

Arrangements for the termination of a Nuclear or Radiological Emergency

Medical Follow-up and Provision of Mental Health and Psychosocial Support

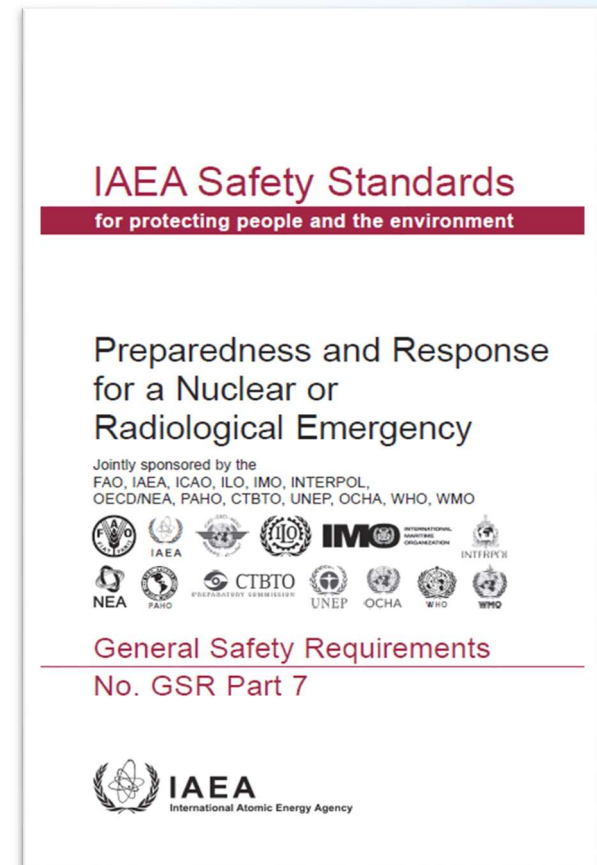
Lecture 10

Introduction.

GSR Part 7, Requirement 12



“The government shall ensure that arrangements are in place for the provision of appropriate medical screening and triage, medical treatment and longer term medical actions for those people who could be affected in a nuclear or radiological emergency.”

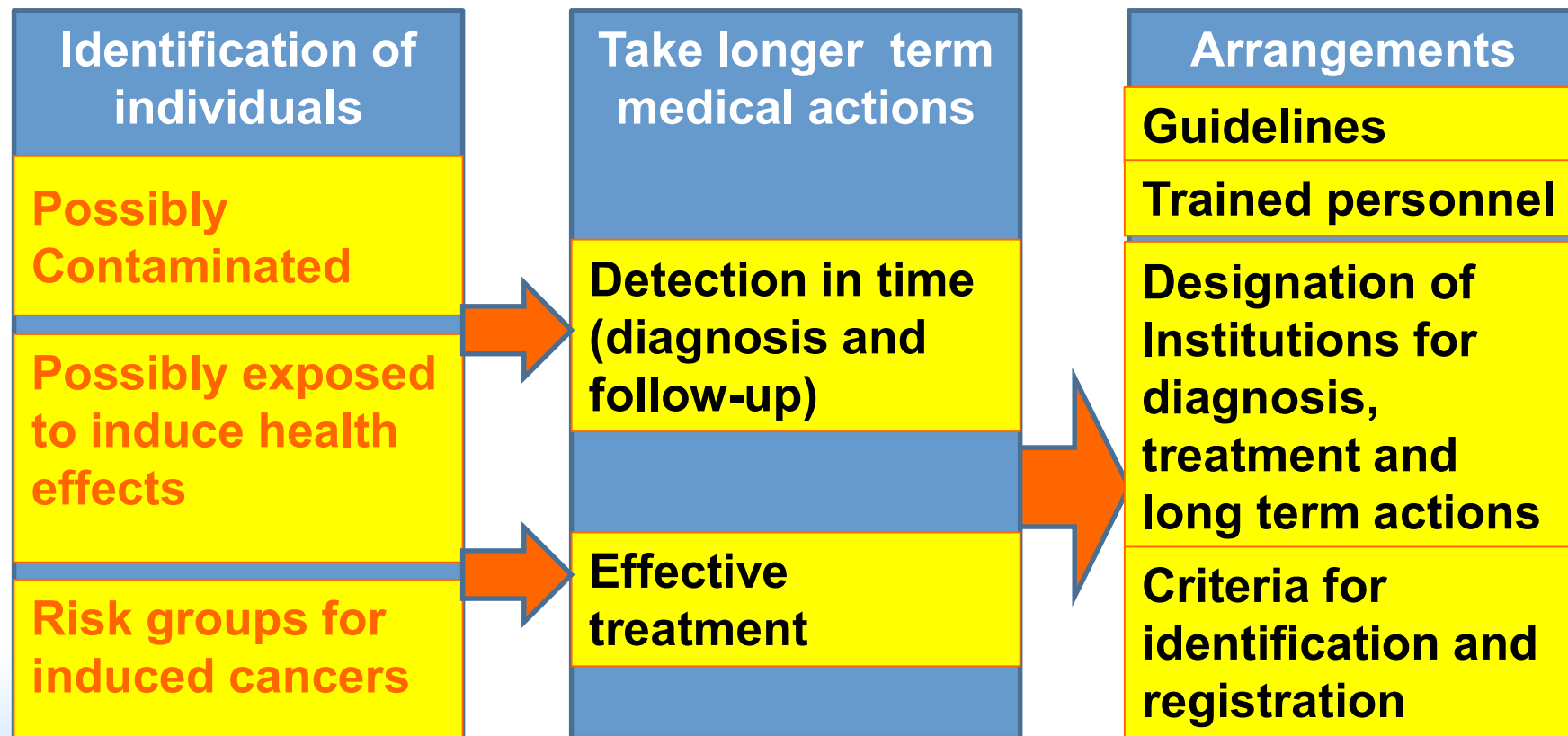


Introduction.

