: The Convention on Early Notification and the Convention on Assistance in case of a radio-nuclear emergency.<sup>1</sup> According to these Conventions, in case of a cross-border accident, a Member State is obliged to notify the IAEA and is entitled to request for assistance when necessary; the international community, those states which are parties to the Conventions, would be obliged to provide assistance under the Convention on Assistance.

In the framework of the two Conventions the system of the international response to radio-nuclear emergency has been set up under the leadership of the International Atomic Energy Agency and including WHO, WMO, FAO, EC, NEA, and other parties members of the Inter-Agency Committee on Response to Nuclear Accidents (IACRNA). The mechanism of the response and roles of each party are defined in the Joint Plan of the International Organizations for the Response to Radiation Emergency.<sup>2</sup> The Joint Plan is adopted by 8 international organizations including the WHO.

## Cooperation with the IAEA

The WHO works very closely with IAEA in this field. The IAEA-WHO liaison for radiation emergency response operates between the Section of Emergency Preparedness and Response at the IAEA, and the Radiation and Environmental Health Program at the WHO. The

joint responsibilities under this cooperation include co-sponsoring of safety standards, guidelines, and technical reports, development of training materials, holding of joint training courses (regional/national), and finally the medical response to radiation emergencies in the form of joint assistance missions.

Publications prepared jointly by the WHO and IAEA include the following fundamental publications: GSR-2 Publication entitled "Requirements for Preparedness and Response for Nuclear or Radiological Emergencies",<sup>3</sup> Generic Procedures for Medical Response during Nuclear or Radiological Emergencies,<sup>4</sup> various technical reports, case reports, and other publications.

Practical tools for physicians were jointly developed in collaboration with the IAEA, namely, a leaflet "How to Recognize and Initially Respond to an Accidental Radiation Injury", which is also available as a poster and is translated into several languages UN. A training material for physicians on medical preparedness and response to radiation emergency was issued in 2002 both as a CD and an interactive tool on the web.

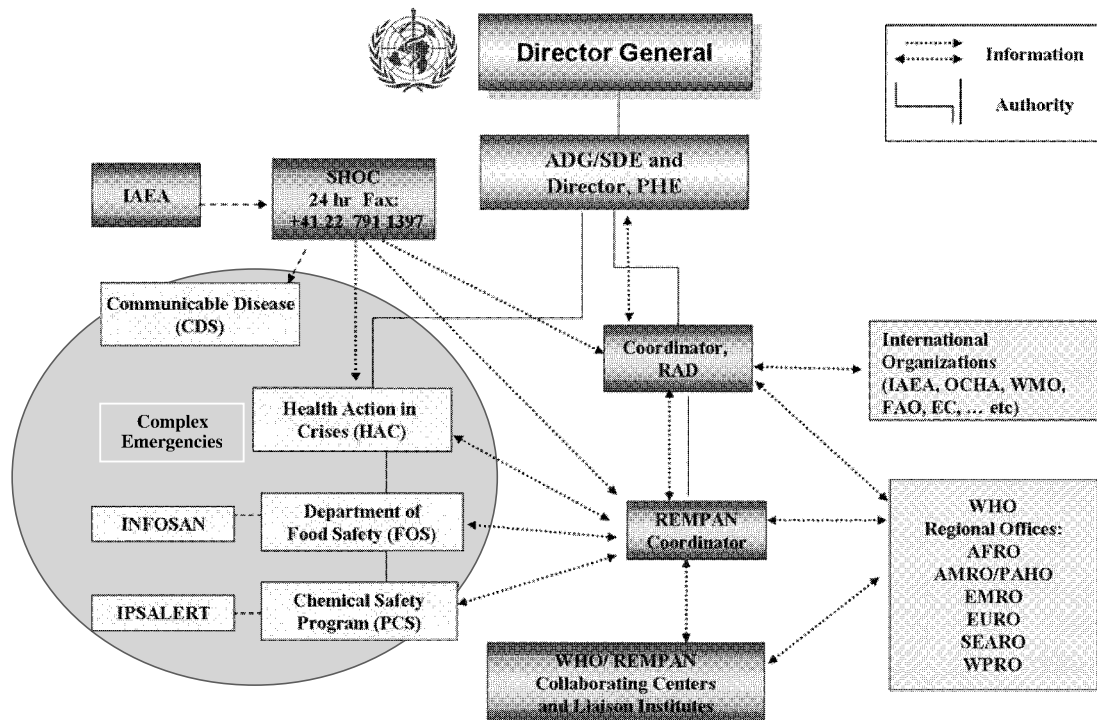
## WHO REMPAN Centers for Medical Assistance in Radiation Emergencies

In 1987, to fulfil its responsibilities under the two Conventions and the Joint Plan the WHO established a network of medical and research institutions. Today, the WHO Radiation Emergency Medical Preparedness and Assistance Network (REMPAN) comprises some 30 centers around the world (Figure 1). Members of the network are medical institutions specialized in the various fields of medical response to radiation emergency.<sup>5</sup> In Japan, REMPAN is represented by the nation's leading centers, such as RERF in Hiroshima, Nagasaki University and NIRS in Chiba.

