A FRAMEWORK

for mental health and psychosocial support in radiological and nuclear emergencies



World Health Organization

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FOREWORD

Providing policy advice and assisting Member States in strengthening their national capacities for preparedness, response and recovery after radiological and nuclear emergencies is an integral part of the World Health Organization's (WHO's) work towards implementation of the International Health Regulations (IHR) (2005). Monitoring of the IHR implementation through annual reporting and Joint External Evaluation (JEE) missions indicate that half of WHO's Member States are still lacking essential elements of preparedness pertaining to radiation emergencies.

The lessons learned from nuclear accidents such as in Chernobyl in 1986 and in Fukushima in 2011 clearly demonstrate that in addition to direct risks to human health and the environment from radiological hazards, the impact of such accidents is linked with subsequent protective actions and negative socioeconomic changes. Similar to other disasters and emergency situations, nuclear accidents have a profound impact on mental health, psychological and social standing, which in turn affect people's well-being, mental and physical health. Radiation emergencies, however, carry substantial and unique stressors.

International radiation safety standards make provisions for the inclusion of measures to mitigate such health impacts in emergency response and recovery plans, but they are limited in detail and practical guidance. Furthermore, there are few practical tools for integrating mental health and psychosocial support (MHPSS) for response to radiation emergencies. International radiation safety standards make provisions for the inclusion of measures to mitigate such health impacts in emergency response and recovery plans, but they are limited in detail and practical guidance. Furthermore, there are few practical tools for integrating mental health and psychosocial support (MHPSS) within response to radiation emergencies.

A framework for mental health and psychosocial support in radiological and nuclear emergencies is the first of its kind to bring together existing knowledge at the intersection of mental health and radiation protection. The framework was developed as an initial step towards supporting the integration of these fields, through a straightforward discussion of the mental health and psychosocial impacts exerted by radiation emergencies, as well as actions that can be taken to mitigate these effects across the emergency cycle.

This publication was produced through considerable interdisciplinary collaboration. It would not have been possible without invaluable contributions from a global network of experts and partners. We would like to thank them for their important efforts towards making mental health and well-being an imperative focus, thereby helping to reduce suffering and increase resilience following radiological and nuclear emergencies.

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ABBREVIATIONS

ERC	emergency risk communication
IAEA	International Atomic Energy Agency
IASC	Inter-Agency Standing Committee
ICRP	International Commission for Radiological Protection
IFRC	International Federation of Red Cross and Red Crescent Societies
IHR	International Health Regulations
ITB	Iodine Thyroid Blocking
IHR	International Health Regulations
M&E	Monitoring and Evaluation
mhGAP-HIG	Mental Health Global Action Programme Humanitarian Intervention Guide
MHPSS	Mental Health and Psychosocial Support
NGO	nongovernmental Organization
NPP	Nuclear Power Plant
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
PAHO	Pan American Health Organization
PFA	Psychological First Aid
PHC	primary health care
UN	United Nations
PTSD	post-traumatic stress disorder
WHO	World Health Organization

EXECUTIVE SUMMARY

The health impact of radiological and nuclear emergencies can last for decades. Lessons learned from past radiological and nuclear accidents have demonstrated that the mental health and psychosocial consequences can outweigh the direct physical health impacts of radiation exposure. International radiation emergency preparedness and response standards outline provisions for mitigating these effects. Yet, practical guidance for addressing the mental health and psychosocial aspects of radiation emergencies remains scarce.

A Framework for Mental Health and Psychosocial Support in Radiological and Nuclear Emergencies was developed to fill this gap while building upon existing World Health Organization (WHO) and Inter-Agency Standing Committee (IASC) guidelines for providing mental health and psychosocial support (MHPSS) in emergency settings.

This framework aims to promote integration between the MHPSS and radiation protection fields. It is intended for officials and specialists involved in radiation emergency planning and risk management as well as MHPSS experts working in health emergencies.

Individual and community mental health and psychosocial well-being can be impacted considerably during and after radiation emergencies due to a number of factors. In particular, fear and uncertainty about radiation risks may be common. In addition, emergency protective actions designed to protect human lives (such as iodine thyroid blocking, radiation monitoring and decontamination, sheltering in place and evacuation), could have repercussions on the physical or mental health of the affected people. Furthermore, people may link various somatic illnesses with exposure to radiation and thereby overwhelm unprepared health systems.

In addition to environmental and socioeconomic impacts, radiation emergencies are characterized by multiple factors, including health risk uncertainty and social stigma towards affected people (including the workers of the affected nuclear facility). These factors are sometimes coupled with inconsistent media coverage and misconceptions which can exacerbate people's distress. Substance abuse, domestic violence, depression, anxiety, post-traumatic stress disorder and other psychosocial outcomes become more likely after such emergencies.

Estimates indicate that at least one in five people affected by an emergency or a disaster will experience a mental health condition, with certain groups particularly at risk. In the case of radiation emergencies, these groups may include:

- people directly affected;
- children from affected areas and parents concerned about the long-term impact on their children's health;
- pregnant women and lactating mothers from affected areas;
- people with underlying health concerns;
- people with low literacy levels and difficulty in following risk communications;
- first responders, clean-up workers and other responders working in stressful conditions;
- people living in residential facilities and institutions;
- evacuees and members of hosting communities;
- people with pre-existing mental health and psychosocial concerns;
- the workers of the nuclear facility and their families.

Care should be taken to consider the unique needs of each of these groups.

A number of actions discussed in this framework can be implemented to support the mental health and psychosocial well-being of affected people and communities across the emergency cycle. These actions are guided by several cross-cutting considerations of MHPSS planning and implementation, which are discussed in the document.

> "This framework aims to promote integration between the MHPSS and radiation protection fields

Cross-cutting MHPSS considerations for the entire emergency cycle: preparedness, response, and recovery

Coordination	• Coordination through inter-sectoral MHPSS working groups can guide action. • Coordination must involve functional lines of communication, clear operating procedures and agreed roles and responsibilities.
Communication	• Implementing emergency risk communication (ERC) strategies – developed during the preparedness stage and involving all stakeholders – increases the effectiveness of protective actions and can reduce fear. • ERC should include clear messaging about protective actions that is inclusive, adapted and disseminated by trained communicators who will listen to concerns.
Community Engagement	• Affected people should be viewed as leaders in designing and implementing MHPSS activities that build upon existing community support networks. • Emergency response planners should identify trusted community leaders and involve them in decision-making throughout the emergency cycle.
Capacity Building	• Health-care workers, first responders and MHPSS providers should be trained in basic psychosocial support and in basic radiation protection. • Policies and procedures should be established to support the mental health and well-being of first responders, clean-up and plant workers and health-care staff.
Core ethics	• Care must be taken to ensure the primacy of community needs and protection from exploitation, abuse and discrimination. • Local culture and values should be respected and confidentiality maintained.

KEY MHPSS ELEMENTS OF RESPONSE PLANNING

MHPSS planning should be informed by a risk, vulnerability and needs assessment. While there may be many aspects of mapping potential risks and hazards, MHPSS risk mapping aspects include identification of the potential adverse impacts of radiation protection actions, of appropriate counter measures, of system weaknesses, of priority needs and of capability or resource gaps.

Planning for radiation emergencies also includes overall mental health policy development, including provisions for emergency situations, such as contingency plans, operational MHPSS procedures, identified priorities and criteria for resource allocation, as well as plans for their evaluation and revision. Mapping existing resources, including all available formal and informal support mechanisms, and integration of MHPSS into primary care starting at the emergency response planning stage, are also essential MHPSS preparedness actions that can support resilience during and after radiation emergencies.

Finally, indicators for monitoring and evaluation (M&E) of MHPSS activities should be identified at the planning stage to measure the impact of these efforts during and after the emergency.

MHPSS CONSIDERATIONS FOR EMERGENCY RESPONSE

During a nuclear emergency, communities at risk of exposure may be asked to implement protective actions, such as sheltering in place or evacuation. These measures, while necessary, can also result in fear, anxiety, confusion and anger. Care should be taken to provide targeted mental health and well-being support and accurate information to affected people.

If evacuation is necessary, managers of agencies and institutions involved in emergency response should make certain that families remain together and that evacuees are involved in decision-making with regard to logistics and living arrangements. Iodine thyroid blocking (ITB) may also be required urgently following a nuclear accident. This protective action should be preceded and accompanied by an information campaign to reduce anxiety and promote awareness of the proper administration.

Individual radiation monitoring and decontamination can be uncomfortable and provoke anxiety. The procedure should be arranged so that people undergoing triage, monitoring and decontamination are reasonably safe and comfortable. It is also recommended that, when necessary, decontamination proceed with appropriate religious and cultural considerations in mind. These arrangements should be accompanied by proper communication tools that explain the process and the need for the protective actions.

In addition to these targeted actions, community-level MHPSS interventions can also be implemented and should be done in collaboration with relevant community stakeholders. These interventions, when feasible, can include re- establishment of community activities, such as cultural and religious events; ensuring access to education for children; and restoration of informal support networks. These actions should comply with radiation protection requirements and aim to promote healthy living.

MHPSS CONSIDERATIONS POST-EMERGENCY

Because of the long-lasting impact of radiation emergencies, MHPSS actions should be implemented with a focus on medium- and long-term community mental health services and psychosocial interventions following the emergency. Engaging with affected communities in such recovery efforts and giving them a stake in the process will result in the shared ownership of the outcomes of such efforts, which is instrumental for building trust. Coupled with communication campaigns tailored for specific population groups, these efforts can be crucial for people's well-being and the long-term resilience of the community.

Social stigma towards evacuees and others affected may be common following radiation emergencies, and can lead to some people's hiding their health condition in order to avoid being discriminated against and thereby prevent them from seeking help. Dissemination of accessible, accurate and timely information tailored to specific groups can be effective in promoting social cohesion and reducing further risk of stigmatization. Actions during the recovery phase should also focus on positive elements of mental health and well-being, and promote the integration of MHPSS activities within existing support structures.

Key messages

This framework represents an initial step towards integrating MHPSS within existing radiation emergency preparedness and response arrangements.

Radiation emergencies have unique mental health impacts. Mental health and psychosocial consequences, such as fear, anxiety, emotional and behavioural changes, may outweigh the direct health impact of radiation exposure radiological or nuclear emergencies.

A public health approach with an emphasis on MHPSS interventions is essential for planning and responding effectively to radiation emergencies and must include inter-disciplinary capacity building to ensure MHPSS is integrated within existing arrangements for response.

Cross-sector coordination between radiation protection and MHPSS actors, community engagement, targeted risk communication and applying core-ethics principles are crucial for preparedness, response and recovery after radiation emergencies.

Practical tools need to be developed in order to promote the integration of MHPSS within existing radiation emergency preparedness plans and protection actions.

Research is needed to further understand mental health vulnerability to radiation emergencies and strengthen the evidence base for appropriate MHPSS actions.

1 | INTRODUCTION

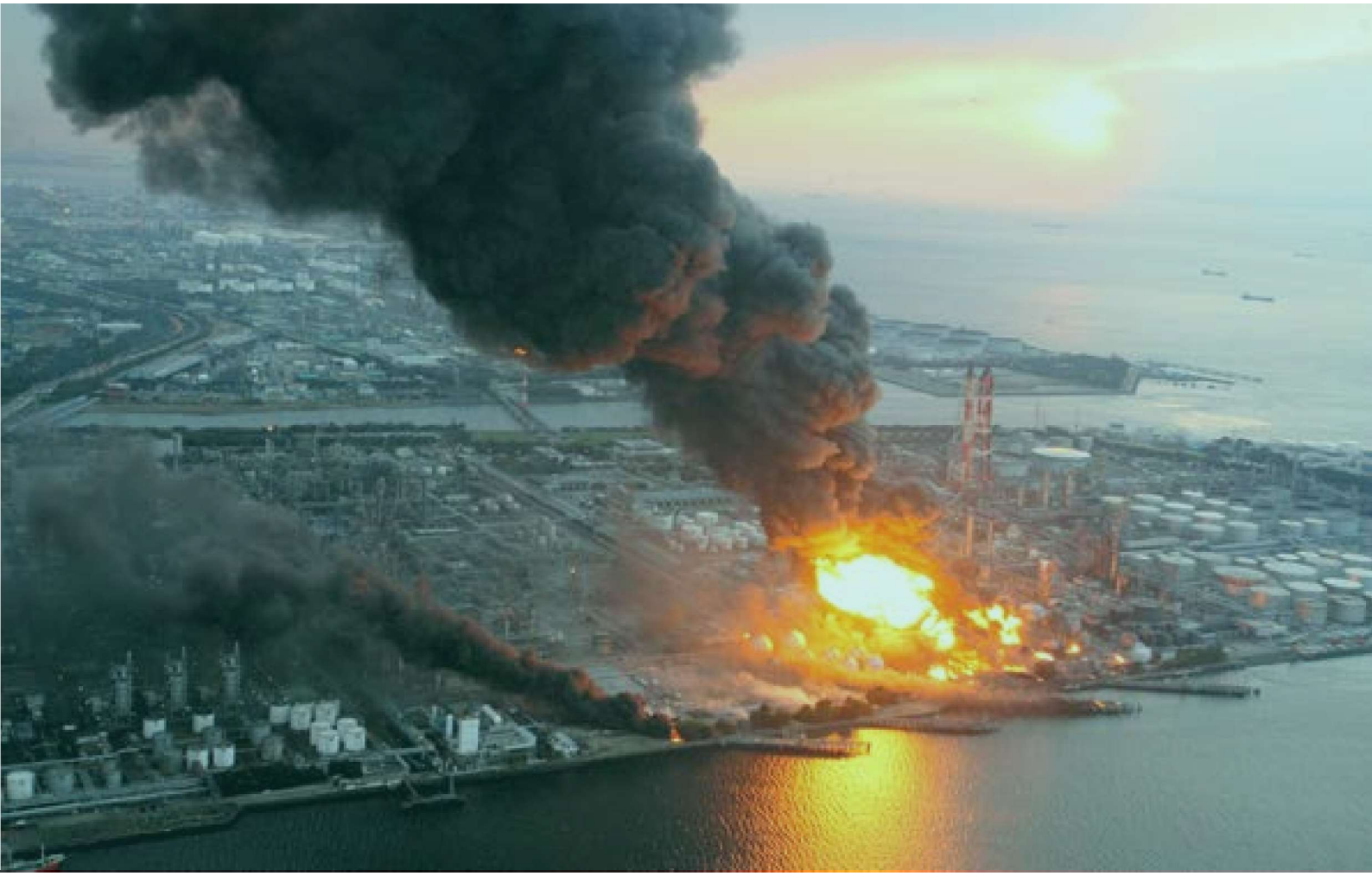


Image © EPA

The health effects of radiological and nuclear emergencies (grouped in this document under the term radiation emergencies), range from short-term to long- term and can last for decades. Survivors of the Hiroshima and Nagasaki atomic bombings, for instance, were at risk of developing certain types of cancer and cardiovascular diseases over their lifetime. In addition, they were reported as having nightmares more than 50 years after the bombings, and remain fearful for the health of future generations (1).