Requirement 12, GSR Part 7



Arrangements to be made for:

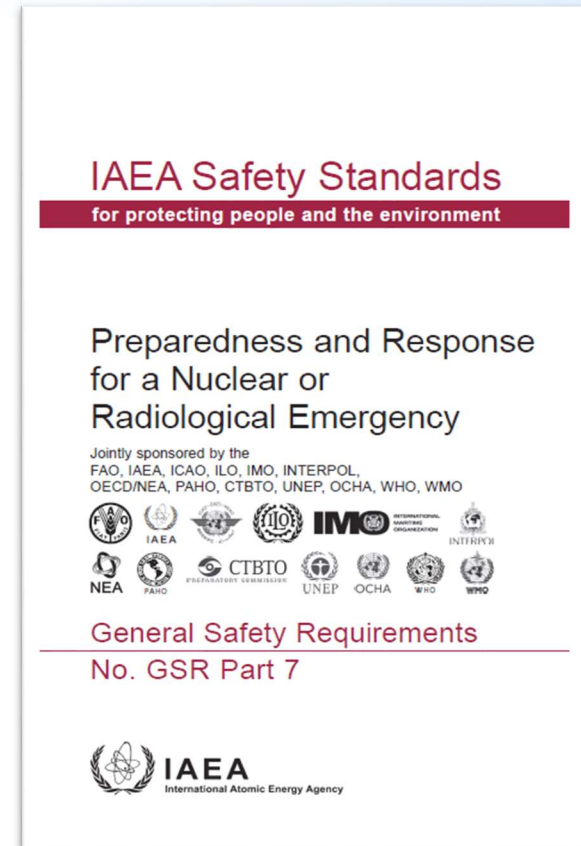


Introduction.

Requirement 16, GSR Part 7

Arrangements for mitigating the non-radiological consequences of an emergency and those of an emergency response and for responding to public concern in a nuclear or radiological emergency shall include:

- (a) **Information** on any associated health hazards and clear instructions on any actions to be taken;
- (b) Medical and psychological **counselling**;
- (c) Adequate social **support**.



Introduction.

GSG-11, Section 3



*“A **registry** of those individuals who, by the time the emergency is to be terminated, have been identified as requiring longer term medical follow-up ... **should be established before the termination** of the emergency.”*

*“A **programme for longer term medical follow-up** for the registered individuals ... has been **developed**.”*

*“A **strategy for mental health and psychosocial support** for the affected population has been **developed**.”*

IAEA Safety Standards for protecting people and the environment

Arrangements for the Termination of a Nuclear or Radiological Emergency

Jointly sponsored by the
FAO, IAEA, ICAO, ILO, IMO, INTERPOL, OECD/NEA, OCHA, WHO, WMO



General Safety Guide No. GSG-11



Purpose



- Help identifying emergency arrangements to be made for
 - Medical follow-up and
 - Mental health and psychosocial support
- following a nuclear or radiological emergency
- Help identify how these arrangements fit within overall response efforts during the transition phase
 - Share relevant experience from past emergencies

Learning Objectives

- Identify activities to be carried out during the transition phase to allow for the medical follow-up and the provision of mental health and psychosocial support.
- Recognize arrangements to be made for achieving effectively prerequisites for terminating the emergency related to medical follow-up, mental health and psychosocial support.
- Identify challenges faced and relevant lessons learned from past emergencies.

Contents



- Needs
- Medical follow-up
 - Objectives and criteria
 - Coordination
 - Registration
 - Information sharing
 - Arrangements at preparedness stage
- Mental health and psychosocial support
 - Objectives
 - Arrangements under an all-hazards approach
 - Public support centres

Discussion



Who may need medical follow-up and psychosocial support in the aftermath of a nuclear or radiological emergency, and why?

Treatment in HIA Percy-IRSN 2012 (France)



Treatment of physical sequelae in Mutual de Seguridad 2013 (Chile)



Worsen 1
September 06, 2013
Right and left hands:

Image reproduced from 'The Radiological Accident In Chilca, Peru', IAEA, Vienna (2018)

Is the Goiânia accident still important from medical perspective?

Case 1

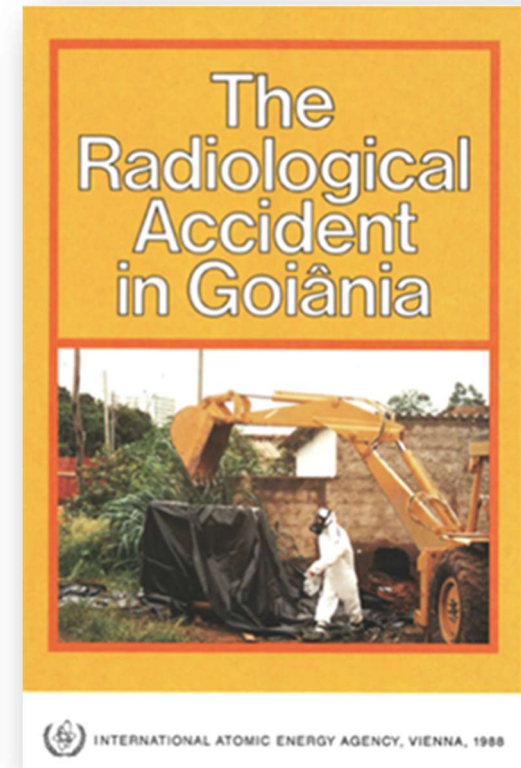


Image reproduced from 'The Radiological Accident in Goiânia', IAEA, Vienna (1988)

Case 2



Image courtesy by : Dr. N. Valverde (Nelson Valverde)



Increase in incidence of thyroid cancers after the Chernobyl accident

- Chernobyl thyroid cancer increase in Belarus (no increase in other cancers seen).