The terms of reference for the network include:

- the network maintains regular communication before, during and after accidents;
- upon official notification from IAEA, WHO immediately dissemi-

## WHO/HQ radiation emergency information chart



**Figure 1.** The flow of communication at the WHO and to the organizations within and elsewhere, in case of a radiation emergency or exercise.

- nates information to network members for action as appropriate;
- in emergency, WHO identifies a network member/s to address specific medical assistance requests of a Member State;
- the network provides a clearing house for information by sharing databases on over-exposed patients, radiation injuries, diagnosis, treatment outcomes, and long-term follow-up;
- the network convenes biennial coordination and planning meetings providing professional forum;
- the network members advise to Member States, provide information to public, education/training and practical tools for professionals, and promote harmonized protocol for medical and public health response to radiation emergencies;

### Communicating in Emergencies

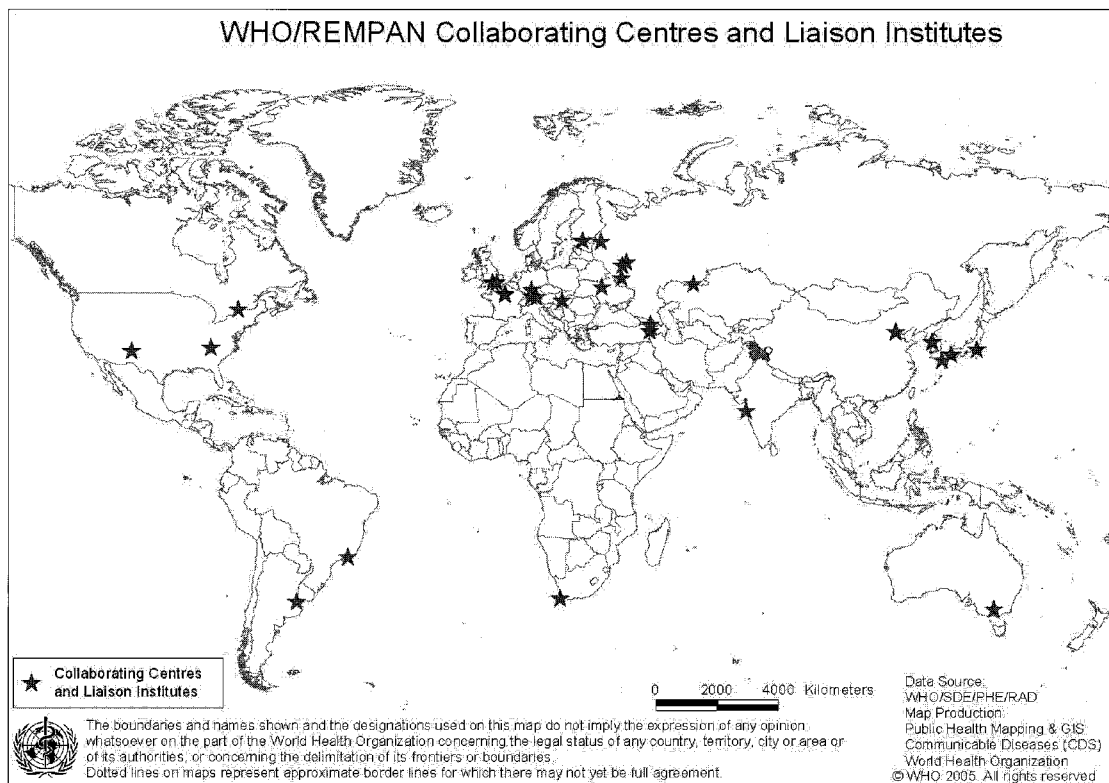
The types of radiation emergencies that may occur include variety of scenarios from nuclear weapon detonation to situations related to natural disasters such as floods and earthquakes and use of improvised radiological dispersal devices, or "dirty bombs", which probably are the most likely scenario. There have also been a number of significant radiation incidents around the world involving accidental exposure from orphan-sources, such as incidents in Brazil, Georgia, Turkey, etc. Finally there are numerous accidents involving lower exposures which practically happen daily in industry, medicine, or research facilities around the world.

