

Part 3 Information dissemination

1. Public Relations Activities

Radiation Medical Science Center for the Fukushima Health Management Survey

TOIDA Jun

1. Objectives and Promotion Structure of Public Relations Activities

Fukushima Medical University's Radiation Medical Science Center for the Fukushima Health Management Survey (hereinafter "Center") is engaged in public relations activities and responds to inquiries from the people of Fukushima Prefecture in order to promote and deepen understanding of the significance and purpose of the Fukushima Health Management Survey (FHMS), which will be continued over a long term.

In April 2012, the Department of Public Relations was established within the Center to conduct public relations activities, and was reorganized into the Department of Public Relations and Communication in 2013. This department was made an office under the Department of International Cooperation and Communication in 2014. Now, a combined Office of Public Communications and International Cooperation exists under the Department of Health Survey Public Support. Its call center, as a point of contact for the residents of the prefecture, accepts questions and consultations regarding the FHMS, started operating in July 2011, at the same time as the opening of the Center.

2. Overview of information dissemination activities

1) Project to share information and strengthen cooperation with 13 municipalities

Since FY 2013, we have been holding periodic briefing sessions with the 13 municipalities* designated as the evacuation zone after the

Table 1. Number of briefing sessions with the 13 municipalities, by year

Year	Number of briefing sessions
FY2013	52
FY2014	77
FY2015	37
FY2016	29
FY2017	28
FY2018	29
FY2019	32

Fukushima accident in aim to share the results of the FHMS and information on the physical and mental health of the prefecture's residents (Table 1).

*13 municipalities: Tamura City, Minamisoma City, Kawamata Town, Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village, Iitate Village, Date City (some places within Date are designated as evacuation recommendation locations)

As a result of the earthquake and nuclear power plant accident, residents had to evacuate to other places in and out of the prefecture, making them susceptible to anxiety. In order to communicate the results of the analysis of the FHMS and to maintain and improve the health of the residents, we thought it was important to



Figure 1. Briefing session with municipal officials

exchange information with public health nurses and other health and welfare officials of the municipalities concerned, who usually have many opportunities to come into contact with the residents.

Public health nurses and public health and welfare officials of the municipalities use the analysis of data from the FHMS to understand the health status of residents, which is then used in their efforts to help residents.

In the briefing sessions, we not only provide information on the survey results, but also listen to updates on the reconstruction status and efforts and activities of the municipalities, as well as the anxieties and worries heard from the residents, including requests and opinions on the FHMS, while addressing their questions and concerns (Figure 1).

In conjunction with these meetings, we have also held seminars (health lectures) for residents with medical doctors from Fukushima Medical University (FMU). Topics were determined in response to requests from the municipalities, and those covered have included analysis of data from the FHMS, prevention of lifestyle-related diseases, and prevention of dementia.

2) Participation in events organized by municipalities

With prolonged evacuation following the earthquake and nuclear accident, there were concerns about deteriorating health among prefectural residents. For this reason, we collaborated with organizations and groups inside and outside FMU, including FMU's Education Center for Disaster Medicine and the DMAT Fukushima Reconstruction Support Office, to provide "Yorozu Health Consultation" from May 2012. In order to address the anxieties of prefectural residents regarding their physical and mental health and health effects of radiation, we set up a booth at general health checks and health check result reporting meetings held by municipalities, for people to consult with us one-on-one about anything of anxiety.

In the beginning, many of the consultations we received were about anxieties such as, "Is my physical discomfort caused by radiation?" and "I

Table 2. Number of Yorozu Health Consultations held, by year

Year	Number of Yorozu Health Consultations
FY2012	83
FY2013	158
FY2014	197
FY2015	189
FY2016	96



Figure 2. Yorozu Health Consultation

don't know what to do from now on." We tried to provide opportunities for experts to respond directly to the concerns and anxieties of residents and listen to them carefully. According to a questionnaire conducted after the consultation, residents gave such comments as, "I was able to find out where to go for advice in the future," "I now know what I need to change for my health," and "It was nice to be listened to carefully."