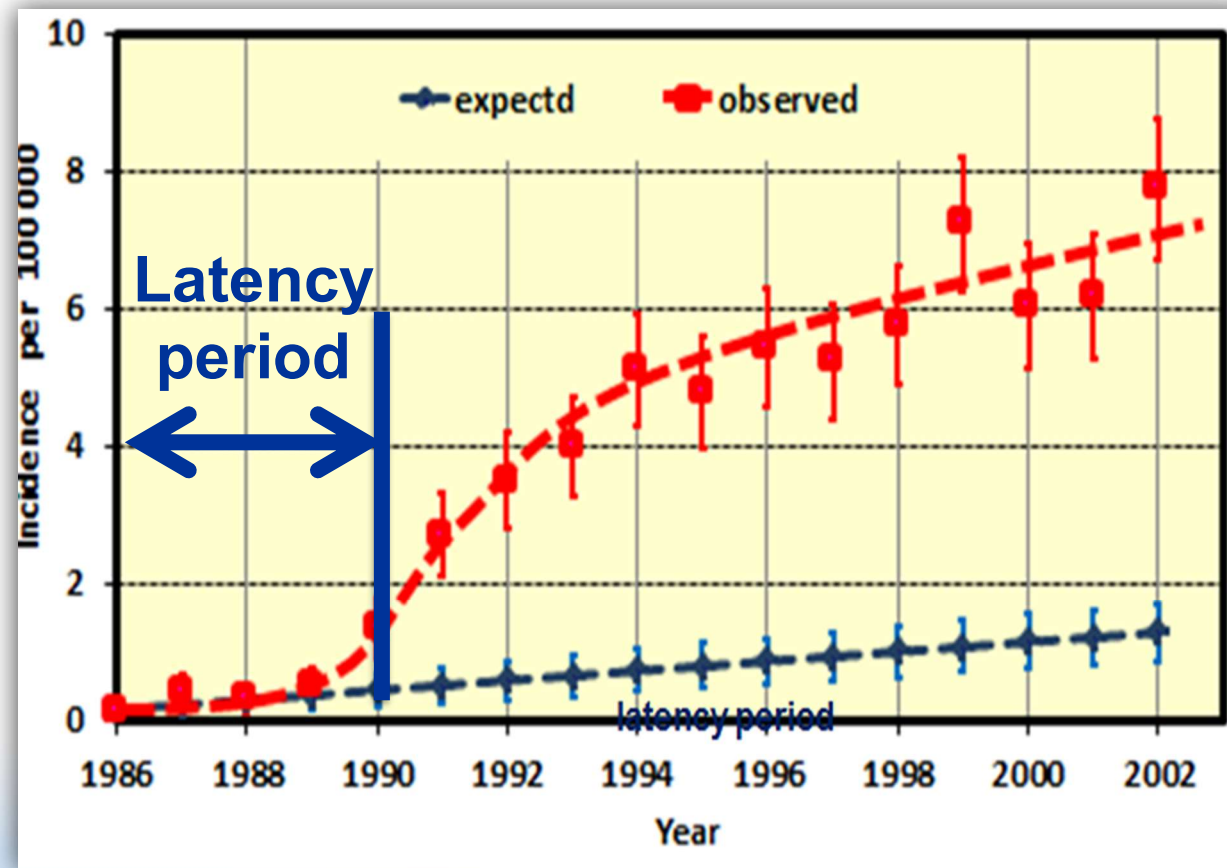


Image reproduced from *The Chernobyl Forum: 2003–2005*, IAEA, Vienna (2006)

The Fukushima Daiichi accident in 2011

- Traumatic experience associated with evacuation;
- Social stigma.



Photograph courtesy of Koichi Nakamura/AP Images/picturedesk.com

Medical follow-up and mental health and psychosocial support needs

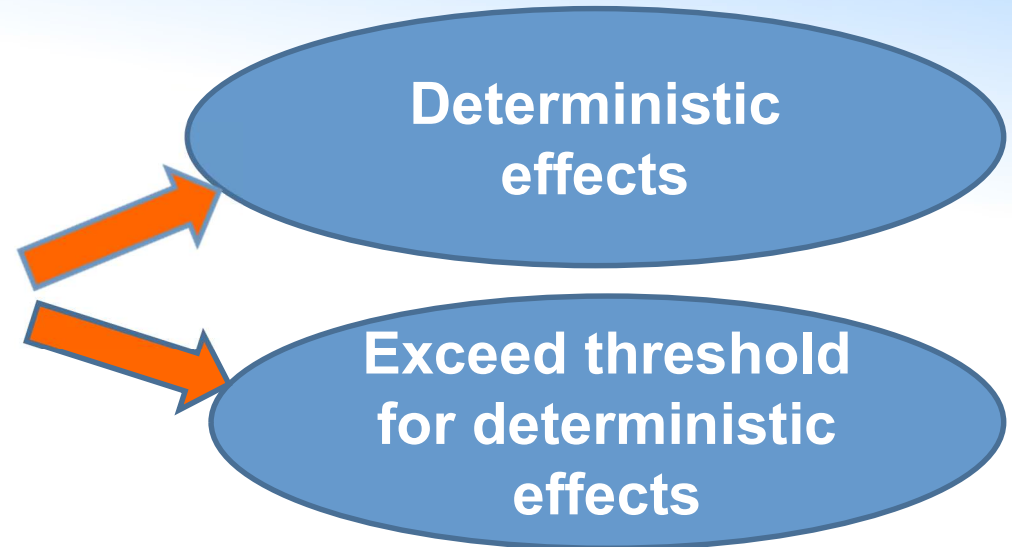


- Individuals:
 - Overexposed in an emergency;
 - Exposed at levels that entail the risk of sustaining an increase in the incidence of radiation induced cancers;
 - Subjected to disruptive public protective actions, such as evacuation and relocation, or returning to live in the affected area;

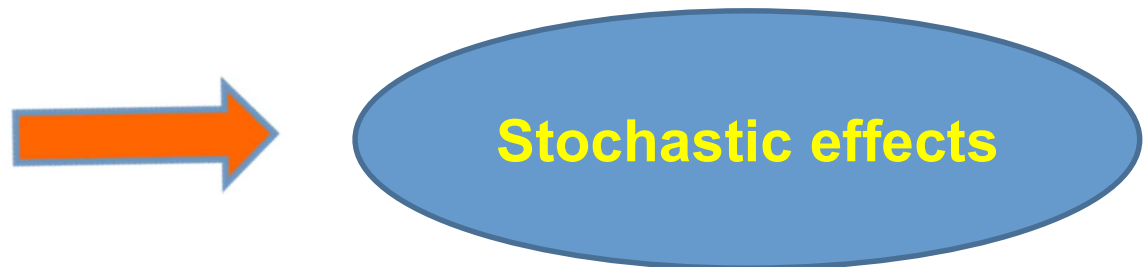
Medical follow-up

Objectives:

(a) Long term medical care



(b) Early detection



(Always explain the objectives to those involved to ensure that the expectations among all relevant parties are appropriate)

Generic criteria in terms of received dose as basis for medical actions (GSR Part 7, GSG-2)



TABLE II.1. GENERIC CRITERIA FOR DOSE LIMITS FOR A SHORT PERIOD OF TIME FOR WHICH AND OTHER RESPONSE ACTIONS ARE EXPECTED UNDER ANY CIRCUMSTANCES IN AN EMERGENCY TO MINIMIZE SEVERE DETERMINISTIC EFFECTS

Acute external exposure (<10 h)

$AD_{\text{red marrow}}^a$	1 Gy	If the dose is
AD_{fetus}^b	0.1 ^b Gy	— Take protective actions in condition of generic criteria
AD_{tissue}^c	25 Gy at 0.5 cm	— Provide protection
AD_{skin}^d	10 Gy to 100 cm ²	— Carry out decontamination

Acute internal exposure due to an acute intake ($\Delta = 30 \text{ d}^e$)

$AD(\Delta)_{\text{red marrow}}$	0.2 Gy for radionuclides with atomic number $Z \geq 90^f$ 2 Gy for radionuclides with atomic number $Z \leq 89^f$	If the dose has been received:
$AD(\Delta)_{\text{thyroid}}$	2 Gy	— Perform immediate medical examination, medical consultation and indicated medical treatment;
$AD(\Delta)_{\text{lung}}^h$	30 Gy	— Carry out contamination control;
$AD(\Delta)_{\text{colon}}$	20 Gy	— Carry out immediate decorporation ^g (if applicable);
$AD(\Delta)_{\text{fetus}}^i$	0.1 ^b Gy	— Conduct registration for longer term medical follow-up;
		— Provide comprehensive psychological counselling.