When a radiation accident happens, the first medical response comes through the local public health system, and at further stages, the regional, state or national public health agencies become involved, if necessary, national health authorities may request international assistance from IAEA.

When a Member State requests assistance, this request first goes to the IAEA's Incident and Emergency Centre (IEC). Then through the emergency communication network system (ERNET), the information about the accident is forwarded to international organizations, parties to the Joint Plan, including the WHO.

Sometimes the information arrives through mass media channels. According to the Joint Plan, prior to any actions it should be first verified by the IAEA. The WHO will be involved upon an official request for medical assistance from a Member State.

The communication flow inside the WHO is described in the WHO internal guide document.<sup>6</sup> According to the standard operation procedures, the information arriving from the IAEA comes the Strategic Health Operation Centre (SHOC), which is a 24-hour emergency response facility of the WHO. If an emergency situation has a complicated nature involving various risk factors, other structures within the WHO may get involved as appropriate, such as Health Action in Crisis Department, Department of Food Safety, Chemical Safety and Health Programme (Figure 2). Each of these Departments and Units work with their respective international networks, namely International Food Safety Network (INFOSAN) and International Program on Chemical Safety (IPCS) with its' Global Outbreak



**Figure 2.** The collaborating centres of WHO's Radiation Emergency Medical Preparedness and Assistance Network (REMPAN) include 31 locations all around the world as of September 2005.

#### Alert and Response Network (GOARN).

The information from SHOC is immediately forwarded to the Coordinator of the WHO Radiation and Environmental Health Program and REMPAN Coordinator who communicates this information to the REMPAN centers as appropriate. Depending on the nature and scale of the accident, this network may be activated or distributed the information. WHO Headquarters also involves its six Regional Offices to the response scheme, namely AFRO, AMRO, EMRO, EURO, SEARO, and WPRO, where focal points for emergency communications are assigned. Communication channels extend to other international organizations as applicable.

Emergency communication channels should be regularly tested and kept functional, as this is one of the key components of the emergency response. WHO conducts communication tests for its network at least twice a year.

#### Building National Capacity of Member States through Training and Exercise

Besides medical assistance upon a Member State's request in case of radiation emergency, the REMPAN's key objectives include building national capacity on preparedness. There is no success in responding to emergency without being well prepared. This task is implemented in the network by various activities, including development of guidelines and recommendations, providing forum for professional

discussions and delivering information to medical community.

One of the key tasks of REMPAN related to the capacity building is to provide professional training through education of medical and public health workers involved in emergency response, and to conduct various emergency exercises, drills, and tests. The need for internationally harmonized training programs for medical professionals should be addressed via establishment of an international consensus for a standard approach to the medical management of radiation injuries and acute radiation syndrome. Having 192 Member States and working directly with their national health authorities, the WHO has an immense potential and should play a leading role in facilitating an open dialog among radiation emergency medicine professionals towards the international consensus based on the best scientific evidence.

The other key component to the capacity building is exercises. There are various types of exercises ranging from simple communication tests to international nuclear power-plant accident exercises. One of the recent exercises that WHO had participated in was CONVEX(3)2005 which took place in Romania in May 2005 and was based on a national exercise held at Cernavoda Nuclear Power Plant. The major objective for WHO was to test WHO response system and communication capabilities in an emergency situation which continued for a prolonged time, as the duration of the exercise was more than 48 hours. WHO tested the ability of the staff to respond to emergency, telephone and video conference facilities use, and the mechanism of REMPAN activation how long it would take and how

it would work. Several lessons were learnt from this exercise and will be applied to improve the WHO response system.

### Future directions

Today, REMPAN arrived at a crossroad where important choices have to be made. It took time to build the network and today the WHO unites world's leading centers and agencies under the umbrella of REMPAN. However, now it is time to review the network's priorities and the strategy in order to identify the gaps and map out the best way forward.

The centers of the network contain a unique knowledge and expertise. The accumulated knowledge should be preserved and shared with the international professional community. This is especially pertinent for the developing countries embracing the age of nuclear technology. The REMPAN resources are not yet available to some the Member States in Middle-East and South-East Asian regions of the WHO, in regions where political situation is not always stable and capacity building for national health authorities is especially important.

The WHO is now exploring opportunities for developing an in-

ternational training program that would comprise good practices and experience acquired in the USA, Japan, and European Countries, and harmonize the approach to training in radiation emergency medicine. One of the key issues for REMPAN's future programs planning and implementation is resource mobilization. This is a priority task for strengthening the WHO's system of radiation emergency response, which will be accomplished through the REMPAN system development.

### References

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