While taking care to protect personal information, the content of the consultations was shared with the municipalities and served as support for local doctors and public health nurses. In FY2017, the "Yorozu Health Consultation" was taken over by the Fukushima Medical Association (Table 2, Figure 2).

For two years starting from FY2015, we held "Yorozu Exercise Class" for residents with the aim of increasing their awareness of health and motivation to exercise. The program included lectures on health promotion and exercises that anyone can do with ease and enjoyment, along with cancer examinations conducted by municipalities (Figure 3).

In addition, in order to deepen people's understanding of radiation and thyroid examina-

tions, we have held on-location lectures and information sessions at municipal facilities, kindergartens, elementary schools, and junior high schools in Fukushima, Yamagata, and other prefectures, where medical doctors and other experts from FMU provide scientific explanations of radiation and other matters to respond the anxieties of residents (Table 3).

In a questionnaire conducted at the time of these sessions, many people said that their anxieties had been alleviated by the explanations they received and that they were able to better understand the thyroid examination. Currently, the Office of Thyroid Ultrasound Examination is in charge of this program.

3) Dissemination of information through the website

(1) Website for the FHMS

A special website for the FHMS was established in February 2012 as a single platform for prompt dissemination of information on the survey and its implementation status. The website has been gradually enriched with content that includes an



Figure 3. Yorozu Exercise Class

Table 3. Numbers of on-location information sessions and on-location lectures at schools, by year

Year	On-location information sessions	On-location lectures at schools
FY2012	8 locations	—
FY2013	88 locations	—
FY2014	52 locations	—
FY2015	32 locations	38 times
FY2016	15 locations	18 times
FY2017	9 locations	10 times

overview of the FHMS, the purpose and schedule of each survey, Q&A based on the information accumulated in each survey, and the introduction of academic papers regarding the FHMS. In addition, inquiries from residents and survey participants, reservations for examinations, and changes to registered information are also accepted via the website.

In December 2019, the website was remade with a device-independent design in response to the increase in smartphone browsing (Figure 4). The renewed website is easier to read and use on smartphones, and provides enhanced information and functions for those eligible for the FHMS. For example, the page for the Thyroid Ultrasound Examination now allows users to search for examination venues around the nation by location (prefecture) and examination date (and time). Since thyroid examinations are conducted for those aged 18 and under at the time of the earthquake, an increasing number of these people are moving out of the prefecture for higher education or employment.

(2) Website of the Radiation Medical Science Center

In January 2019, we opened another website for the Radiation Medical Science Center for the FHMS, and transferred information on academic papers from the aforementioned website for the FHMS, aiming to disseminate the information domestically and internationally. As part of this effort, an English version of the website has been set up, and the materials submitted to the Over-



Figure 4. Website for the FHMS
<https://fukushima-mimamori.jp/>

sight Committee are translated into English and posted on the website. The English version is used to promote understanding and information sharing about the progress and findings from each survey, especially with overseas researchers and people around the world who are interested in the consequences of the earthquake and nuclear accident (Figure 5).



Figure 5. Website of the Radiation Medical Science Center for the FHMS
<http://kenko-kanri.jp/>

4) Compilation of annual reports on FHMS

The progress of the FHMS has been reported to the Oversight Committee as needed, and in March 2015, the Japanese and English versions of the "Report of the Fukushima Health Management Survey (FY2011—FY2013)" were published in order to provide information on the results of the survey in an easy-to-understand manner not only to the eligible residents of Fukushima Prefecture and but also the general public. From FY2017, a revised version of the report has been published and made available on the website to share progress and current topics related to each survey, including annual trends with updated results for each fiscal year (Figure 6).