TABLE II.2. GENERIC CRITERIA FOR PROTECTIVE ACTIONS AND OTHER RESPONSE ACTIONS IN AN EMERGENCY TO REDUCE THE RISK OF STOCHASTIC EFFECTS (cont.)

Generic criteria	Examples of protective actions and other response actions ^a
Dose that has been received and that exceeds the following generic criteria: Take longer term medical actions to detect and to effectively treat radiation induced health effects	
E^d 100 mSv in a month	Health screening based on equivalent doses to specific radiosensitive organs (as a basis for longer term medical follow-up) ^b , registration, counselling
H_{fetus}^f 100 mSv for the full period of in utero development	Counselling to allow informed decisions to be made in individual circumstances

Discussion



Who has the responsibility for medical follow-up after an emergency in your country?

Need for coordinating mechanism



**Designated organization
to act as a coordinating
authority**

When, how and why?

Coordination is the
basis for an effective
response

Existing
organization



New
organization



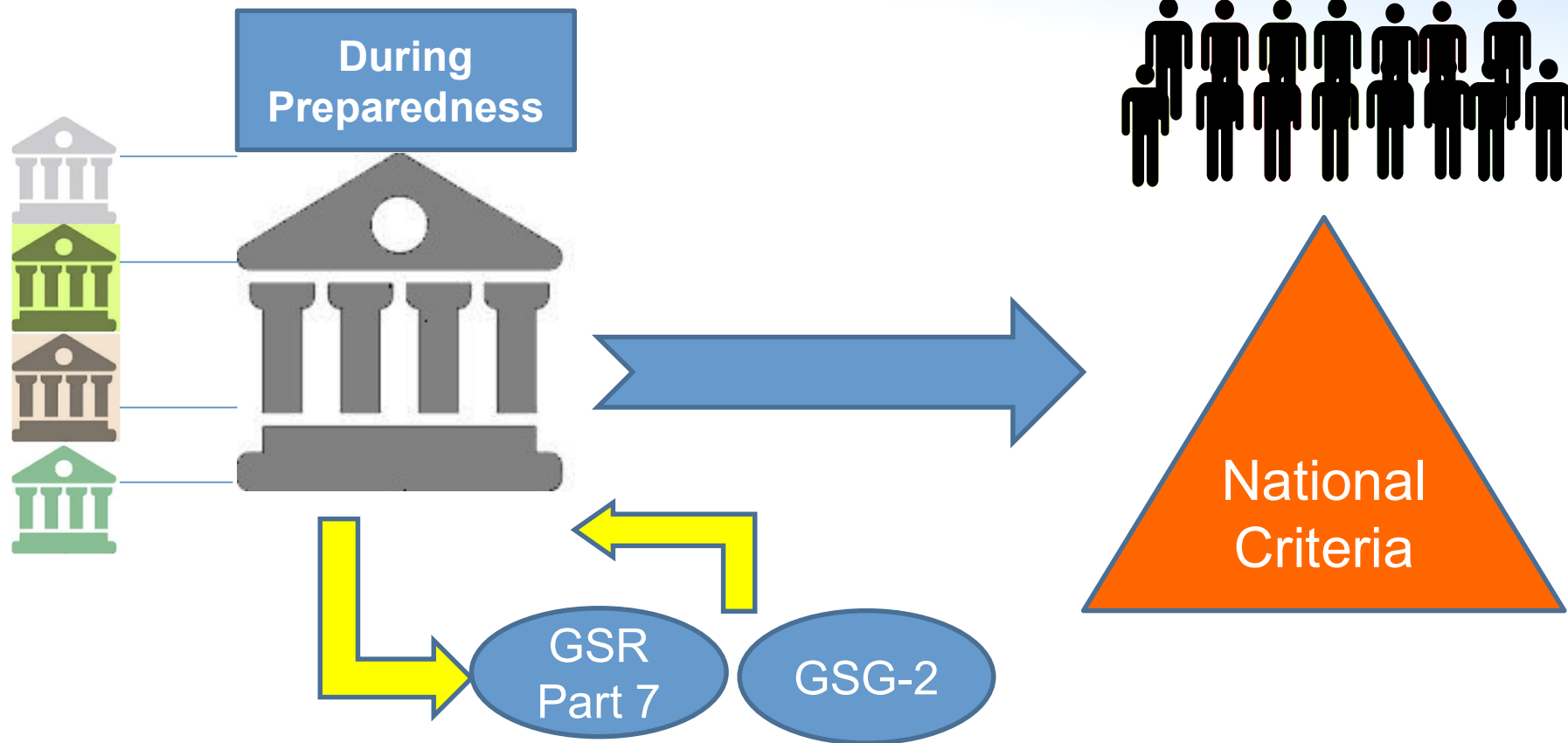
Arrangements to implement:
Medical follow-up and
mental health