Radiation emergencies range from large scale incidents with catastrophic consequences (such as a detonation of an improvised nuclear device or use of a nuclear bomb), to small scale incidents that do not pose any significant risk to public health (such as a loss of a nuclear density gauge containing a small amount of radioactive material). Examples of radiation emergencies include, among others:

> “The aim of this framework is to support the development of preparedness, response and recovery policy, plans and procedures for mental health and psychosocial support

- nuclear installations accidents, such as those in Fukushima, Japan in 2011, in Chernobyl, Ukraine in 1986, and the Three Mile Island accident in Pennsylvania, USA in 1979;
- radiological accidents related to lost sources and radioactive waste, such as Goiania accident in Brazil in 1987;
- radiotherapy accidents that may affect a few people or hundreds of people, such as the accident in Epinal, France in 2004;
- malevolent events, such as a dirty bomb explosion or the Polonium-210 poisoning incident in the UK in 2006.

Any of these scenarios may have a strong impact on the mental health of affected people, emergency responders, their families and others. Malevolent events may also be particularly distressing and become precursors to further mental-health related risks, even when the mortality rate may be low.

Past nuclear accidents have resulted in low levels of radiation exposure for the majority of affected people, for whom non-radiological health consequences have outweighed the direct radiological consequences (2). Both the Chernobyl and Fukushima nuclear accidents were reported to have considerable diverse and long-lasting social, psychological and mental health consequences affecting individuals and societies (3-5).

Existing International safety standards provide high-level requirements for radiation emergency preparedness and response (EPR), most of which are based on radiation protection concepts and quantities (6-9). These include provisions for mitigation of non-radiological consequences, which are defined as "adverse psychological, societal, or economic consequences of nuclear or radiological emergency," or, "of an emergency response affecting human life, health, property, or the environment" (7).

Despite these relevant requirements for inclusion of mental health and psychological support in the EPR and recovery arrangements, to date there are no detailed practical tools and protocols describing how exactly these requirements are to be implemented within the overall protection strategy for radiological or nuclear EPR (10, 11).

In addition, existing safety standards do not explicitly address the importance of planning in advance for management of the psychosocial impact of such emergencies. Given that psychological impacts of emergencies and of emergency protective actions implemented during response are often greater than the actual physical impact of radiation, it is essential that psychological and mental health aspects of radiological or nuclear emergencies are integrated at all stages of the emergency cycle from preparedness to long-term recovery (Fig. 1).

Generic Safety Requirements (GRS-Part 7) state in Requirement 16:

"Non-radiological consequences of a nuclear or radiological emergency and of an emergency response shall be taken into consideration in deciding on the protective actions and other response actions to be taken in the context of the protection strategy. Arrangements shall be made 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. These arrangements shall include arrangements for providing the affected people with (a) information on any associated health hazards and clear instructions on any actions to be taken (…); (b) medical and psychological counselling, as appropriate; (c) adequate social support, as appropriate" (7).

Nuclear accidents and radiological emergencies may also have severe economic consequences (12,13). Crops and other affected agricultural and wildlife products may be lost; evacuees may remain unemployed indefinitely; and sales of local products, trade and tourism could fall. In a difficult economic situation, psychosocial consequences of a nuclear accident will be further aggravated.

Depending on the prevailing circumstances during the response to an emergency situation and on radiation safety requirements, certain components of the framework proposed in this document may or may not apply.

1.1 PURPOSE OF THE DOCUMENT AND TARGET AUDIENCE

This framework builds upon the existing World Health Organization (WHO) and Inter-Agency Standing Committee (IASC) guidelines and recommendations for managing mental health and psychosocial consequences of emergencies and disasters. It aims at supporting the development of preparedness, response and recovery policies, plans and procedures, which would include provisions for mental health and psychosocial support. The goal is to broaden the scope and strengthen the arrangements for preparedness and response to radiation emergencies by incorporating relevant national and local plans related to the mitigation of mental health and psychosocial consequences of emergencies and disasters.

The target audience includes any officials and various specialists involved in radiation emergency response planning, and response and consequence management.

1.2 KEY CONCEPTS AND DEFINITIONS

Definitions

In line with the IASC *Guidelines on mental health and psychosocial support in emergency settings* (14), and in line with WHO terminology, the composite term mental health and psychosocial support (MHPSS) is used in this document to describe any type of local or outside support that aims to protect or promote psychosocial well-being and/or prevent or treat mental disorder. Although the terms mental health and psychosocial support are closely related and overlap, for many stakeholders involved in EPR, they require different, yet complementary, approaches.

Responding agencies outside the health sector tend to speak of interventions supporting psychosocial well-being. Health sector agencies refer to mental health, yet historically have also used the terms psychosocial rehabilitation and psychosocial treatment to describe non-clinical interventions for people with mental disorders. Exact definitions of these terms vary between and within aid organizations, disciplines and countries. A glossary is shown in the Glossary.

Phases of a radiation emergency

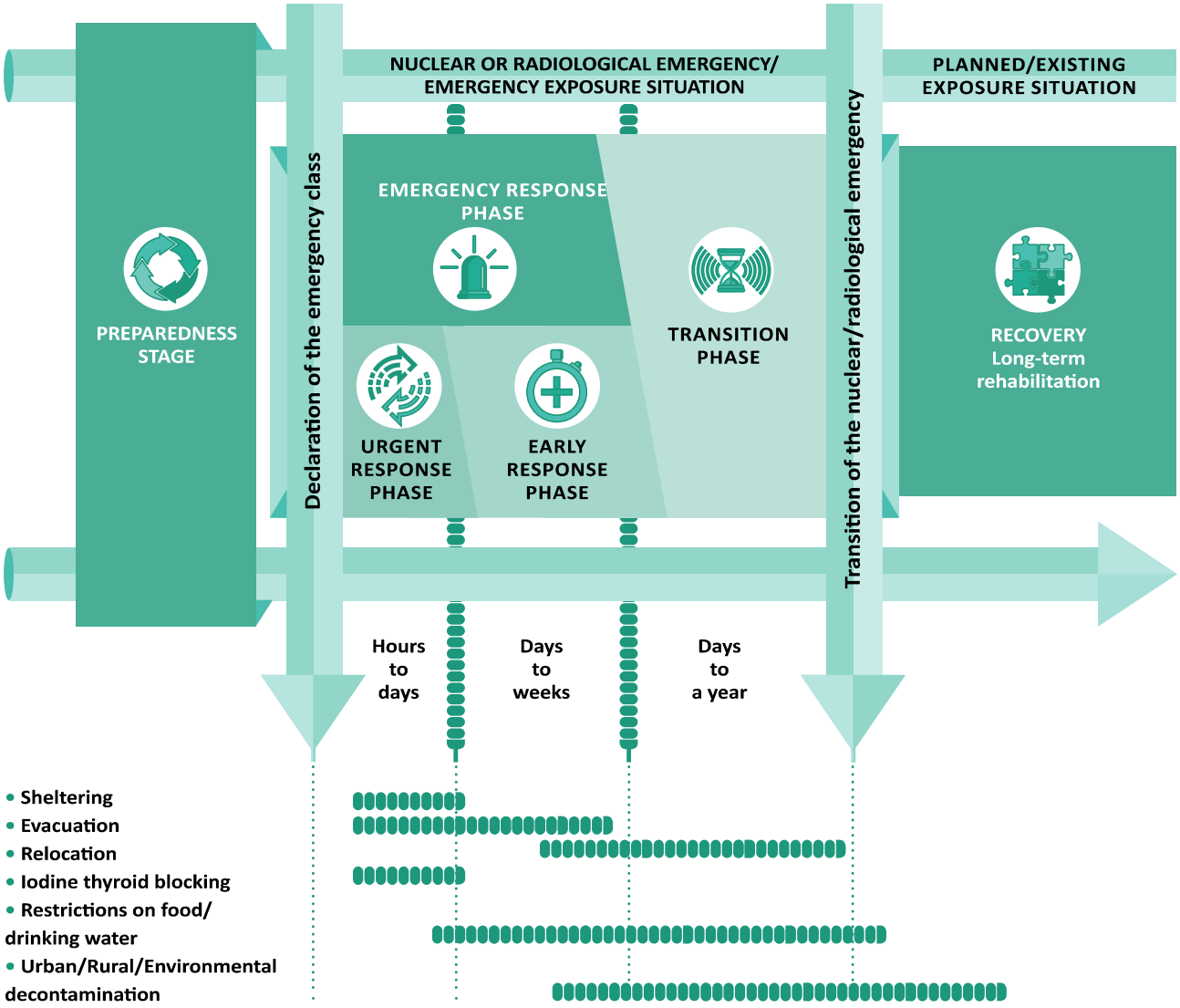
The International Atomic Energy Agency (IAEA) defines two phases of emergency response in its General Safety Guide GSG-11 (9): urgent and early response, followed by transition and recovery phases (Fig. 1).

- **Urgent response phase:** The period within the emergency response phase from the detection of conditions warranting emergency response actions that must be taken promptly in order to be effective until the completion of all such actions. Such emergency response actions include mitigation actions by the nuclear facility operator and urgent protective actions on site and off site. The urgent response phase may last from hours to days depending on the nature and scale of the nuclear or radiological emergency.

- **Early response phase:** The period of time, within the emergency response phase, from which a radiological situation is already characterized sufficiently well, allowing for early protective actions and other response actions to be identified, until the completion of all such actions. The early response phase may last from days to weeks depending on

> “This framework aims at supporting the development of preparedness, response and recovery policies, plans and procedures, which would include provisions for mental health and psychosocial support

Fig. 1: **Phases of radiation emergency cycle**



Examples of protective action (may be: combined, adapted or prevailing circumstances)

Source: (9) Graphic recreated with permission © ***IAEA***

the nature and scale of the nuclear or radiological emergency.

- **Transition phase** (sometimes called the intermediate phase)**:** The period during which the primary focus is to characterize the radiological situation on-site and off-site to support risk management decisions).

- **Long-term recovery phase:** This is a period characterized as an existing exposure situation (in the case of decommissioning and environmental decontamination activities, potential exposure for involved personnel will be considered as planned exposure).

The duration of these phases varies depending on the type and scale of emergency; and there is generally an overlap in the MHPSS needs of populations across these phases. MHPSS interventions should never jeopardize the implementation of protective actions to reduce people's exposure to radiation.
For the purpose of this document, the two phases of response (urgent and early response) are grouped into one emergency phase. The emergency phase

typically ends when the situation is under control, the off-site radiological conditions have been characterized sufficiently well to identify whether further protective actions (such as food restrictions and temporary relocation) are required and put into effect. Both transition and recovery phases have also been grouped into a post-emergency phase.

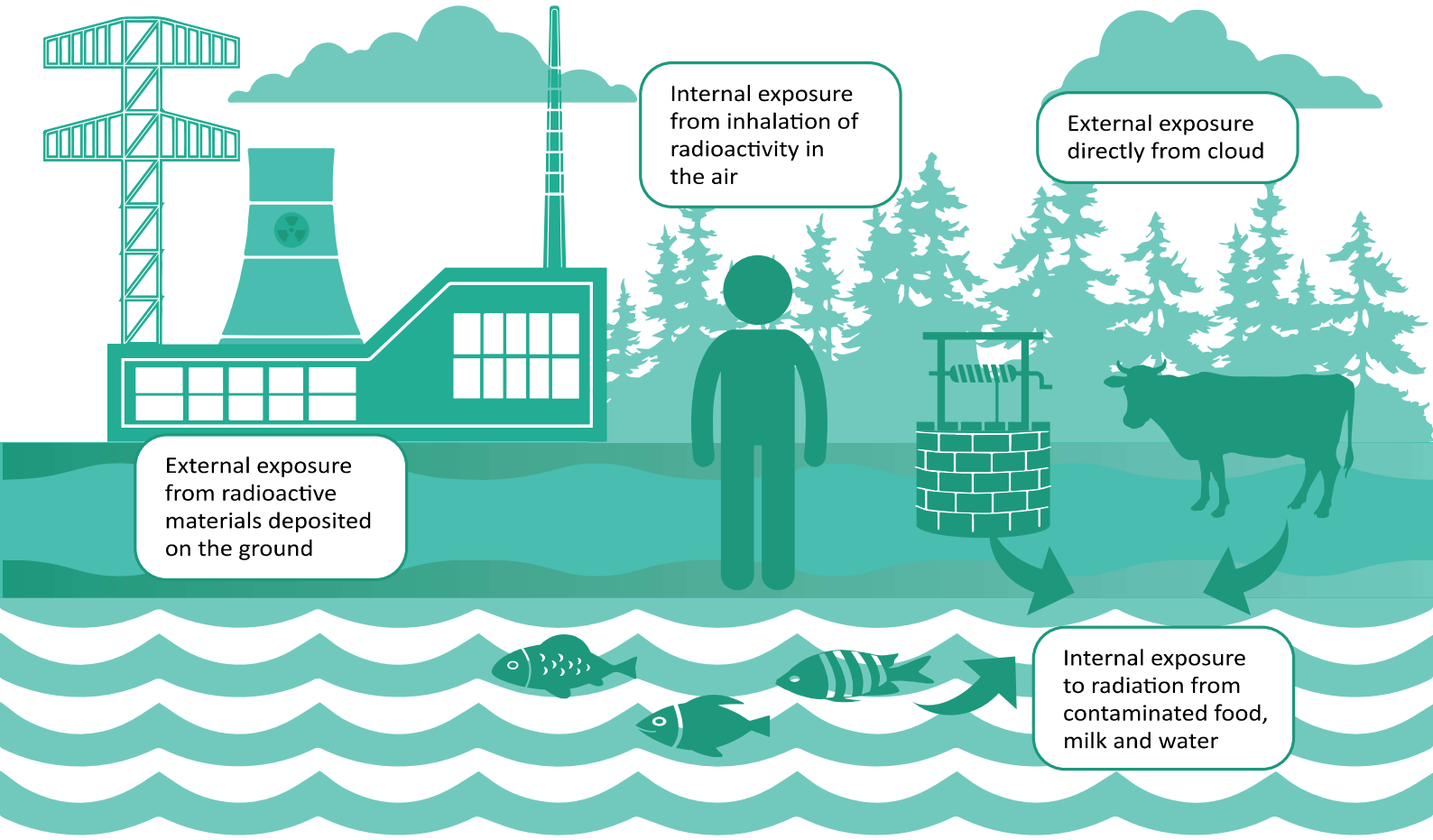
> MHPSS interventions should never jeopardize the implementation of protective actions to reduce people's exposure to radiation

Key concepts

Basic concepts of radiation protection are provided in Box 1 for those who are not familiar with the field of radiation protection, and the main risk factors resulting from a radiation emergency (shown in Fig. 2) that affected people may face. Further reading is available elsewhere (16).