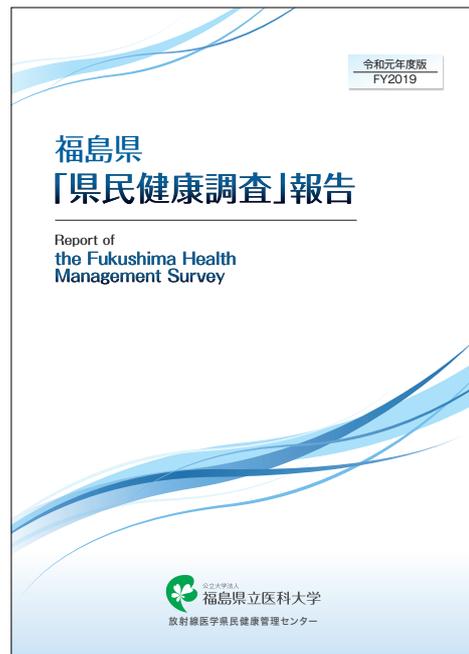


Figure 6. Report of the Fukushima Health Management Survey FY2019

5) Activities at conferences and health events

The Center has continued activities to disseminate the results of and findings from the FHMS by setting up a booth and/or holding a panel exhibition at medical conferences, symposiums, and health events held by municipalities and other organizations.

The "Iki Iki Kenko Zukuri (Live with Vitality) Forum," organized by the Health Promotion Center of Fukushima Medical University, started in 2017 in Koriyama City, and was also held in Shirakawa City and Minamisoma City (Figure 7). The Center has also set up a booth and held panel exhibitions.

In addition, we exhibited panels at the 77th Annual Meeting of the Japanese Society of Public Health held in Koriyama City in October 2018 (Figure 8) and the 43rd Meeting of the Japanese Association of Breast and Thyroid Sonography held in Fukushima City in September the following year, drawing attention from participants from all over Japan.



Figure 7. Iki Iki Kenko Zukuri Forum



Figure 8. The 77th Annual Meeting of the Japanese Society of Public Health

3. Response to and utilization of the media

At the beginning of the Fukushima Health Management Survey (FHMS), it was important to widely publicize the content and implementation of the survey, including to the residents of the prefecture. For this reason, in 2012, we held a press meeting to explain about the FHMS and demonstrate a thyroid examination to media organizations in the prefecture.

Potential health effects after the earthquake and nuclear accident were a widely held concern not only among affected residents who had to evacuate, but also among people inside and outside Japan, and media coverage has become an important source of information.

For this reason, we respond to requests for news coverage and disseminate information by issuing press releases from the Center (Figures 9 and 10).

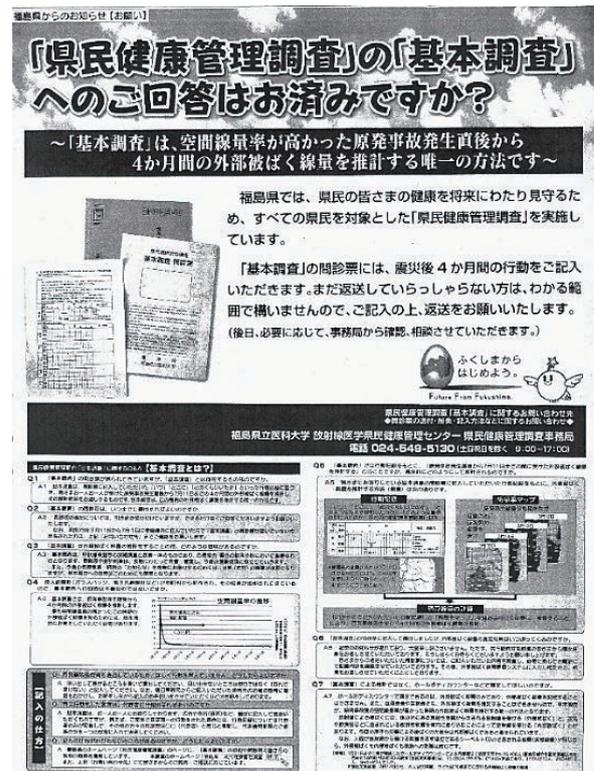


Figure 9. Notice of the Basic Survey in a newspaper (Fukushima Minyu Newspaper, March 25, 2012)