At the preparedness stage

Coordinating mechanism

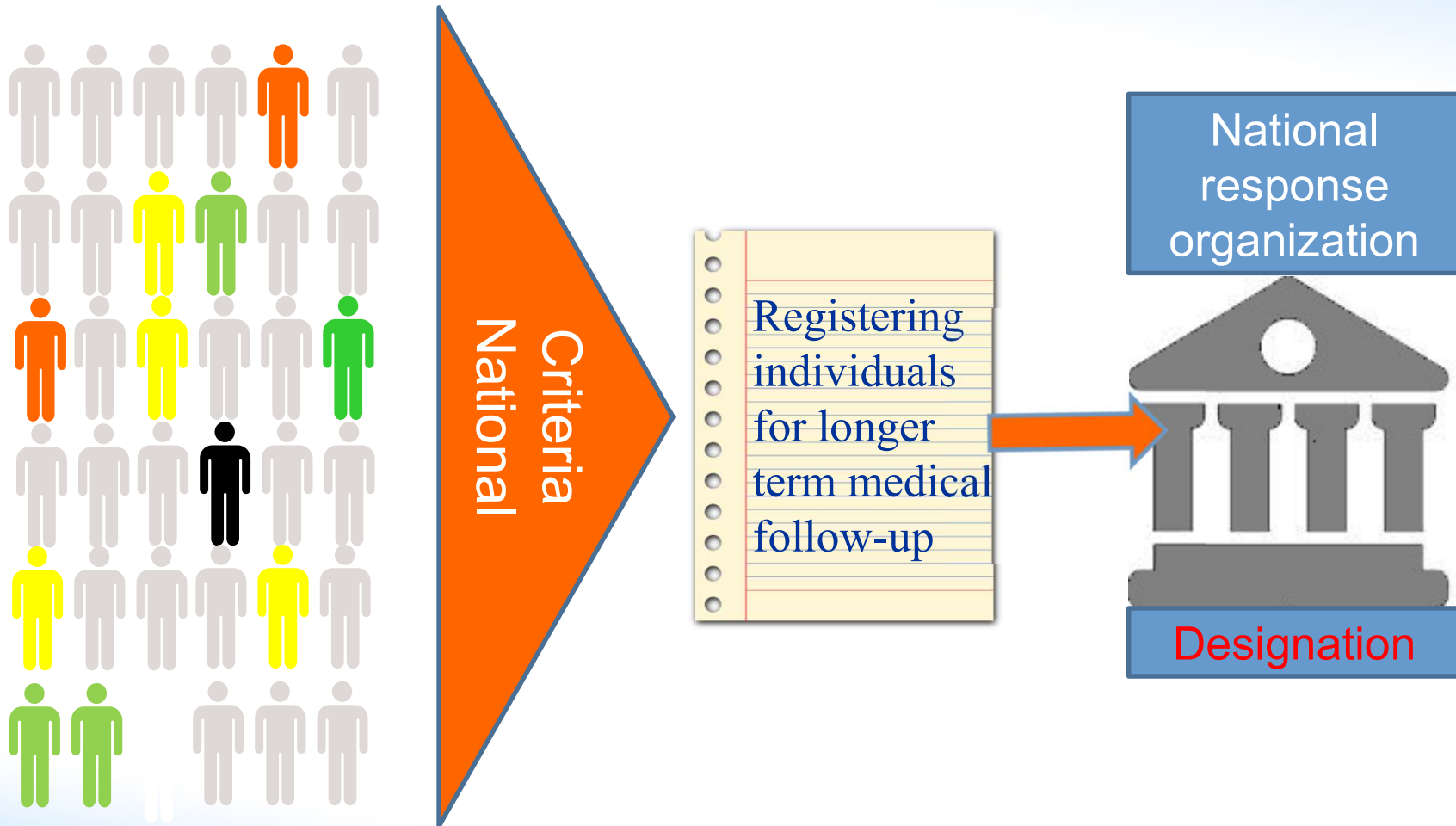


Establishing criteria



Identifying and registering those individuals requiring **longer term medical follow-up** and mental health and **psychosocial support**

Arrangement for registration of individuals

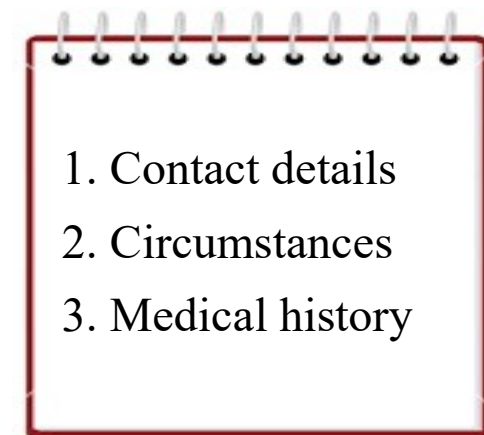


The registry



The data and information to be gathered in the registry may include:

- **Basic contact details**
(e.g. name, date of birth, gender, address, telephone);
- **Circumstances of the exposure**
(e.g. location at the time of the event, duration of exposure, activities carried out);
- **Relevant medical history**
(e.g. previous illnesses, co-morbidities, family history, workplace history, habits).



(Consider an initial registration by first responders and the completion of the registry later on)

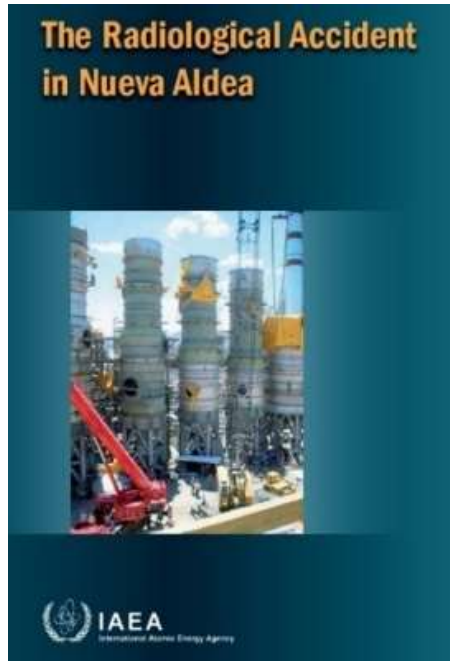
Provision of information

- Registered individuals to be provided with the **necessary information**, including but not limited to:
 - **Reason** for their selection;
 - **Assessed doses** and associated **health risks**;
 - **Contact point** in the designated institution;
 - **Record** of the procedures and laboratory tests;
 - **Symptoms** that may eventually present and whom to consult;
 - Offer for **psychological support**.

(Comply with the usual conditions of doctor-patient confidentiality and store the records accordingly)

Example, Case 1.

Nueva Aldea, Chile (2005)



Industrial Radiography

Source:
Ir-192; 3.3
TBq

Cutaneous radiation syndrome
of the left hand



Radiological lesion of the buttock

- 233 workers screened
- 3 registered for medical follow up



109
Days



162
Days



8 years later



1 month



2 months



3 months

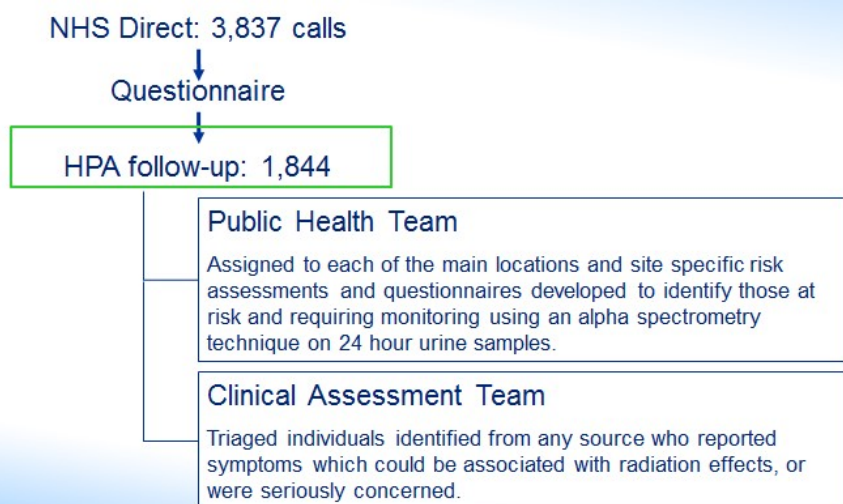
Images reproduced from 'The Radiological Accident in Nueva Aldea', IAEA, Vienna (2009)

Example, Case 2.