The basic concepts of MHPSS are described in Box 2, which radiation protection specialists can use to familiarize themselves with the main concepts of MHPSS and their use in emergency situations.

Fig. 2: **The main pathways of exposure to ionizing radiation**



Source: (15) Graphic recreated with permission © ***IAEA***

Box 1: **Basic facts about radiation** (16)

Ionizing radiation is a type of energy released by unstable atoms that travels in the form of electromagnetic waves (gamma or X-rays) or particles (such as neutrons, alpha- and beta-radiation). The spontaneous disintegration of atoms is called radioactivity. People are exposed to natural radiation sources, as well as man- made sources on a daily basis throughout their lives. Natural radiation comes from many naturally-occurring radioactive materials found in soil, water and air. Every day, people inhale and ingest radionuclides from air, food and water.

Radiation exposure may be internal or external (or a combination of both) and can be acquired through various exposure pathways (Fig. 2).

- Internal exposure to ionizing radiation occurs when a radionuclide is inhaled, ingested or otherwise enters into the bloodstream (for example, by injection or through a wound). It will stop when the radioactive isotope is eliminated from the body.

- External exposure may occur when airborne radioactive material (such as dust, liquid, or aerosols) is deposited and contaminates skin or clothes. It can also occur without contamination, resulting from being in close proximity to an external radioactive source and being irradiated, for example, by an X-ray-generating device. External irradiation stops when the radiation source is shielded or when the person moves outside the radiation field.

People can be exposed to ionizing radiation under different circumstances, for example at home, due to natural background radiation; as a result of a planned intervention at a workplace (occupational exposure) or at a medical facility; or as a result of an accident or emergency.

Excessive exposure to radiation may damage living tissues and/or organs, depending on the amount of radiation received. The extent of the potential damage depends on the type of radiation, the sensitivity of the affected tissues and organs, exposure pathway, the radioactive isotopes involved, individual characteristics of the exposed person (such as age, gender and underlying conditions), and other factors.

The amount of radiation received is measured by a **radiation dose**. The risk of developing specific health effects depends on radiation dose. At very high doses, radiation can impair the functioning of tissues and/or organs and produce acute effects such as skin redness, hair loss, radiation burns, acute radiation syndrome or even death. The higher the dose, the more severe the biological effects. If the radiation dose is low and/or it is delivered over a long period of time (low dose rate), the risk is substantially lower because the damage to cells and molecules may be repaired by the body.

At the very low doses comparable with natural background radiation, it is impossible to attribute health effects such as cancer to radiation due to the limitations of available modern scientific tools. It should be noted that effects of this type may never occur, but their likelihood is proportional to the radiation dose. The risk is higher for children and adolescents, as they are significantly more sensitive to radiation exposure than adults.

Box 2: **Basic facts about MHPSS** (14, 17)

Mental health is defined by WHO as a state of well-being in which every individual realizes her or his own potential, can cope with the normal stresses of life, can work productively and fruitfully and is able to contribute to her or his community.

The interconnection between the individual's emotions, thoughts, feelings, internal reactions, and the external environment, interpersonal relationships, community and/or culture (i.e. social context), is referred to as psychological reactions. **Psychosocial support** refers to actions relating to the social and psychological needs of individuals, families and communities.

The mental health and psychosocial impact of emergencies

Emergencies damage community and family resources and undermine personal coping strategies and social connections, which would normally support people. Human, social and economic consequences are long-term and far-reaching and affect entire communities and societies.

Almost all people affected by emergencies will experience psychological distress, which for most people will improve over time. Among people who have experienced war or disaster in the previous 10 years, one in five (22%) living in an area affected by conflict is estimated to have depression, anxiety, post-traumatic stress disorder, and other mental health disorders.

In people affected by the Fukushima disaster, for example, high rates of the following mental health disorders were reported: nonspecific psychological distress (8.3-65.1%), depressive symptoms (12-52.0%), and post-traumatic stress symptoms (10.5-62.6%) (18).

International guidelines recommend services at different levels, from basic services to clinical care, and indicate that mental health care needs to be made available immediately for specific, urgent mental health problems as part of the health response (14, 17) The psychosocial impact is more severe when people are separated from their family or friends, their living conditions significantly change or are no longer safe and people cannot access assistance.

There are a number of factors that could lead to limited access of MHPSS services, including their location, cost, security issues, poor awareness of the services or stigma associated with mental health, or because local services are simply lacking. Therefore, alternative solutions to include (and disseminate information about) MHPSS services should be considered during the planning stage.

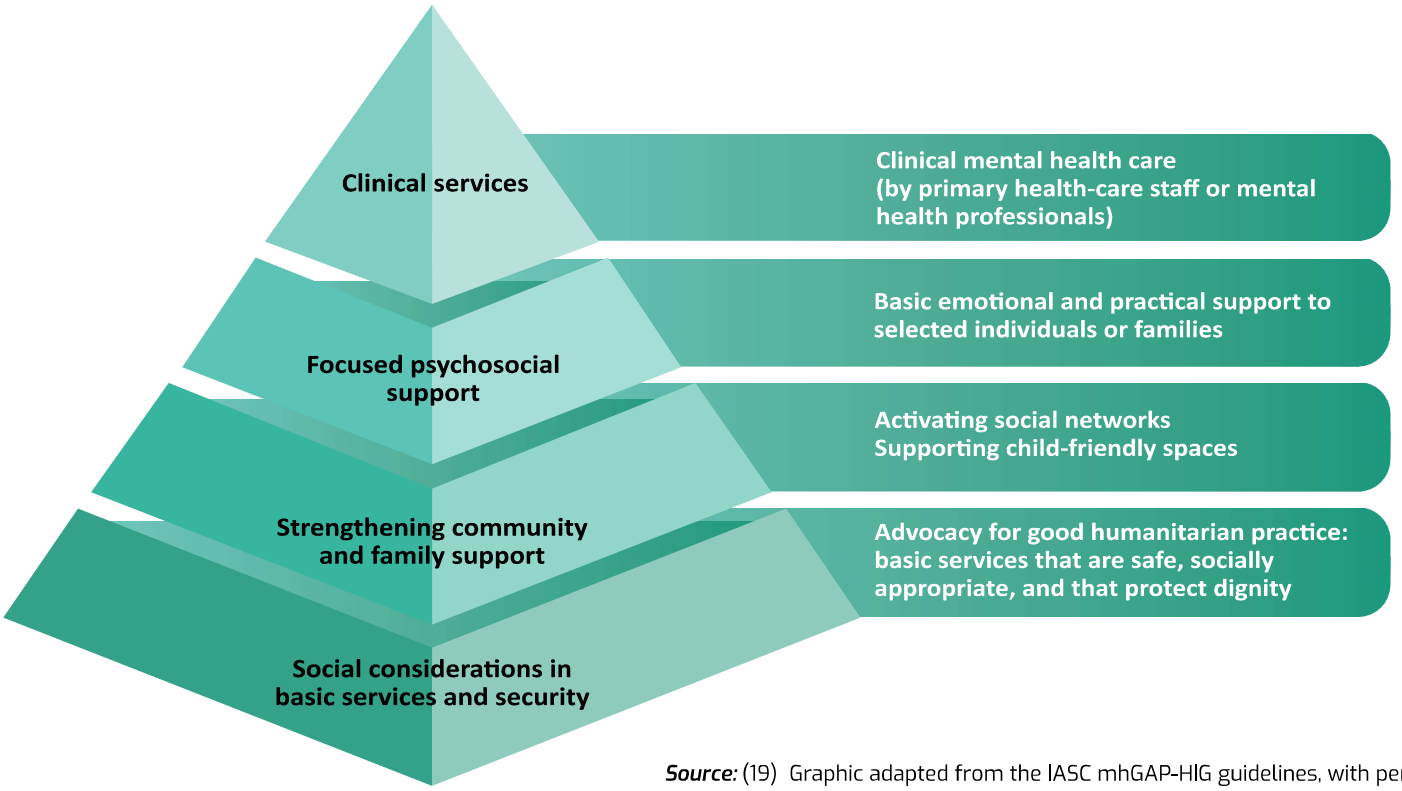
A key to organizing MHPSS is to develop a multi-layered system of complementary support that meets the needs of different groups (19). MHPSS components range from basic psychosocial support through to specialized mental health care (Fig. 3) as described below.

- **Social considerations in basic services and security** – This promotes positive mental health and psychosocial well-being, resilience, social interaction and social cohesion activities within communities. Activities in this layer are often integrated into health, protection and education sectors and should be accessible to the entire affected population, where possible. Examples of activities include Psychological First Aid (PFA) and recreational activities. Basic psychosocial support can be provided by trained emergency responders, community members and volunteers.

- **Community and family psychosocial support** – This includes promotion of positive mental health and psychosocial well-being and prevention activities, with a specific focus on groups, families and individuals at risk. Examples of activities include peer support and group work. Community and family psychological support can be provided by trained emergency responders, community members and volunteers.
- **Focused psychosocial support** – This includes prevention and treatment activities for individuals and families who present with more complicated psychological distress and for people at risk of developing mental health conditions. Examples of activities include basic psychological interventions, such as individual and group counselling, which are often provided in health-care and social care facilities with accompanying outreach work, or in community facilities where feasible and culturally acceptable. Focused psychosocial support can be provided by both specialists and trained and supervised non-specialists.
- **Clinical services** – This includes specialized clinical care and treatment for individuals with chronic mental health conditions and for people suffering such severe distress and over such a period of time that they have difficulty coping in their daily lives. Examples of activities include treatment centres for survivors and alternative approaches to drug therapy. Services are provided by specialists within health-care and social welfare systems.

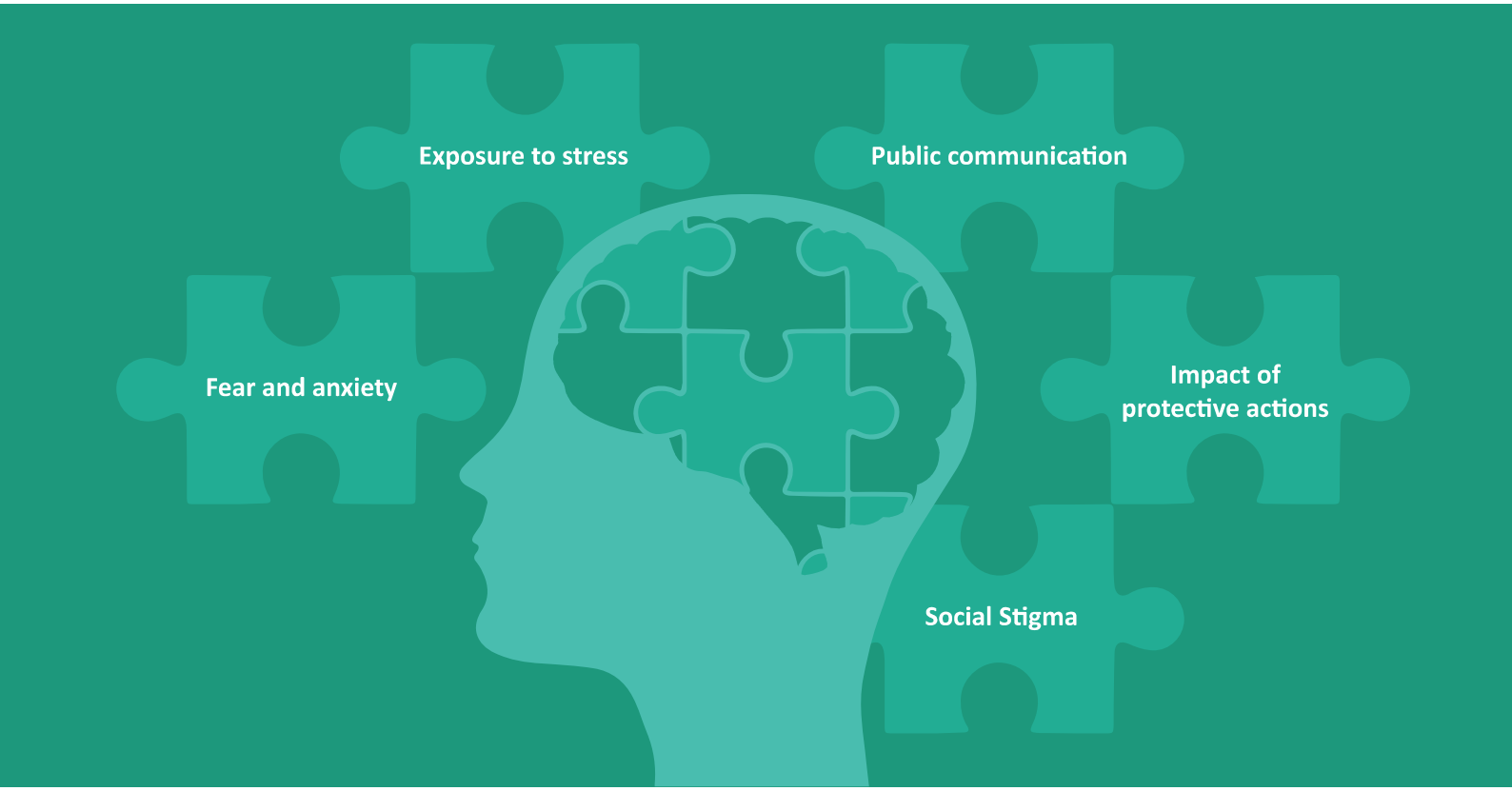
The term first responders used in this framework refers to individuals and teams that are involved in activities which address the immediate and short-term effects of an emergency. This includes: on-scene personnel from the police, fire brigades, hazmat teams of civil protection and emergency medical services. It also includes personnel in hospital emergency rooms, crisis management institutions and those involved in detection, verification and warning (20). In addition, other personnel may be called upon, depending on the scenario and scale of the event (for instance, various health-care professionals were requested to assist with the identification of bodies following the 2011 Great East Japan Earthquake and Tsunami. In general, such responders do not have training in response to radiation emergencies, particularly for psychological support, and may need to be equipped with easy-access information, pocket-size leaflets, fact sheets, frequently asked questions and answers, checklists, and so on.