Figure 10. Prefectural government news page in newspapers covering the FHMS (Fukushima Minpo and Fukushima Minyu Newspapers, July 26, 2015)

4. Consultation services through the establishment of a call center

Since the time when Basic Survey questionnaires were sent out in July 2011, a call center with a dedicated telephone number has been set up to respond to various inquiries regarding the FHMS. The main tasks of the call center include answering questions about survey invitations and results, accepting reservations for examinations, changing reservation dates and times, changing registered information such as name and address, and resending or stopping mailings. Inquiries are accepted on weekdays from 9:00 to 17:00.

Changes in the number of incoming calls to the call center are shown in Table 4. In the first few years after the start of the FHMS, there were more than 30,000 inquiries per year. In the beginning, not only was the number of calls high, but also, the content of the inquiries was characterized by the need to respond to individual concerns and anxieties about the health effects of radiation, in addition to explanations of the survey results. Since the call center plays an important role in the long-term implementation of the FHMS as a contact point for the residents of the prefecture, the need for personnel who can

appropriately respond to diversifying inquiries has increased. In August 2014, we outsourced our call center operations to an operator with expertise and a proven track record, resulting more stable operations, more experienced operators, and more efficient and effective management of the center. Since FY2016, the number of incoming calls has been in the 10,000 per year range, and the percentage of calls to make examination reservations and address changes has been increasing.

In addition, in order to make sure that invitations and other mailings are delivered to those who are eligible for the FHMS, the call center also calls to confirm a mailing address when mailed items are returned.

The opinions and requests received by the call center, together with those received by Fukushima Prefecture, were compiled as the "Voice of Prefectural Residents" and reported to the 18th Oversight Committee held in February 2015 and the 24th Oversight Committee held in September 2016.

5. Strengthening public relations activities in line with the public relations strategy

As we approach the tenth anniversary of the Great East Japan Earthquake and the nuclear power plant accident, it is necessary to devise ways to convey to prefectural residents and other audiences more easily about the findings from the survey as well as the support the Center offers based on the survey results. At the same time, it is also necessary to accurately grasp the needs of the residents of the prefecture, understand them, and share them as reliable information.

For this reason, in July 2020, we formulated a public relations strategy for the Center as a guideline for systematic and effective public relations, including what information should be provided to the prefectural residents as well as to people in Japan and overseas, and how it should be communicated.

In line with the PR strategy, we will take specific measures to disseminate information on the FHMS.

Basic "LINK" policy of our PR strategy

Table 4. Number of calls received at the call center

Year	Number of calls
FY2011 (July -)	30,785
FY2012	48,996
FY2013	40,702
FY2014	33,082
FY2015	22,008
FY2016	16,311
FY2017	14,283
FY2018	11,972
FY2019	14,198
Total	232,337

Table 5. Number of calls responded by the Center's Medical Consultation Desk

Year	Number of calls responded
FY2016	78
FY2017	97
FY2018	92
FY2019	63

- Listen: we listen to voices and opinions.
- Interact: we interact with others for better communication.
- Network: we connect otherwise distant people.
- Keep: we keep working together.

We believe that it is important to strengthen our

public relations activities with the above four strategic pillars and with considerate and compassionate eyes toward prefectural residents, so that the Fukushima Health Management Survey can be of more use for them in maintaining and improving their long-term health.

Part 3 Information dissemination

2. International Cooperation Activities

Radiation Medical Science Center for the Fukushima Health Management Survey

OSUGA Kenichi

1. Overview of International Cooperation

1) Purpose and history of international cooperation activities

(1) Purpose

A Department of International Cooperation was established within the Radiation Medical Science Center for the Fukushima Health Management Survey (FHMS) (hereinafter "Center") in July of 2012. Since then, it has been our nexus to:

- Invite experts and scientists from international organizations and world-class research institutes to receive scientific advice and support for the FHMS and for the health promotion of Fukushima residents, and
- Promote international exchange and public relations, so that scientific knowledge gained through the FHMS in particular, and Fukushima's experience in general, can be of use to a global audience.