Polonium incident, UK (2006)



- Major challenge to identify individuals who may have been involved and may require medical follow-up:
 - Information gathering to support monitoring, assessment and registration relied heavily on public involvement through an effective public communication mechanism:



- Utilizing a call centre, questionnaires at first stage;
- Performing monitoring and assessment at second stage to determine who may need to be registered for medical follow-up;
- No individual exceeded the criteria for subjecting to longer term medical follow-up.

Arrangements for the medical follow-up



Initial duration of medical follow-up



Management of the information and reporting and sharing of results



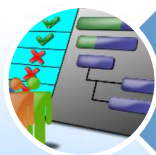
Choice of medical specialists



Management of biological & non-biological samples



Management of mental health and psychosocial consequences



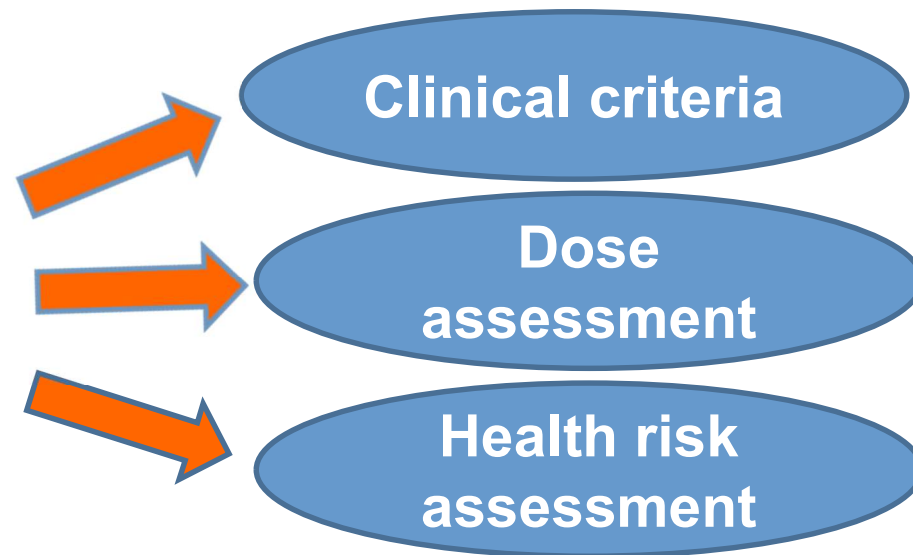
Ethical and cost-benefit aspects

Ensure that individuals are provided with access to information of their medical evaluations and to adequate sources of information

Medical decisions in the follow-up

They should be made by medical specialists:

- **Deterministic Effects**

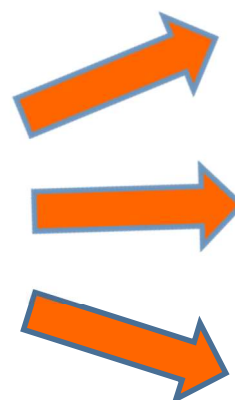


(Consider including these individuals in screening and monitoring programmes for stochastic effects as well)

Considerations for screening and monitoring



- **Stochastic Effects**



Criteria based on scientific evidence

Non-cancer health effects should be carefully considered



Priority for vulnerable population*



*(*the most vulnerable population groups, such as infants, children and pregnant women, should be prioritized for longer term medical follow-up)*

Long-term medical follow-up in response to the Goiânia accident (1987)



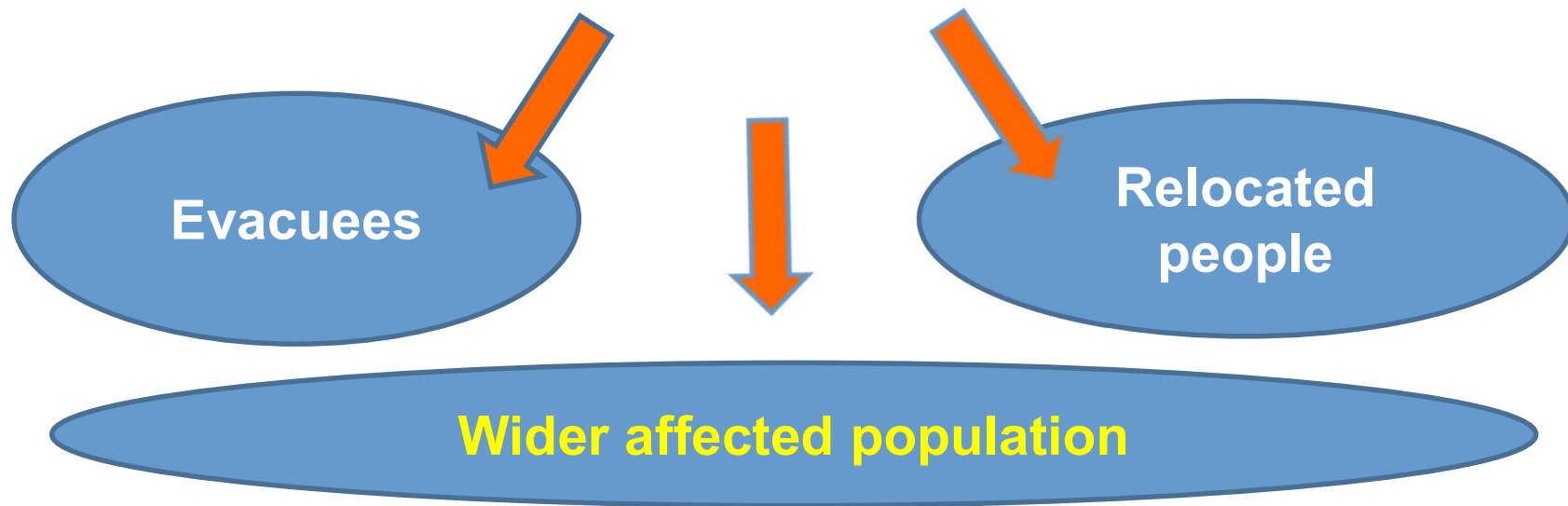
Group	Criteria	Persons
I	SAR – SCR - >0,2 Gy >1/2 ALI for ^{137}Cs	49 adults + 45 children
II	<0.2 Gy <1/2 ALI for ^{137}Cs	56 adults + 47 children
III	“Social” victims People living near the 9 main contamination foci Legally included	1030