Fig. 3: **The IASC Intervention pyramid for MHPSS in emergencies**



Source: (19) Graphic adapted from the IASC mhGAP-HIG guidelines, with permission

2 | MENTAL AND PSYCHOSOCIAL ASPECTS OF RADIOLOGICAL AND NUCLEAR EMERGENCIES



There is a range of psychosocial aspects that need to be considered when planning for radiation emergencies. While these psychological aspects apply to everyone, certain groups will require special attention (Fig. 4).

2.1 FEAR AND ANXIETY RELATED TO RADIATION

There are a number of reasons why exposure to radiation may be particularly frightening. Exposure to ionizing radiation is not immediately evident, visible, or otherwise detectable without special equipment, and so it is not possible for individuals to assess whether they are within a safe distance from a dangerous source of radiation, whether they might be contaminated externally, or have unknowingly inhaled or ingested radioactive substances. Lack of knowledge among the general public and sometimes also among government officials, or lack of information about ionizing radiation, its health effects, and how it is measured, can further increase short- and long-term anxiety following an emergency involving potential or actual radiation exposure (21, 22).

The negative public perception of the exposure to ionizing radiation, and by proxy, everything related to nuclear energy, is linked with the history of the nuclear bombings in Japan in 1945, their associated death and devastation (23), as well as more recent emergencies involving nuclear power plants. In addition, cancer, birth defects and hereditary effects are also often linked with exposure to radiation in the mind of the public, which is often misled by mass media and films in popular culture. In addition, scientific evidence on the health effects of low doses of radiation remains susceptible to uncertainties.

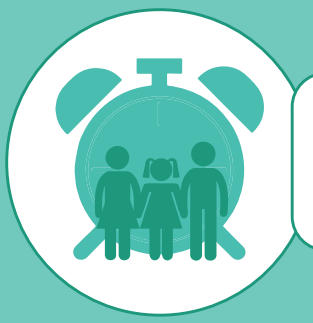
Fig. 4: **At-risk groups that require MHPSS during radiological and nuclear emergencies**



People in close proximity to extremely stressful events, such as an explosion at an accident site



First responders, health workers, clean-up workers, reporters and other responders working under hazardous or stressful conditions



Parents and future parents concerned about the long-term effects of radiation and health of their children



People in residential facilities/institutions (assisted living, retirement homes, correctional facilities)



Children from affected areas, who may face discrimination, stigmatization and bullying at school



Evacuees, as well as the members of hosting communities, whose lives were affected by the evacuation.



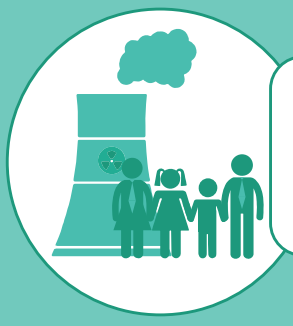
People with additional physical health needs, such as those ill, older or with a disability



People with pre-existing mental health and psychosocial needs



People with a low level of literacy, who may struggle to follow advice and instructions provided by risk communicators



The workers (and their families) of the nuclear facility where the accident took place, who may be blamed for the accident

Understandably, any potential hazard that may pose a risk for children and future generations touches upon emotional reactions, thereby adding to the fear of radiation. Negative risk perception about the genetic effects of radiation exposure was associated with depressive symptoms among the evacuees from Fukushima prefecture in Japan (25). Fear of exposure to radiation and a high number of healthy people worried about their exposure levels (so-called worried well) may overwhelm the capacities of local health-care facilities (21).

There are also wider political dimensions which will further influence the psychosocial climate in the affected regions and nations. Fukushima was linked to the growth of public distrust in the nuclear industry and the government. As seen after the accident in Chernobyl, which occurred in the final days of the former Soviet Union, the uncertainties associated with the aftermath of a nuclear accident can become additional factors in destabilizing the pre-existing national or local political situation, and thus contribute to further anxiety among those affected. Box 3 describes lessons learned from these two nuclear emergencies.

2.2 EXPOSURE TO STRESS

Exposure to any severe stressor, such as disasters and catastrophes, is a risk factor for a range of long-term mental health conditions including anxiety and mood disorders as well as acute stress and grief reactions.

However, there are substantial differences between natural disasters and nuclear accidents in terms of the psychosocial impact associated with many factors such as human and material losses, psychological acceptance, community cohesiveness, stigmas, and media influence, which can all exacerbate stress levels.

The threat to health is a particularly powerful stressor for populations affected by radiological or nuclear emergencies (2, 4, 22, 27-29). In addition, protective actions such as iodine thyroid blocking (ITB), radiation monitoring and decontamination, screening, food and drinking-water restrictions, sheltering in place and evacuation could be a source of stress in affected people. In general, stressful situations, such as emergencies, often lead to changes of behaviour patterns (30). For instance, there is an increasing trend of substance abuse in people to cope with significant stress and its symptoms, including depression, anxiety or PTSD (31). This is particularly true for those affected by an emergency due to a nuclear accident.

2.3 PEOPLE AT RISK

Not everyone has or develops significant psychological problems during emergencies. Many people show resilience, meaning they are able to cope relatively well in adverse situations; this includes some individuals within at-risk groups. Although such people at-risk may need additional support, they often have the capacities and social networks that enable them to contribute to their families and maintain active relationships in social, religious and political life (14).

> “Depending on the emergency context, particular groups of people are at increased risk of experiencing social and/or psychological problems

There are numerous interacting social, psychological and biological factors that influence whether people develop psychological problems or exhibit resilience in the face of adversity, which makes it difficult to determine who will be most affected.

Depending on the emergency context, particular groups of people are at increased risk of experiencing social and/or psychological problems. Although many key forms of MHPSS should be available to the emergency-affected population in general, good programming specifically includes the provision of targeted support to the more vulnerable groups of people (14). It is important to recognize that within and across each at-risk group (detailed in Fig. 4) there is a diversity of risks, problems and resources.

Box 3: **Lessons from Chernobyl and Fukushima nuclear accidents**

The Chernobyl nuclear accident in 1986, and the Fukushima combined natural and nuclear disaster in 2011, were both rated at the highest level of severity by the International Nuclear Event Scale. Even though the duration, quality and quantity of radioactive releases, as well as levels of human exposure to radiation and the direct health consequences are very different between the two cases, both bear similarities in terms of psychosocial and mental health consequences.

These effects arise from exposure to the same type of severe stress. In the event of a nuclear accident, the three major contributing elements are: (i) the unknown nature of radiation and uncertainty related to the extent risk for people's health: (ii) implementation of the protective actions taken (such as evacuation, temporary relocation, resettlement), resulting in drastic socioeconomic consequences and changes for the affected communities, and the problem of returning to normal life following the disaster: and (iii) stigmatization of affected people, mostly evacuees and residents of the affected settlements.

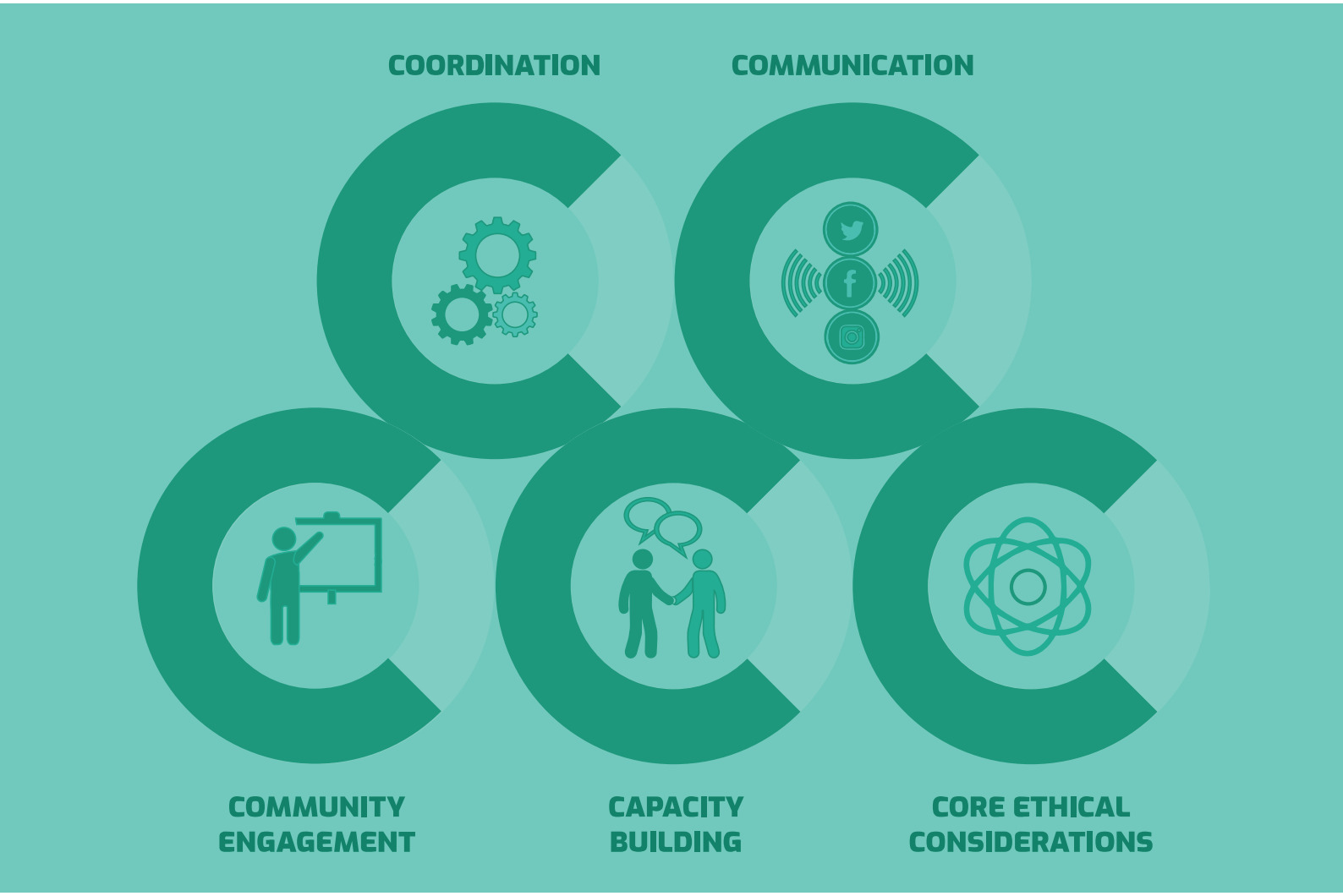
Evacuation following Chernobyl was problematic. The reports on health effects of radiation were inconsistent, and medical professionals blamed Chernobyl for people's health problems, even when there was no evidence of the association with radiation exposure (24). Ultimately, 350 000 people living near the nuclear plant were permanently relocated, with 600 000 military and civilian personnel from the former Soviet Union recruited as clean-up workers. The biggest health impact of Chernobyl has been on mental health, specifically major depression, anxiety disorders, post-traumatic stress disorder (PTSD), stress-related symptoms and medically unexplained physical symptoms (2).

Evacuation, temporary relocation and resettlement following the nuclear accident at Fukushima were all equally stressful for more than 150 000 people, including more than 50 000 voluntary evacuees, and the receiving communities. Over 100 evacuees died by disaster-related suicides, exceeding the number in Miyagi and Iwaki Prefectures, where there were a greater number of direct deaths due to the tsunami (25). These mental health consequences resulted from long-term evacuation leading to uncertain future and social issues including prejudice or stigma.

Both nuclear accidents have highlighted the need to apply a public health approach and scrutinize the protective strategy, focusing on the impact it may have on the affected people's well-being and mental health. Calling evacuees "victims", along with the effect of emergency interventions, strongly affect psychological health, with the likelihood of chronic levels of stress increasing over time (4, 5). Studies from Chernobyl have demonstrated that psychological effects of the accident did not always manifest in a clinical form such as anxiety or depression. Surveys reported negative emotional and behavioural changes such as substance abuse and risky attitudes among youth often based on the fatalistic idea of "we're all going to die soon anyway".