(2) Background

After the nuclear accident, Fukushima Medical University (FMU) was given a central role in building a sustainable, disaster-resilient society and sharing with the world lessons about Fukushima's reconstruction. In April 2011, FMU concluded an inter-university agreement with Hiroshima University and Nagasaki University, both with profound experience in radiation medicine. In August 2011, we concluded an agreement with Japan's National Institute of Radiological Sciences (now the National Institute for Quantum and Radiological Science and Technology: QST) and the Radiation Effects Research Foundation (RERF). In September, the Center was formally established, and with the cooperation of radiation-related research institutes across the



Figure 1. The International Expert Symposium in Fukushima (September 2011) (Courtesy of the Nippon Foundation)

country, the FHMS was launched. Soon after, on September 11 and 12, world-class experts gathered for FMU's First International Expert Symposium in Fukushima: Radiation and Health Risks (see below and Figure 1). Participating international organizations (WHO, IAEA, ICRP, NCRP, UNSCEAR, IARC, IRSN, etc.) and experts on Chernobyl have then and since been important counterparts in our international cooperation activities.

From this, the important responsibility of propagating honest and accurate lessons from Fukushima to the world was recognized, along with the need to collaborate with global experts. This drove the establishment of our Department of International Cooperation.

In addition, in May 2012, an action plan was compiled by the Japanese government's Coordinating Council for Measures to Alleviate Health Concerns of Residents Affected by the Nuclear Disaster. One of four pillars in that plan is to "strengthen international cooperation," for which the plan states that "it is important to build a network with international organizations and foreign countries that have knowledge about how to respond to residents affected by nuclear accidents (e.g., countries affected by the Chernobyl

accident), and to obtain cooperation in human resource exchange and other areas, in order to alleviate anxieties caused by the nuclear accident."¹⁾

Furthermore, in December 2014, the Ministry of the Environment's Interim Report of the Expert Committee on the Health Management of Residents Following the Accident at TEPCO's Fukushima Daiichi Nuclear Power Plant stated that "it is desirable to accurately and continuously disseminate the results of academic analysis and evaluation both domestically and internationally and feedback the results to local residents and society, while ensuring personal information protection" and, "it is desirable that FHMS findings be appropriately utilized internationally as a source of academic knowledge."²⁾

Therefore, our Center's international cooperation activities have proceeded in light of these requirements.

2) Major activities planned at the time of establishment

- Networking with radiation medicine/radiological science and international epidemiological surveys; planning and organizing international conferences, symposiums, and expert meetings related to these fields; dispatching Center representatives overseas.
- Disseminating published data, papers, etc. from the FHMS to international audiences.
- Initiating and cooperating with joint research projects involving IAEA, WHO, UNSCEAR, ICRP, etc., and promoting research on health management and reduction of radiation effects in cooperation with organizations having experiences related to the Chernobyl accident.
- Responding to international visitors and dispatching Center representatives overseas
- Promoting radiation risk communication in Japan and overseas in cooperation with our Department of Public Relations

2. Past activities: activities to obtain scientific advice and support necessary to promote the FHMS

1) International conferences and expert meetings in collaboration with radiological science and international epidemiological surveys, etc.

(1) International Expert Symposiums in Fukushima (2011 to 2016)

On September 11 and 12, 2011, six months after the nuclear accident, the "International Expert Symposium in Fukushima: Radiation and Health Risks" was held at FMU, organized by the Nippon Foundation.