Mental health and psychosocial support



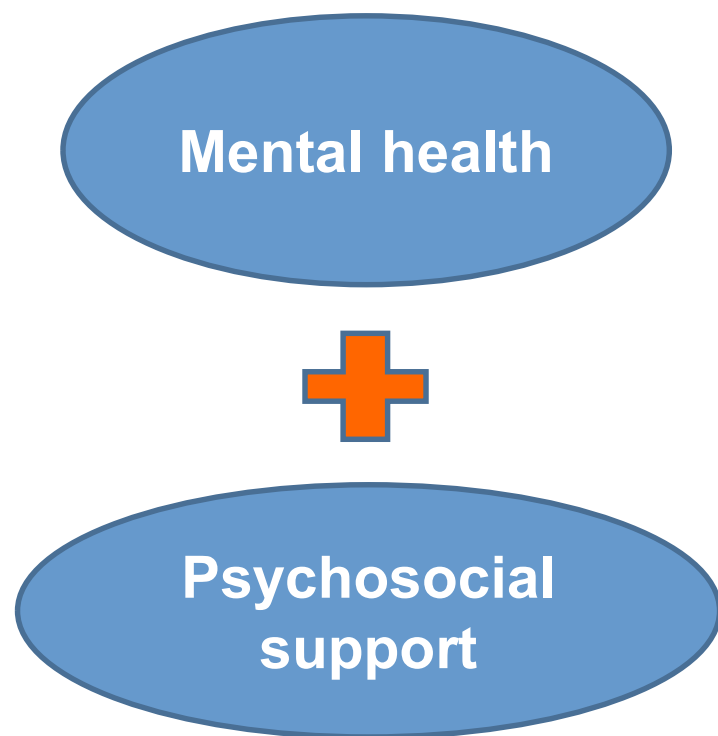
Objective:

“Reducing adverse psychological and societal consequences”



(Always explain the objectives to those involved to ensure that the expectations among all relevant parties are appropriate)

Mental health and psychosocial support (cont'd)



Aim to:

- Support people's **well-being**;
- Provide for **reassurance**.

When:

- **As early as possible.**

Based on:

- **Two-way** communication between authorities and concerned parties.

Mental health and psychosocial support (cont'd)

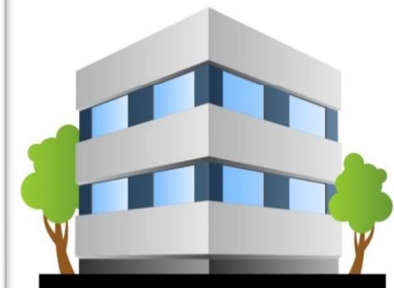
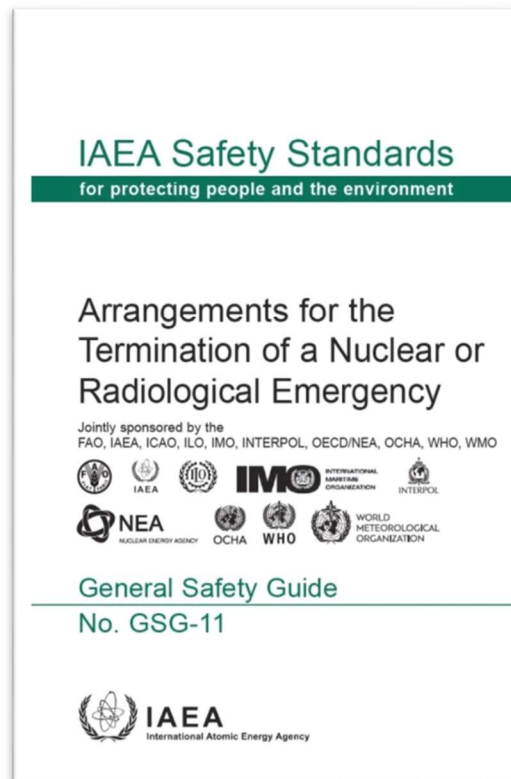


- Provision of mental health and psychosocial support is common for all emergencies:
 - Highlights the importance of all-hazards approach;
 - WHO guidance available:
 - WHO, UNHCR, mhGAP Humanitarian Intervention Guide (mhGAP-HIG): Clinical Management of Mental, Neurological and Substance Use Conditions in Humanitarian Emergencies, WHO, Geneva (2015).
 - WHO, WAR TRAUMA FOUNDATION, WORLD VISION INTERNATIONAL, Psychological First Aid: Guide for Field Workers, WHO, Geneva (2011).
 - IASC, IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings, IASC, Geneva (2007).

Public support centre



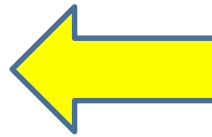
“Information that places the health hazards in perspective and training on effective approaches to risk communication, tailored to various population groups, should also be given to local doctors, nurses, pharmacists, psychologists and other health care specialists to enable them to provide advice to the public within the settings of their health care practices.”



Public Support Centre



Public support centre (cont'd)