Experience from Chernobyl and Fukushima showed that these nuclear emergencies resulted in low and very low exposure levels of ionizing radiation, respectively, which were far outweighed by the psychological and social effects of the emergencies among the affected populations. Such lessons provide a useful insight for application of MHPSS after a nuclear accident.

3 | CROSS-CUTTING ISSUES THROUGH THE EMERGENCY CYCLE



Certain aspects of MHPSS planning and implementation during response and recovery phases are cross-cutting and apply throughout the entire emergency cycle for all type of emergencies, particularly the so-called "5 Cs", including coordination, communication, community engagement, capacity building and core ethical aspects of community-based MHPSS interventions, as described below.

3.1 COORDINATION

International safety standards for preparedness and response to radiation emergencies underline the importance of cross-sector coordination to ensure timely and efficient planning and response to an emergency, resulting in an eventual successful recovery (7). National arrangements for cross-sector coordination are also included in the requirements for countries' preparedness for health emergencies as postulated in the International Health Regulations (IHR) (2005) (32).

Similar to radiation emergencies management, MHPSS is a cross-cutting issue where no one agency is responsible for solely delivering it within emergency settings; as an interdisciplinary area, it remains the responsibility of multiple agencies, sectors and clusters. Effective MHPSS programming requires inter-sectoral coordination among diverse actors and stakeholders (14). A

recent report summarizing MHPSS experience, lessons learned and challenges, identified lack of coordination between agencies providing MHPSS in the areas affected by the Fukushima nuclear accident as one of the main challenges in the post-accident recovery period (33).

Within a country affected by a radiation emergency, MHPSS would be most relevant for health, social well-being, education, emergency response and civil protection sectors involved in the response. An MHPSS working group is typically led by a health agency and aims to balance diverse, yet complementary approaches of other sectors. There are various configurations in leadership of MHPSS working groups, with the exact configuration decided at country level by the actors involved. Each of the involved sectors will usually identify a focal point responsible for the agency's MHPSS activities. Focal points representing their respective sectors will then form a cross-sector coordination working group, also typically managed by the health sector.

In an emergency context, an MHPSS working group serves as the platform or forum where agencies providing MHPSS programmes (either stand-alone or integrated into their work with other affected sectors, such as education, culture and sport, travel and tourism) can meet to discuss technical programming issues related to the emergency response.

An effective coordination plan is part of the overall response plan. It builds on the available mapped resources, and includes the following elements.

- A roster should be drafted of emergency response organizations and human resources who will establish a multi-sector MHPSS working group when needed. The group should have representation from wider systems, such as existing community support mechanisms, formal and non-formal school systems, general health services, general mental health services, social services, and so on (14).
- Focal points responsible within relevant agencies in relevant administrative regions should have functional links for communication and established operating procedures. Tasks, responsibilities and lines of communication should be defined, agreed on and clear to all involved.
- Description of agreed roles, responsibilities, capabilities and protocols should be shared between the involved authorities and organizations. This will facilitate the development of an integrated response plan (7).
- General health and mental health professionals should advocate and work in partnership with other sectors (for instance, communication, education, community development, disaster coordination, child protection, police) to ensure that relevant MHPSS interventions are timely and properly implemented.

3.2 COMMUNICATION

During public health emergencies, people need to know what health risks they face, and what actions they can take to protect themselves. Accurate information provided early, often, and in languages and channels that people understand, trust and use, enables individuals to make choices and take actions to protect themselves, their families and communities from threatening health hazards.

Emergency risk communication (ERC) is an integral part of any response. It is the real-time exchange of information, advice and opinions between experts, community leaders or officials, and the people who are at risk (34).

During emergencies, humanitarian crises and natural disasters, effective ERC allows people most at risk to understand and adopt protective behaviours. Preparation for ERC includes establishing an open dialogue with all relevant stakeholders during the preparedness stage shown in Fig. 1. It allows authorities and experts to listen to and address people's concerns and needs so that the advice they provide is relevant, trusted and accepted. This is essential not only for limiting the exposure to a hazard and minimizing the consequences of the emergency, but also to reduce anxiety among the affected populations and facilitate access to care for those who need it. Planning and response activities for emergency situations are shown in Fig. 5.

WHO guidelines for communicating risk in public health emergencies (34) provide the following recommendations.

- Build trust and engage with communities of affected people.
- Integrate ERC into health and emergency response systems (including governance, leadership and coordination across sectors and stakeholders, building information systems and providing resources in terms of finance and capacity building).
- Use strategic planning (i.e. assessment and evaluation of interventions in order to improve public awareness and influence behaviour before, during and after a public health emergency) for effective and targeted ERC practices.

Public communication is one of the most challenging aspects in the management of radiation emergencies (35, 36). It can be delivered by different stakeholders involved in response and through various media, and may often be incomplete, inconsistent, contradicting and confusing.

Social media play a critical role in managing ERC. A recent study evaluated the Twitter communications right after the Fukushima nuclear accident, highlighting the point that scientific information delivered through social media channels was mixed with emotion, non-scientific information and rumours, which contributed to the public anxiety, confusion and to some degree, divided the society (37).

In any major emergency, a sudden increase in the need for information can severely stress and sometimes exceed the capacity of the communications infrastructure (21). Lack of information, lack of its clarity and consistency have also been shown to increase public concerns (38).

Poor communication may contribute to increased anxiety, distrust of authorities, and stigmatization of the affected people (22, 24, 25, 39, 40). In addition, lack of information and inadequate risk communication may lead to the increased number of the worried well – people who will seek medical help due to perceived health problems rather than radiation exposure, thereby risking overwhelming health-care facilities (21).

3.3 COMMUNITY ENGAGEMENT AND RESILIENCE

The IAEA General Safety Guide 11 (GSG-11), defines community resilience as the capacity of a community to be able to recover quickly and easily from the consequences of a nuclear or radiological emergency (9).

Community resilience depends on a number of factors, each of which plays an important role depending on the type of the emergency, type of the community and its resources, and type of the setting involved. These factors include but are not limited to: local networks and relationships, leadership and governance, local collective knowledge, health conditions, available resources, economic conditions, and so on.

> “In any major emergency, an increase in the need for information can severely stress and exceed the capacity of the communications infrastructure

Community-based approaches to MHPSS in emergencies are based on the understanding that communities can be drivers for their own care and should be meaningfully involved in all stages of MHPSS responses.

Emergency-affected people are first and foremost to be viewed as active participants in improving individual and collective well-being, rather than as passive recipients of services that are designed for them by others. Thus, using community-based MHPSS approaches facilitates families, groups and communities to support and care for others in ways that encourage recovery and resilience.

Fig. 5: **Recommended actions for emergency communication in planning and response**



Develop a public communication strategy that includes both media and social media outreach. Extensive media attention could be helpful, but accurate impartial messaging is critical to prevent the media focus on the response from becoming negative or hypercritical (35)



Coordinate your messages with other responding agencies and relevant experts to prevent inconsistent messaging. Specific guidance on communicating in emergencies is provided elsewhere (34, 43).



Be consistent in your messages and information. Consistency enhances trust by the public.



Prepare clear messages to inform the affected population about actual and perceived risks and prognosis, as well as protective actions to be administered and precautionary measures people could apply to help themselves (44).



Prepare information for different emergency scenarios and different protective actions, such as evacuation, sheltering, ITB, decontamination procedures and so on.



Identify and train crisis spokespeople/communicators as part of pre-crisis planning. Prepare them to listen to the concerns of the public with empathy. Trust is central to risk communication – these communicators must be trusted sources for information if their messages are to be received and acted on (34).

These approaches also contribute to restoring and/or strengthening those collective structures and systems essential to daily life and well-being (41). WHO recognizes community engagement as one of the main factors required for an efficient response to public health emergencies. In order to achieve this emergency response, planners should identify people that the community trusts and build relationships with them; involve them in decision-making to ensure interventions are collaborative, contextually appropriate and that communication is community-owned (34).

Building trust and engaging with the affected communities was underlined as one of the key interventions in the WHO guidelines on communicating during public health emergencies (34). Indeed, after the Fukushima nuclear accident, many parents expressed distrust towards the information they received, questioning the reliability of the information, and shared their frustration at the impact this had on their ability to make informed decisions for their families, such as the choice of food to purchase (42).

Among the Fukushima evacuees, the lack of information and low health literacy levels caused anxiety (45). However, engaging people in joint activities that had a common objective, resulted in the sense of shared ownership of the activity's outcome and thereby reinforced trust, a sense of solidarity, unity and mutual understanding (Box 4).

In any crisis, the first point of contact is the immediate family, friends, colleagues, neighbours or other next to kin. In most instances, communities have



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some ways (such as systems, people, resources) to support those in need, in the event there are emotional, physical, social or financial problems.

These might be religious institutions, community activity groups, associations and societies among

other groups, who may have a better understanding of local needs and be better positioned to respond in a more sensitive manner. Emergency planners should identify such community resources in advance as part of a MHPSS resource-mapping exercise. It is important to recognize, establish contact and collaborate with people within these community resources prior to the emergency, and also involve them during the response and recovery following the emergency.

3.4 CAPACITY BUILDING AND TRAINING

Capacity development is the process by which organizations improve and maintain their human resources and how individuals within an organization develop and retain the competencies (knowledge, skills and attitudes) needed to carry out their duties competently, and preferably beyond the minimum standard. With respect to MHPSS capacity building, main training efforts should focus on the development of skills among health-care workers who have had little training in MHPSS (14).

These workers should be supervised by mental health specialists – or be under their guidance – for a substantial amount of time to ensure the lasting effects of training and responsible care. Workshops on supervision skills and ongoing support should be offered by and to the mental health specialists involved.

Training initiatives should consider national social and health care systems to avoid creating parallel systems of care. When planning the training process, coordination between governmental and nongovernmental organizations (NGOs) should occur so that the content is consistent, roles are clearly defined and use of resources is maximized.

During emergencies, non-professional caregivers and responders may be rapidly trained to provide PFA (46). They should also be provided with orientations on potential consequences of radiological and nuclear incidents, and be trained

Box 4: **Building trust by engaging community – Iitate village experience**

Nearly a decade has passed since the Fukushima Daiichi nuclear power plant accident, which left local residents coping with various psychosocial and economic problems. While radiation remains their concern, their trust in the authorities has yet to be restored. The majority of people have not returned to their homes since they were forced to evacuate because of the nuclear accident. The relocation experience has changed the lives of both evacuees and hosting communities; it challenged the traditional sense of community and had a major impact on the well-being of the people affected. Living in the aftermath of a nuclear disaster undermined their trust in scientists and medical experts.

During the evacuation period, Fukushima Medical University experts interviewed more than 1000 residents of Iitate village who were evacuated after the accident. Scientists collaborated with local public health workers to design and conduct a health survey and to discuss the results of interviews with the study participants.

This approach helped to identify health and social concerns of local people. After the evacuation order was lifted in 2017, peer groups were created to monitor local people's well-being. The purpose of doing so was to build a support system where local people could connect, help each other and engage in a social activity in the affected communities.

The study used a holistic approach which assumed that people's well-being and the sociocultural reconstruction of their living environment are closely interrelated. The collaboration with local public health workers, community leaders and local residents allowed for:

- integration of local knowledge into the broader understanding of the psychosocial and socioeconomic consequences of the 2011 disaster;
- joint development of information/ education materials and dissemination activities;
- shared ownership of these materials; and
- restoration of trust and people's engagement in the recovery measures/ programmes implemented by authorities.

The lives of people affected by the 2011 nuclear accident had diverse, complex and challenging problems. To fully understand the extent of the problems, the authorities tasked to manage the recovery process needed to engage directly with local communities. This process continues and is the only way to rebuild the broken trust between people and authorities/experts.

Source: (45)

to provide the affected population with basic information about risk and preventive measures, as well as supporting them in accessing further information and support. Considering the potential scale of radiological or nuclear emergencies, training may incorporate an element of ongoing support or supervision by MHPSS professionals.

Staff members working in emergency settings tend to work many hours under pressure and within difficult security constraints. Many aid workers experience insufficient managerial and organizational support, and this is often reported to be their biggest stressor (14). It is therefore essential to protect and promote the well-being of staff involved in emergency response. As mentioned previously, first responders, clean-up workers and health workers, act under stressful and sometimes hazardous conditions (47-49).

After the Fukushima accident, nurses who had more knowledge of radiation tended to have better mental

health, suggesting that education and training about the health risks of radiation exposure is important for health-care professionals (47). Working hours and staff response to stress should be monitored on an ongoing basis (50) and potential work-related stressors should be addressed.

Human resources management and staff support is an important component of integrating MHPSS in the general system of EPR. The following actions are instrumental in addressing the issue.

- Prepare a staff-support policy to prevent or mitigate the effects of stress among first responders, clean-up workers, power-plant workers and their families (49).
- Recruit and train MHPSS providers (professionals and volunteers) (14), including provision of basic information on radiation safety.
- Provide education and professional development training, support and supervision for general health-care providers on the use of MHPSS interventions (19).
- Provide PFA training for all care providers, including first responders (46).

3.5 CORE ETHICAL CONSIDERATIONS FOR COMMUNITY-BASED MHPSS

In general, ethical guidelines in MHPSS work are similar to those applied in radiation protection. The four core ethical values underpinning the radiation protection system are: beneficence/non-maleficence, prudence, justice and dignity. These core ethical values apply to all three principles of radiological protection: justification, optimization and dose limitation to further improve accountability, transparency and inclusiveness (51).

MHPSS ethical guidelines are specifically governed by beneficence/non-maleficence and do more good than harm (where any harm should be outweighed by the benefit of the intervention) as well as those that relate to the quality and effectiveness of the intervention.

Ethical considerations for MHPSS in emergency settings are elaborated in various guidelines (41). Applying ethical principles to community-based MHPSS in emergency settings helps to avoid potentially risky or unsafe practices and to keep communities safe. Most specific to psychosocial support programmes in emergencies are the six core principles of the *IASC Guidelines on mental health and psychosocial support in emergency settings* (14). In particular, when promoting a community-based approach to MHPSS it is paramount that the following point be addressed.

- When planning and implementing interventions, donors or responders must, as stated above, consider the needs, best interests and resources of the affected population.
- Care must be taken that all those engaged in any aspect of community-based MHPSS are aware of the ethical prohibition against sexual exploitation and abuse.
- Confidentiality must be maintained. This includes providing services in such a way that vulnerable groups can receive services without being specifically identified by their vulnerabilities.
- There should be no racial, sexual, linguistic or religious discrimination when providing MHPSS to communities; everyone should be supported, including indigenous people, migrants, minorities, people with disabilities, regardless of a person's gender orientation or identity.
- Responders should have the capacity to respect local cultures and values, and to adapt their skills to suit local conditions.
- Potentially negative effects of programming should be discussed with the community early on and monitored throughout the response so they can be promptly addressed.

> "MHPSS ethical guidelines are specifically governed by beneficence/non-maleficence and do more good than harm, as well as those that relate to the quality and effectiveness of the intervention

4 | KEY ELEMENTS OF PLANNING FOR MHPSS IN RADIOLOGICAL OR NUCLEAR EMERGENCIES



The International Commission for Radiological Protection (ICRP) defines the justification principle of the system of radiological protection as a "process of determining whether... a proposed action, or set of actions, in an emergency or existing exposure situation is likely to be beneficial overall (that is, whether the benefits to individuals and society outweigh any costs or harm) (52).

It further states that the consequences of the implemented protection strategy are "not confined to those associated with radiation exposure but include other risks and the costs and benefits of the activity. Sometimes, the radiation detriment will be a small part of the total. Justification thus goes far beyond the scope of radiological protection" (52). Similarly, General Safety Requirements (GSR) Part 7 clearly states: "Each protective action… shall be demonstrated to be justified, with account taken not only of those detriments that are associated with radiation exposure but also of those detriments associated with impacts of the actions taken on public health, the economy, society and the environment" (7). Examples of such impacts include possible deaths among patients evacuated without the necessary medical care and possible reduced life expectancy due to resettlement, as well as non-radiological health impacts, such as psychological and mental health consequences (4, 53).

The use of evidence-informed MHPSS interventions can reduce distress, enhance well-being, improve functioning for affected communities and ultimately contribute to a positive outcome of response and recovery. Effective planning therefore involves an understanding of the factors and incorporation of them at all stages of emergency management,

as well as MHPSS education and training for planners and responders. Key elements follow of the process to address MHPSS aspects during the planning phase.

4.1 RISKS, VULNERABILITY ANALYSIS AND NEEDS ASSESSMENT

Assessments of vulnerability and needs of MHPSS plans require multiple steps during the planning phase. They begin with conventional radiation hazards and risk mapping, which includes identifying the most plausible emergency scenarios for a given country or region and the resources likely needed to respond to them. Beyond this, additional steps are particular to MHPSS preparedness. This includes the following actions, among others.

- Identify potential adverse mental health impacts of certain protective actions (such as administration of potassium iodine pills, sheltering in place, evacuation, individual monitoring and decontamination). For instance, sheltering in place for a prolonged time or temporary accommodation of evacuees in schools and gyms after the Fukushima nuclear accident exacerbated the mental health and psychological consequences of the affected communities.
- Consider possible MHPSS interventions for each protective action to prevent and reduce such adverse consequences.
- Identify weaknesses in the existing public MHPSS systems and resources.
- Assess and prioritize the identified needs and gaps in the capabilities and resources required to respond.
- Establish regular intervals to review and update the risk and vulnerability analysis and needs assessment.

4.2 GENERAL MENTAL HEALTH POLICY

Considering the complex nature of the stressors to which a population may be exposed during any disaster, including radiation emergencies, it is recommended that a general public mental health policy or plan (unrelated to emergency situations) is put in place (17). This would be in addition to an MHPSS contingency plan, which specifically addresses emergency situations. The latter includes the following actions (14):

- involve different sectors;
- prepare a contact list of relevant national and international public mental health experts who may give appropriate advice when needed;
- engage local community leaders, activists and other members (engaging community members during the disaster planning process is vital and should facilitate this action);
- consult people and communities about the lessons learned from their previous experiences with emergencies and about their perceived needs (54);
- establish priorities and criteria for the allocation of (often limited) resources (54);
- test the response and contingency plans regularly using exercises for different scenarios (54);
- include, in the response plan, essential operational procedures for evacuation of mental health facilities (if applicable).

4.3 MAPPING OF EXISTING RESOURCES

Mapping of existing resources begins with identifying and recording (mapping) all available formal and informal community support mechanisms (including those resources within each sector which would be involved in emergency response). This includes various psychosocial resources, such as experienced and/or trained professionals and volunteers, specialized MHPSS services, availability of exercises, which have drawn on lessons from past experiences. It also includes information materials in various media on individual coping and life skills, available social support mechanisms, and the capacities of communities, NGOs and government (all levels) (14).

4.4 MHPSS INTEGRATION INTO GENERAL HEALTH CARE

Mental health and psychosocial aspects must be an integral part of the public health risk assessment, and emergency preparedness, response and recovery plans for all types of emergencies regardless of the origin and source of the emergency (17), including radiological and nuclear emergencies.

In addition, mental health-care interventions should be carried out within primary health care (PHC) as well as general hospitals and outpatient facilities.



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Mental health care can also be integrated into specialized services such as paediatrics, emergency medicine, obstetrics and gynaecology as well as for other noncommunicable diseases (19).

All too often, unfortunately, there is neglect of or even resistance to the involvement of mental health professionals in a public health response during an acute crisis (55). Mental health and psychosocial support professionals and PHC staff trained in MHPSS have key skills that can be applied during an emergency, such as experience of working with individuals or communities who are distressed or expressing distrust and frustration. They may also provide useful support to other health and emergency response workers in helping to manage aspects of the response. Therefore, incorporating MHPSS into the overall emergency response is justified.

Clinical on-the-job training and support of PHC and general health workers by mental health specialists are essential components for successful integration of mental health care into the general health system. A standard tool for integrating mental health care into non-specialized health care in humanitarian emergency settings is available and could be used as a model for other types of emergencies (19). The recommendations for clinical management of mental health disorders during the response phase of an emergency are provided elsewhere (19, 46).

Mental health and psychosocial interventions should also be organized in other pre-existing structures within the community, such as in schools, community centres, youth and senior centres. Engagement of community members, such as religious leaders, and use of existing community resources should be maximized.

4.5 MONITORING AND EVALUATION OF MHPSS IMPLEMENTATION

Monitoring and evaluation (M&E) is necessary to assess whether a programme, project or intervention is achieving the desired results. For M&E to effectively measure status before, during and after a project, it must be built into the activities of a programme from the very beginning (56).

For the purpose of this framework, the term monitoring refers to the visits, observations and questions to be asked while a programme is being implemented to see if it is progressing as expected. One of the key issues in monitoring MHPSS programmes is to ensure that the programme is doing no harm. Similarly, the term evaluation, as used here, refers to examining a programme at the beginning, middle (if timing allows), and after it has been completed to see if it achieved the desired results.

Activities should be monitored and evaluated through indicators that need to be determined, if possible, before starting the activity. Indicators should focus on inputs (available resources, including pre-existing services), processes (aspects of programme implementation and utilization) and outcomes (such as level of distress, functioning of beneficiaries, livelihoods). Provisions should be made to register the evacuees and those who were resettled as a result of a radiological or nuclear accident, to enable the monitoring and follow-up of such groups, if needed.

The IASC Reference Group on Mental Health and Psychosocial Support in Emergency Settings has developed a common M&E framework (56) to supplement the IASC *Guidelines on mental health and psychosocial support in emergency settings.*

The IASC framework defines indicators as a unit of measurement and specifies what is to be measured; indicators are intended to answer whether or not the desired impact, outcomes or outputs have been achieved. Indicators may be quantitative (for instance, percentages or numbers of people) or qualitative (such as, perceptions, quality, type, knowledge, capacity). Both impact and outcome indicators are used.

Impact indicators are aligned with the goal statement and aim to reflect the result (or impact) of actions on a broader scale. There are different methods of measuring impact that involve both quantitative and qualitative indicators. In the IASC framework, impact is recognized as a change at the individual level and that of the collective or group (56). Examples of impact indicators follow:

- functional ability to carry out essential daily activities, which will differ according to factors such as culture, gender, age, and so on;
- subjective well-being indicators such as feeling calm, safe, strong and hopeful, or on the contrary – anxious, vulnerable, lost and sad);
- extent of prolonged disabling distress and/ or presence of mental, neurological and substance use disorders;
- ability of people with mental health and psychosocial problems to cope with problems (for instance, through communication, stress management, problem-solving or conflict management skills);
- social behaviour (for instance, helping those in need, using violence, bulling, or other aggressive behaviour, and so on);
- social connectedness (such as quality and number of connections an individual has with other people in their social circles of family, friends, co-workers and acquaintances).

Outcome indicators are indicators that represent measure of an outcome demonstrating that family, community and social structures promote psychosocial well-being of their members (56). Examples may include the following:

- level of family connectedness or cohesion;
- level of social capital, both cognitive (level of trust and reciprocity within communities) and structural (membership and participation in social and community networks or groups);
- percentage of target communities where steps have been taken to identify, activate or strengthen local resources that support psychosocial well-being and development;
- percentage of formal and informal social structures that include specific mental health and psychosocial activities and support;
- number of affected people who use different formal and informal social structures (such as educational facilities, health care, social services, women's groups and youth clubs);
- number of people in at-risk groups engaged in livelihood opportunities.

> "Clinical on-the-job training and support of general health workers by mental health specialists are essential components for successful integration of mental health care

5 | MHPSS CONSIDERATIONS DURING THE EMERGENCY RESPONSE PHASE



Depending on the scale and the scenario of a nuclear or radiological emergency, public health interventions should be complemented with a range of MHPSS interventions. This chapter does not intend to discuss the urgent protective actions which may be used in emergencies but provides an overview of key MHPSS considerations for the emergency response phase.

5.1 PSYCHOLOGICAL ASPECTS OF SHELTERING IN PLACE, EVACUATION AND ITB

Sheltering in place, evacuation and relocation are protective actions that may affect mental health and psychosocial well-being after nuclear emergencies, as was seen after the Chernobyl accident in 1986 and after the 2011 Great East Japan Earthquake and Tsunami and the subsequent nuclear accident, both of which caused displacements of populations in affected areas (4, 24, 25).

Sheltering in place may have to be implemented as an urgent protective action, but this could also add to other stressors. Individuals sheltering in place must remain indoors, whether they are at home, work, school, shopping, in a place of worship, at a friend's house or elsewhere. A response that requires sheltering in place can last from a few hours to several days or weeks, and may require individuals to be separated from family members. Depending on the type of emergency, individuals sheltering in place may have varying access to supplies, materials and information. For instance, if a dirty bomb is detonated in an area, groups of individuals may have to shelter to a single room and tape the windows, doors and air vents shut to prevent exposure to radiation. This can result in fear, confusion and anger (57).

ITB must be administered quite rapidly in case of a nuclear accident involving a release of radioactive iodine (58). Administration of ITB should be

accompanied by an information campaign explaining in simple terms the rationale and modalities for effective ITB administration (a leaflet about ITB should be disseminated in advance at the planning phase to reduce anxiety regarding the potassium iodine's side-effects).

Evacuation (discussed in Box 5) may be especially stressful for more vulnerable people in the community, such as those with pre-existing health conditions, severe physical, intellectual, cognitive or psychosocial disabilities. In some cases it may lead to drastic consequences, as seen among the critically ill evacuees of health-care facilities after the Fukushima disaster (4, 53). In addition, when large numbers of people relocate, frustration and tension may arise between evacuees and the receiving communities (14).

Among other protective actions, mitigation of psychosocial impacts of sheltering in place which may last up to several days – including a potential lack of access to information, supplies or support for the duration – should be incorporated within training of responders and integrated into MHPSS planning. Recent experience with social distancing and confinement implemented as a countermeasure in many countries affected by the global COVID-19 pandemic, saw lessons offered on management of MHPSS consequences of such interventions, which could be applied in case of a radiation emergency as well (59).

If safety measures allow, evacuees should be actively involved in the implementation of urgent protective actions, such as evacuation, as much as possible. Explanations must be provided why it is necessary to leave behind personal belongings and pets, and to communicate that shelter or temporary relocation is organized with the aim of keeping members of families and communities together (54). Community leaders should be consulted regarding decisions on where to locate religious places, schools and water supply, if temporary shelters and camps are to be built. This activity should be started in the planning phase of emergency preparedness and response, and these relationships maintained so they can be activated quickly in the event of an emergency. Providing religious, recreational and cultural space to evacuees has been shown to reduce the mental health and psychosocial impact of the evacuation; such spaces should therefore be incorporated into the planning of temporary facilities (14).

5.2 PSYCHOLOGICAL ASPECTS OF RADIATION MONITORING AND DECONTAMINATION

The decontamination process, if required, may be very stressful for those affected, especially when a large group of people needs to be decontaminated and the waiting period is long. Anxiety may be increased by uncertainty, fear of contamination, not being allowed to leave the scene, discomfort and potential embarrassment associated with undergoing decontamination. The necessity of handing over personal objects and asking people to undress during decontamination adds to feelings of discomfort, embarrassment and insecurity, and will require specific cultural and religious awareness (60).

People may be frightened, but evidence suggests that panic is rare (61-63). To reduce public anxiety and to promote public compliance with decontamination procedures, emergency responders should communicate openly and honestly with members of the public about the nature of the event, the actions they are taking, and provide health-focused explanations about why decontamination is necessary (61, 64).

In fact, good communication is essential during decontamination. The use of pictograms and written information may be helpful (65), especially because personal protective equipment may hamper first responders in their communications. As much

> "Evacuation, sheltering and relocation are protective actions that may affect mental health and psychosocial wellbeing after nuclear emergencies



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Rethinking contamination

The English word contamination when translated to some other languages often has a negative connotation and is expressed by words synonymous to words like dirty and filthy. When communicating to the public and developing communication materials, leaflets, and so on, emergency responders and planners should be mindful of this issue and make sure the messages to the public are clear and free from such connotations. Careful and sensible language may be required, and clarification may be needed to explain the use of specific terminology.

as possible, the affected communities should be involved in the decision making process with regard to implementation of the protective actions.