Training on effective approaches

GSR
Part 7

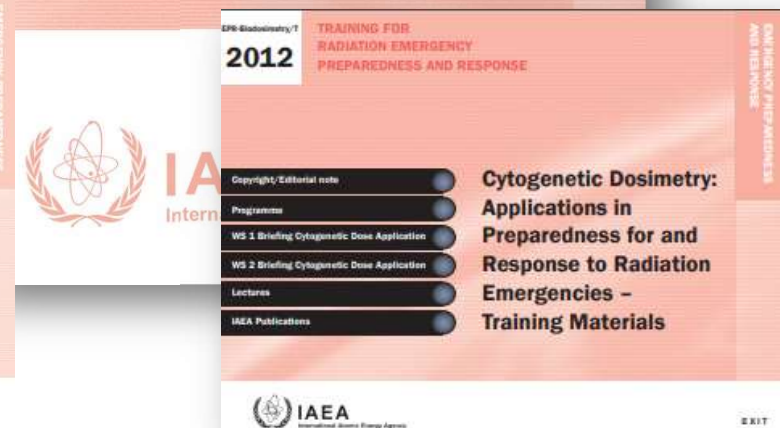
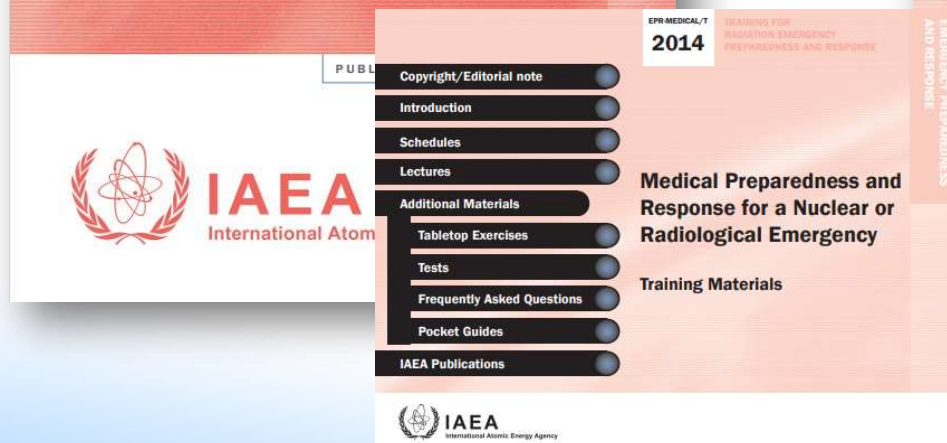
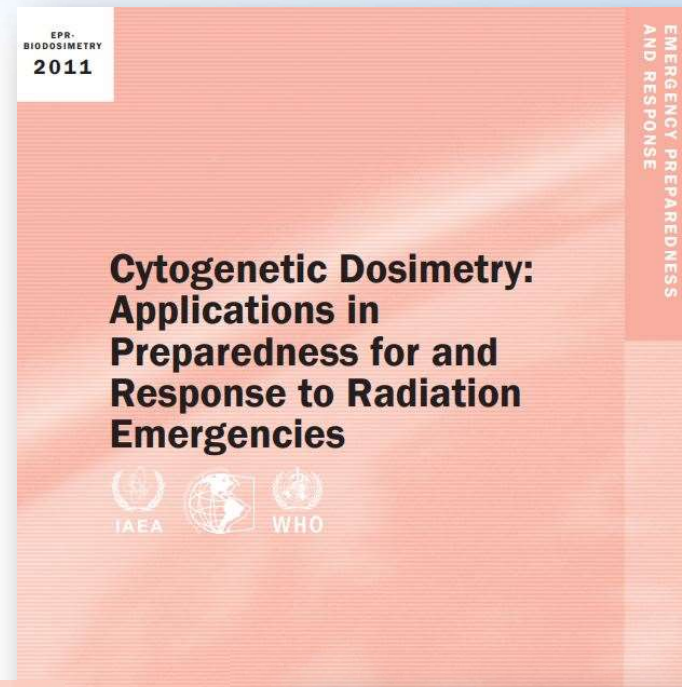
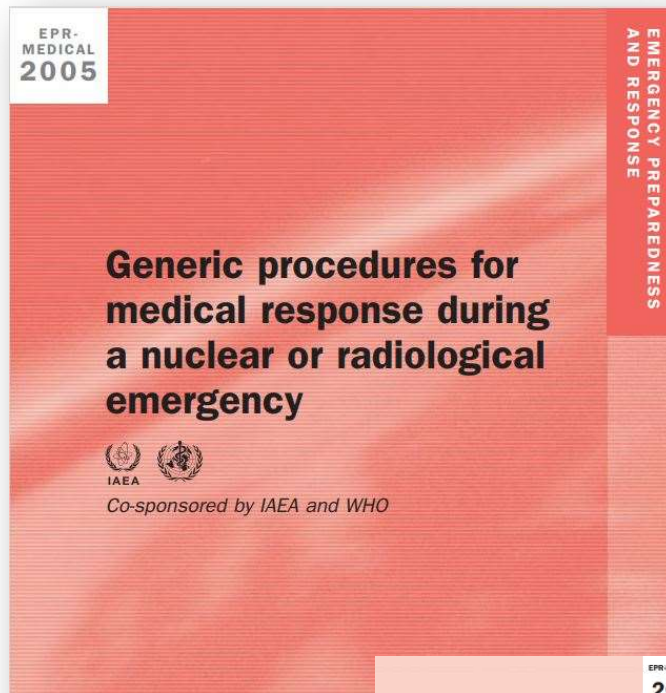
- Mental health and psychosocial support;
- Information that places the health hazards in perspective;
- Risk communication tailored to various population groups;
- Advice to the public within the settings of their health care practices.

Discussion

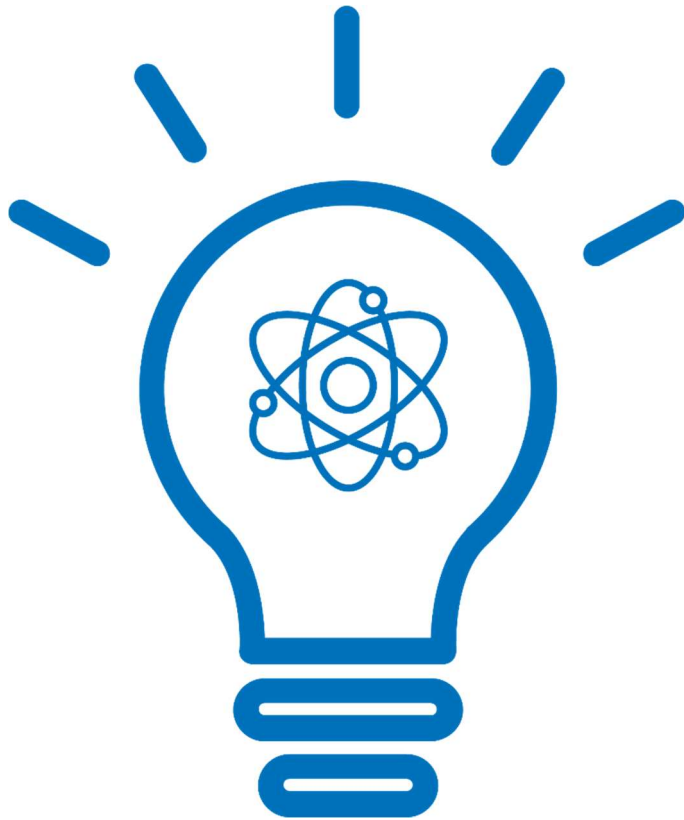


Are arrangements for the provision of mental health and psychosocial support following a nuclear or radiological emergency made at the national level? How well are the relevant authorities prepared?

Practical guidance available



Summary



- Provision of adequate medical support to affected populations and individuals is paramount in the aftermath of a nuclear or radiological emergency.
- Arrangements to enable effective implementation of medical follow-up and the provision of mental health and psychosocial support following a nuclear or radiological emergency should be made at the preparedness stage.
- Medical response should be integrated within the overall emergency response effort for resuming normal social and economic activity.



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Thank you!