In addition, it is necessary to allow for sufficient space for people to move, to prevent them from feeling trapped, while at the same time providing screens that allow for privacy when undressing. Clothes should be made available to replace the removed contaminated clothing. During the decontamination process, children should be accompanied by a parent, caregiver or an adult otherwise known to the child.

5.3 MHPSS INTERVENTIONS AT COMMUNITY LEVEL DURING THE RESPONSE PHASE

Subject to the prevailing circumstances and radiation safety requirements, authorities dealing with response should consider implementing MHPSS as soon as feasible in the response, through implementing planned MHPSS procedures. In addition to formal arrangements between responding agencies, this may also entail ad-hoc engagements with existing or newly-formed social structures, forums, associations, NGOs and other actors to implement community-focused interventions. Some forms of community-focused interventions are suggested (Fig 6). These should only be carried out if they can be done safely (that is, they do not contradict the provisions for preventing and reducing radiation exposure).

Recent experience with the response to COVID-19 has demonstrated that a prolonged confinement period, as a hazard containment measure, may cause adverse behavioural and emotional reactions, such as increased domestic violence, alcohol abuse, depression and anxiety. WHO and IASC offer comprehensive guidance on MHPSS interventions for managing these consequences (59). These interventions target various vulnerable groups within the population, such as older people, who might be left alone in confinement and have limited ability to use modern communication devices; people with chronic diseases or disabilities; pregnant or lactating women; and of course children. These interventions may be easily adopted for other health crises, including radiological and nuclear emergencies.

Box 5: **Basic facts about evacuation and relocation**

Early phase of the response

In the early phase of a nuclear emergency (within the first few hours/days), urgent protective actions regarding movement of people may be implemented to prevent radiation exposure. Decisions are based on nuclear power plant accident conditions, amount of radioactivity released into the atmosphere, prevailing meteorological conditions (such as wind speed and direction, precipitation), among other factors.

Evacuation is the urgent removal of populations within a radius around the event site, which is most effective when used as a precautionary action before an airborne release takes place.

Sheltering in place is an urgent protective action implemented primarily to provide shielding against external exposure and by using a structure for protection from an airborne plume and radionuclides deposited outdoors.

Later phase of the response

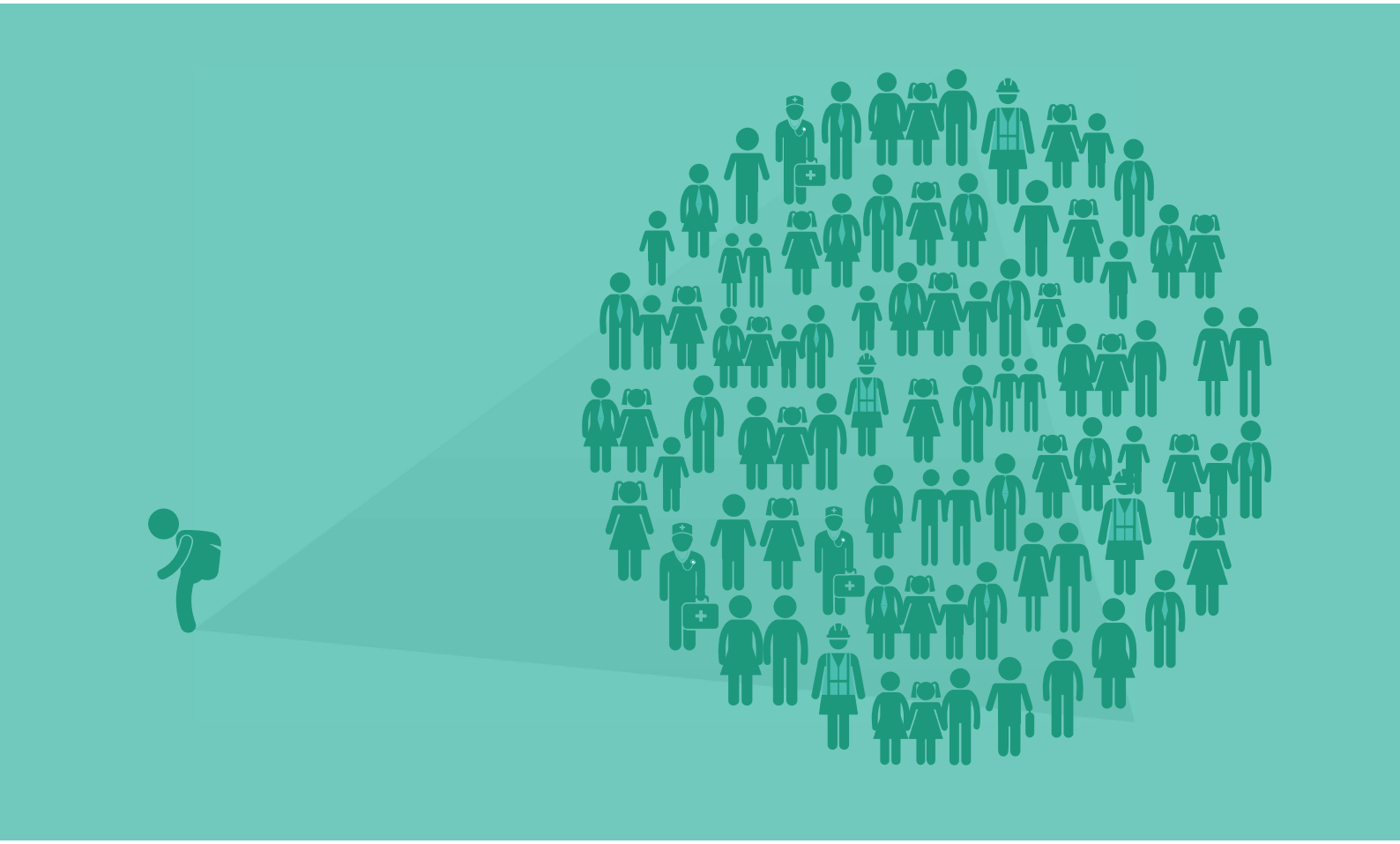
As the amount of environmental and human monitoring data increases, the situation becomes less uncertain and other protective actions may be implemented, taking into account the prognosis of the radiological situation over the long term.

Temporary relocation is a non-urgent movement of people from a contaminated area to temporary housing to avoid chronic radiation exposure. It may be a continuation of the urgent protective action of evacuation (as a longer-term action). If return after relocation is not foreseeable within one or two years, relocation is considered as permanent and is often called resettlement.

Fig. 6: **MHPSS interventions at community level during the response phase**



6 | MHPSS CONSIDERATIONS IN THE POST-EMERGENCY PHASE



When the emergency phase is over, the public health system should focus on implementing ongoing surveillance and risk assessment procedures as well as access to health care services and ongoing long-term follow-up when appropriate.

Large and inclusive stakeholder involvement is required for lifting of protective actions, enabling long-term recovery, and returning to a sense of normality, that is, appropriate rehabilitation of living conditions (while balancing radiological and non-radiological aspects, to define the new situation) (9). Communication resources are also important in assisting affected communities understand the new situation, allowing them to manage their radiological risk as feasible within their cultural context.

After a population has been exposed to severe stressors, it is preferable to focus on medium- and long-term development of community, and on the evidence-based mental health services and psychosocial interventions, as explored in Building back better (66). Radiation emergencies may have a long-lasting impact on affected communities, their health and the economy that may persist for decades, as has been seen from the past. Therefore, these consequences require long-term follow-up and community support (54).

Unfortunately, while the impetus and funding for MHPSS programmes are highest during or immediately after acute emergencies, mental health and psychosocial effects tend to last much longer than the acute crisis phase. In Fukushima, reduced

levels of stress were reported among the evacuees who were allowed to return to their homes after completion of decontamination works (67).

The development of services within a long-term perspective focuses on establishing sustainable access to mental health services for the whole community and is not restricted to subpopulations identified based on exposure to radiation. However, services delivered within a single integrated, community-based system can, when necessary, be tailored to address the needs of different subpopulations. Examples include the provision of outreach services/awareness programmes to vulnerable affected communities or marginalized groups who are reluctant or unable to attend clinical services (41).

6.1 SOCIAL CONSEQUENCES AND STIGMA

Social stigma in the context of health is a negative association applied to a person or group who have had a specific disease. In an outbreak, this may mean people are labelled, stereotyped, discriminated against, treated separately, and/or who experience loss of status because of a perceived link with a disease (68).

Such treatment can negatively affect those with the disease, as well as their caregivers, family, friends and communities. People who do not have the disease but share other characteristics with this group may also suffer from stigmatization. For example, the COVID-19 pandemic has provoked social stigma and discriminatory behaviours against people of certain ethnic backgrounds as well as anyone perceived to have been in contact with the virus. It is understandable that there is confusion, anxiety and fear among the public. Unfortunately, these factors also fuel harmful stereotypes.

Evidence clearly shows that stigma and fear around communicable diseases hamper the response (69, 70). Building trust in reliable health services and evidence-based advice counters this fear, which allows people to empathize with those affected, understand the disease itself and adopt effective, practical measures to keep themselves and their loved ones safe (59).

Stigma and discrimination can be just as pronounced following exposure to ionizing radiation (25, 47). For instance, the Japanese word “hibakusha”, which refers to atomic bomb survivors, has been used to stigmatize survivors of the atomic bombings in Hiroshima and Nagasaki (1, 23). In Chernobyl, clean-up workers, people evacuated and those residing in the areas contaminated by radioactive fallout, were officially labelled “Chernobyl victims” and were compensated in various ways (for instance, annual medical follow-up, rehabilitation holidays in special sanatoriums, small cash amounts, and so on). This reinforced the stigmatization of the affected people and led to the perception of their reliance on external support, which eventually led to hostility towards Chernobyl victims by the surrounding communities that had initially accepted them (2).

> “Fear of discrimination may lead to self-stigma, when people lose self-confidence and suffer from social isolation

After the Fukushima nuclear accident in 2011, bullying caused by stigma and prejudice toward evacuees, including children, became a social problem (39). One of the major concerns raised by both relocated people and those who had stayed at their homes, was the fear of discrimination (42). Fear of discrimination may also lead to self-stigma, when people lose self-confidence and suffer from social isolation (1).

Young people are especially vulnerable to stigma, as they may worry about being viewed negatively by their peers due to assumptions made about the effects of radiation, such as on pregnancy outcomes and the health of their future children (1, 3). It has been reported that young women from Fukushima often try to conceal the fact that they once lived in Fukushima (42). In addition, Fukushima Daiichi

nuclear power plant workers (and their family members) were also stigmatized and blamed by the public for the consequences of the accident. Discrimination, stigma and slurs against the nuclear workers were reported as key contributing factors for adverse mental health effects 2 to 3 months post-disaster (71).

To address and manage stigmatization of people, the International Federation of Red Cross and Red Crescent Societies (IFRC) has made a number of recommendations in its 2019 resolution (72). These include the following:

- Commit to focusing on the positive elements of mental health and psychosocial well-being for individuals, families and communities through mental health promotion and prevention activities, rather than taking a deficit and illness approach to humanitarian work.
- Work through existing mechanisms of support that individuals, families and communities recognize, trust and can access.
- Integrate MHPSS into other relevant programming areas and structures to reduce stigma linked with accessing MHPSS.
- Provide timely, accurate and relevant information about mental health and psychosocial well-being tailored to specific target groups via suitable communication methods (including social media), depending on context and audience.
- Messages about mental health and psychosocial well-being should aim to positively influence attitudes and behaviours towards affected people and not place them at risk of further isolation and stigmatization.

6.2 MHPSS INTERVENTIONS AT COMMUNITY LEVEL DURING THE POST-EMERGENCY PHASE

A range of standard MHPSS interventions are recommended in the aftermath of emergencies, among those discussed here. As stated throughout this framework, communication and education of the public is critical during the post-emergency phase, as this fosters transparency and trust. Every effort should be made to rebuild trust in social structures through community empowerment (34). This creates mechanisms for filling gaps created by the breakdown of social support networks and engages communities in the decision-making process. Such an approach creates the sense of shared ownership among the public and rebuilds trust in official structures. The communication strategy should include educating the public about risks of radiation exposure to prevent unnecessary fear and social stigmatization of affected people, sharing positive coping mechanisms and encouraging health-seeking behaviour (34).

Interventions should emphasize the importance of accepting evacuees into the host community, alongside the establishment of social support systems to (temporarily) integrate them there; and educating community workers as well as community leaders (such as village heads, health and social workers, teachers, journalists, religious leaders) in core psychological care skills (41). These core skills include PFA, emotional support, providing information/answering frequently asked questions, encouraging healthy behaviours and so on.

Interventions should also include the creation of inclusive, community-based self-help support groups. Such groups work to foster mutual emotional support and typically focus on sharing problems and formulating solutions, or searching for effective ways of coping with the stress of the emergency and evacuation. Groups can even develop community-level initiatives or income-generation opportunities for their members. Economic development initiatives that incorporate psychological support assist people to return to a sense of normality and also re-establish a disrupted socio-economic fabric of the society and should be encouraged (41).

> “During disasters and emergencies, mental health and social welfare plans are often disrupted due to the immediate need to address the emergency



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At-risk groups require particular attention, especially children. Activities should be implemented that support children and adolescents to understand the situation, reduce their anxiety and improve their well-being. Such activities should incorporate time for play as well, with the goal of allowing this group to return to normality.

During disasters and emergencies, mental health and social welfare plans are often disrupted due to the immediate need to address the emergency. During the post-emergency phase, efforts should be made to re-establish and support relevant national mental health and social welfare policies and plans for care of people with mental health issues and disorders. The long-term goal is a functional public health system with MHPSS as a core element (66). Elements of this system include:

- creating linkages between affected people and social and health services;
- establishing a referral and treatment system for patients with mental health needs;
- ensuring the continuation of essential services for people with severe mental health conditions or neurological conditions who may not have had access to relevant medication during the emergency;
- making available psychological interventions where possible for people impaired by prolonged distress.

> “Activities should be implemented that support children and adolescents to understand the situation, reduce their anxiety and improve their well-being

7 | CONSIDERATIONS FOR IMPLEMENTING MHPSS



Traditionally, MHPSS actions have been focused solely in the response and recovery phases. Until recently, this approach had been aligned with typical models promoting effective response for intervention in emergencies. However, the field of disaster and emergency management has recently begun to shift from these reactive approaches to a more proactive disaster risk reduction approach.

This shift has been formally marked by disaster risk reduction agreements, such as the Sendai Framework for Disaster Risk Reduction 2015–2030, and the efforts to expand widespread adoption of disaster risk reduction practices in recent years (73). Nonetheless, while psychosocial support is explicitly mentioned in the 2015 Sendai Framework for Disaster Risk Reduction 2015-2030 and identified among functions in the WHO Health emergencies and disaster risk management framework (74), uptake of proactive approaches has been limited among MHPSS actors globally. Yet, some examples exist in countries that demonstrate the feasibility of implementing programming focused on the integration of MHPSS activities with disaster risk reduction perspectives including in preparedness. Reports on best practices of MHPSS implementation and case studies from other types of emergencies can be considered (see Box 6).

The challenges for implementing the MHPSS requirements in national and local plans and arrangements may include but are not limited to the following:

- lack of financial resources and human capacity;
- stigma surrounding mental health issues;
- limited communication and lack of coordination between mental health and radiation protection and emergency response sectors;
- limited experience and limited scientific evidence base to support the MHPSS implementation requirements in the context of preparedness and response to radiological and nuclear emergencies.

Box 6: **MHPSS capacity building in Caribbean countries – a case study**

In 2017, many Caribbean countries were drastically affected by category- five hurricanes Irma and Maria. During the emergency response and recovery, MHPSS needs were often unmet and many areas struggled to recover. The majority of affected countries had developed comprehensive MHPSS plans, but implementation was limited due to workforce, financial and practical constraints.

In order to address this gap for future hazardous events, the Caribbean Development Bank partnered with the Pan American Health Organization (PAHO) to implement an 18-month project in Caribbean countries. The project began with four objectives:

- capacity building
- communication and awareness campaigns
- M&E
- country-specific development of actionable plans.

A four-day train-the-trainers course for mental health professionals was held in 2018 to build capacity for providing PFA and applying the Mental Health Global Action Programme Humanitarian Intervention Guide (mhGAP-HIG); it included developing a roster of MHPSS professionals who would respond to emergencies and further disseminate the training. Thereafter, refresher trainings were held, each focusing on specific components of response, such as needs assessment, M&E and community violence, which were then placed in an online platform for wider dissemination.

In the aftermath of 2017, PAHO also recognized the impact that stigma and traditional gender roles among Caribbean communities continue to have in determining help-seeking behaviour. To address this PAHO and the Caribbean Development Bank developed an awareness campaign with the slogan "Stronger Together" based on the "one love, one family" principle of many Caribbean cultures. Its goal is to disseminate information on coping skills during an emergency but also to counter the stigma around seeking help, particularly among males. This campaign consists of public service announcements, audio and video testimonials, social media posts and illustrated comics of PFA.

These approaches were tested and significantly contributed to increased capacity for effective MHPSS responses in the aftermath of hurricane Dorian in late 2019.

7.1 PRACTICAL TOOLS FOR IMPLEMENTATION OF THE FRAMEWORK

This framework offers general guidance and directions for its implementation at the national, regional, or local levels by relevant stakeholders – emergency planners, responding agencies, health authorities, and so on. Practical tools to apply the framework need to be further developed. These may include decision-making flow charts, checklists and sample protocols, defining the indicators for implementation and accompanying communication materials, such as questions and answers, frequently asked questions, lists of dos and don'ts and infographics.

Relevant examples of such tools have been developed for other types of emergencies (17). Notably, within the humanitarian emergencies and natural disaster sectors, as well as recent experiences with communicable disease outbreaks, such as Ebola virus disease, Zika virus disease

and COVID-19, offer a plethora of examples of application of such tools and services, some of them being tailored for specific groups or a specific setting. For instance, WHO has developed a number of guidance materials addressing MHPSS needs of COVID-19 response, including considerations for people self-isolating, as well as special innovative tools targeting young children (59, 75).

7.2 RESEARCH NEEDS

Despite the numerous reports of experiences from various disaster settings the majority of the existing body of evidence is of descriptive nature, which provide rather weak support for evidence-based recommendations on implementing MHPSS in the context of radiological and nuclear emergencies. Therefore, epidemiological studies of an analytical type would strengthen the evidence base of future policy recommendations pertaining to MHPSS implementation.

A systematic review on the mental health impact of the Fukushima accident looked at 79 recently published studies (18). Few of the studies in that systematic review assessed the affected people's resilience, however. Future studies must be structured to provide adequate and effective care as well as improve an understanding of resilience to the affected survivors. In summarizing the future research needs, the authors stated: "the majority of these studies were devoid of configured control groups, so future research needs to establish meticulously designed methodologies to confirm these findings... there was no study reporting on psychological intervention methods or effects".

A systematic review by the same research group focused on emotional and behavioural consequences of the nuclear accident in Fukushima, such as stigmatization of affected people, suicide risk, and tobacco and alcohol use among the survivors of the disaster, as well as their perception of radiation risk to their own health and health of future generations (76). Here, too, methodologies of the studies were not standardized. Future studies focusing on intervention methods and their outcomes will therefore be crucial.

There were a limited number of studies regarding discrimination and stigmatization among the people affected by the nuclear accident in Fukushima despite many news reports highlighting this issue. Few cross-sectional and longitudinal studies on nuclear power plants reported the impact of discrimination and stigmatization on mental health, but even for non-occupational settings, this relationship is yet to be elucidated. Future studies focusing on discrimination and stigmatization and on interventions against such behaviour are needed. Additional research gaps include:

- comparative analysis of the effectiveness and impact of various MHPSS interventions types;
- research on the underlying reasons of vulnerability, the roles of various factors modifying the vulnerabilities and differences between various groups of the population;
- development of a standard research protocol and compatible surveys allowing for inter-comparison or pooling of data;
- Identification of best approaches towards the interdisciplinary engagement of radiation protection and social sciences and humanities for developing a harmonized guidance (drawing on expertise in radiation protection, social sciences and humanities) and improve international norms and standards for MHPSS applications in radiation emergencies;
- development of interdisciplinary training and education curricula that would address the MHPSS needs for preparedness and response to radiation emergencies.

> "Future studies must be structured to improve an understanding of resilience to the affected survivors

8 | CONCLUSIONS



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A public health approach is essential to address the mental health and psychosocial consequences of radiological and nuclear emergencies (10, 11).

Many of the social and mental health sequelae of radiation emergencies are similar to those in other emergency situations. Nonetheless, acute fear, psychological responses to somatic illnesses and injuries, and long-term development of medically unexplained symptoms are particularly likely in radiological or nuclear emergencies (3, 36, 77).

Many of the proposed mental health and psychosocial interventions do not require a high level of specialized skill or expensive equipment to be implemented but require a multi- disciplinary approach, cross-sector coordination, systematic capacity building through training of staff (to effectively communicate to those affected), and methods to disseminate information on radiation risks that allow the public to address them.

Contingency planning and coordination are critical to prepare communities and health professionals to respond adequately to, and recover from, any emergency. Applying evidence-based mental health services throughout the entire emergency cycle will contribute to efficient response, improve the recovery and ensure communities build back together and flourish.

Historically, the fields of radiation protection and MHPSS have worked independently. This framework sets a unique precedent and represents an initial step towards integrating them during the entire emergency cycle. By detailing the mental health and psychosocial aspects of emergencies, particularly those from radiological and nuclear accidents, this framework marks a significant attempt to bridge the gap between these two fields. It is hoped that such integration will lead to better preparedness, better response and better outcomes for all those affected by emergencies. ■

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GLOSSARY

Cluster: For the purpose of this document, a cluster is used here to refer to a group of agencies that gather to work together towards common objectives within a particular sector of emergency response. The cluster approach, instituted in 2006 as part of the United Nations Humanitarian Reform process, is an important step on the road to more effective humanitarian coordination.

Community resilience: The capacity of a community to be able to recover quickly and easily from the consequences of an emergency or disaster.

Community: Specific group of people, often living in a defined geographical area, who share a common culture, values and norms, are arranged in a social structure according to relationships developed within the community over a period of time. Members of a community gain their personal and social identity by sharing common beliefs, values and norms, and also share common needs and a commitment to meeting them. Communities also contain organizations and institutions such as schools, health centres, religious organizations and civil society organizations, which serve supportive functions for individuals, and offer a sense of belonging, safety and protection. The community context is embedded within the larger societal level, which involves higher-level social, economic and political structures.

Decontamination: A complete or partial removal of contamination by a deliberate physical, chemical or biological process. This definition is intended to include a wide range of processes for removing contamination from people, equipment and buildings, while excluding the removal of radionuclides from within the human body, or the removal of radionuclides by natural weathering or migration processes, neither of which are considered to be decontamination.

Disaster: A disaster is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Emergency: A non-routine situation or event that necessitates prompt action, primarily to mitigate a real or perceived hazard or adverse consequences for human life, health, property and the environment. This includes nuclear and radiological emergencies and any other types of conventional emergencies such as natural disasters, outbreaks, fires and releases of hazardous chemicals.

Emergency risk communication: The real time exchange of information, advice and opinions between experts, community leaders or officials and the people who are at risk, which is an integral part of any emergency response.

Emergency worker: A person having specified duties as a worker in response to an emergency.

Evacuation: A rapid, temporary removal of people from an area to avoid or reduce short-term radiation exposure in an emergency.

Exposure (to radiation): A state or condition of being subject to irradiation from a source that is outside the body (i.e. external exposure) or within the body (such as internal exposure).

Exposure pathway: A route by which radiation or radionuclides can affect a living body.

Inter-Agency Standing Committee (IASC): Established by the United Nations (UN) General Assembly, this is the longest-standing and highest-level humanitarian coordination forum of the UN system, bringing together the executive heads of 18 UN and non-UN organizations to ensure coherence of preparedness and response efforts, formulate policy and agree on priorities for strengthened humanitarian action.

Mental health: A state of well-being in which every individual realizes her or his own potential, can cope with the normal stresses of life, can work productively and fruitfully and is able to contribute to her or his community.

Mental health and psychosocial support (MHPSS): any type of local or external support that aims to protect or promote psychosocial well-being and/or prevent or treat mental health condition. The global humanitarian system uses the term MHPSS to unite a broad range of actors responding to emergencies such as the COVID-19 outbreak, including those working with biological approaches

and sociocultural approaches in health, social, education and community settings, as well as to underscore the need for diverse, complementary approaches in providing appropriate support.

Primary care: A key process in the health system, including first-contact, accessible, ongoing, comprehensive and coordinated care. First-contact care is accessible at the time of need; ongoing care focuses on the long-term health of a person rather than the short duration of the disease; comprehensive care is a range of services appropriate to the common problems in the respective population and coordinated care refers to the role by which primary care acts to coordinate other specialists that the patient may need. Primary care is a subset of PHC.

Primary health care (PHC): The concept elaborated in the 1978 Declaration of Alma-Ata, which is based on the principles of equity, participation, intersectoral action, appropriate technology and a central role played by the health system.

Psychological First Aid (PFA): Humane, supportive and practical assistance to fellow human beings suffering serious crisis events, and who may need support. It includes the following themes: providing practical care and support, which does not intrude; assessing needs and concerns; helping people to address basic needs (for example, food and water, information); listening to people, but not pressuring them to talk; comforting people and helping them to feel calm; helping people connect to information, services and social supports; protecting people from further harm.

Radiation emergency: See also "radiological or nuclear emergency". For the purpose of this document the term radiation emergency is used in place of the term "radiological or nuclear emergency", which is commonly used in the International Basic Safety Standards of the International Atomic Energy Agency.

Radiation risk: Detrimental health effects of exposure to radiation (including the likelihood of such effects occurring), and any other safety-related risks (including those to the environment) that might arise as a direct consequence of: (a) exposure to radiation; (b) presence of radioactive material (including radioactive waste) or its release to the environment; (c) loss of control over a nuclear reactor core, nuclear chain reaction, radioactive source or any other source of radiation. It relates to the probability that specific deleterious consequences may arise, to the magnitude and character of such consequences, and to the factors contributing to the vulnerability of the exposed subject. Depending on the context, the term "risk" may be used to represent a quantitative measure or as a qualitative concept.

Radioactive material: This refers only to the presence of radioactivity, and gives no indication of the magnitude of the hazard involved. I, it refers to a material designated in national law or by a regulatory body as being subject to regulatory control because of its radioactivity.

Radiological or nuclear emergency: An emergency involving a hazard due to: (a) the energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction (nuclear emergency); or (b) other types of radiation exposure (radiological emergency). The term "radiation emergency" is used in some cases when an explicit distinction in the nature of the hazard is immaterial (e.g. national radiation emergency plan).

Relocation: Non-urgent movement of people from a contaminated area. It is a longer-term protective action that may be a continuation of the urgent protective action of evacuation. A permanent relocation (also referred to as "resettlement") continues for more than a year and return is not foreseeable; otherwise it is temporary relocation.

Risk communication: An intervention performed before (as part of preparedness activities), during and after the emergency phase (to support recovery), to enable everyone at risk to make informed decisions to protect themselves, their families and communities against threats to their survival, health and well-being.

Sheltering in place: An urgent protective action used during nuclear emergencies to provide shielding against external exposure and to reduce the intake of airborne radionuclides through inhalation by using a structure for protection from an airborne plume and/or deposited radionuclides (for example, recommending people to stay indoors).



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