The symposium featured 31 researchers in the fields of radiation medicine and radiation protection from 14 countries and 2 international organizations, with about 400 others, including domestic researchers and media representatives, in attendance. The participants actively exchanged thoughts on the current situation in Fukushima, health effects of low-dose radiation exposure, radiation safety and health risks, and lessons learned from the Chernobyl nuclear accident. FMU presented on the FHMS, which had just started, and its importance and validity was acknowledged.

By September 2016, five symposiums of this series had been convened,⁴⁾ addressing not only the FHMS, but also the following topics:

- The importance of human resource development and radiation education, based on the radiation emergency medical response in Fukushima right after the nuclear accident, which was initially hampered by inadequate knowledge and preparation for radiation emergencies (2nd symposium, February 2013).
- While respecting the autonomy of evacuees, support should be provided to them regardless of whether they intend to return. Comprehensive reconstruction support for people living in low-dose radiation environments should be continued in order for them to better understand the meaning of radiation levels (3rd

symposium, September 2014).

- How to gain the most value from the FHMS and from disaster planning in order to reduce risks after nuclear accidents (4th symposium, March 2015).
- The implementation of a thyroid examination program should be determined with due consideration of risks and benefits to individuals and to the population as a whole, human and other resources required from a public health perspective, and analysis of similar programs in other countries (5th symposium, September 2016).
- It is essential to have clear communication with those who undergo thyroid examinations and their families, about why examinations are being conducted, as well as possible prognoses and risks, including what to do if thyroid irregularities are detected and how to treat them (5th symposium, September 2016).

Recommendations compiled at these expert symposiums were submitted to the Japanese government and the governor of Fukushima Prefecture:

- Recommendations from the 3rd symposium to Abe Shinzo while he was Japan's Prime Minister (September 2014)⁵⁾
- Recommendations from the 5th symposium to Uchibori Masao, Governor of Fukushima Prefecture (December 2016)⁶⁾

(2) Other major international conferences, etc.

FMU has taken various opportunities to benefit from the world's scientific knowledge by holding dialogue meetings with international experts, etc., and has utilized the knowledge thus obtained for the FHMS and related activities.

- In July 2012, a seminar was held for general practitioners and specialists in Fukushima by thyroid disease experts from Russia and Belarus.
- A dialogue meeting was held with medical doctors and nurses from Taiwan's National Cheng Kung University and Atomic Energy Council (December 2012).
- Dr. Ted Lazo and other members of the OECD/NEA (Organisation for Economic Co-operation and Development/Nuclear Energy Agency)

Committee on Radiation Protection and Public Health visited FMU and held a joint meeting (February 2013).

- Representatives from GCI (Green Cross International), an international environmental organization addressing long-term mental health and welfare issues from the Chernobyl accident, along with scholars from the University of Southern California, visited FMU and exchanged opinions with FMU faculty (August 2013).
- Experts from the Taipei Veterans General Hospital and National Yang-Ming University of Taiwan visited FMU and held a dialogue meeting (May 2014).
- Dr. Gerry Thomas, project director of the Chernobyl Tissue Bank, visited FMU and exchanged opinions with our faculty (August and October, 2014).
- A researcher from the Finnish Radiation and Nuclear Safety Authority (STUK) visited FMU and shared knowledge on the effects of the Chernobyl accident on Finland (November 2014).
- Special lectures for experts were given by professors from two Belarusian medical universities (January 2015) (Figure 2).



Figure 2. Special lectures for experts by professors from Belarusian State Medical University and Gomel State Medical University (January, 2015)

2) Promotion of joint research with international organizations

The Center has been promoting international cooperation by pooling domestic and international wisdom to share knowledge and lessons learned from the Fukushima accident and to solve various problems through cooperation efforts with international organizations.

(1) Collaborative activities with the International Atomic Energy Agency (IAEA).

IAEA, as a United Nations organization promoting peaceful use of nuclear technology, presents requirements, principles, and guidelines for nuclear technology, including radiation protection. UN member states, in turn, prepare specific laws, regulations, and guidelines (Figure 3).

In December 2012, the Fukushima Ministerial Conference on Nuclear Safety convened in Koriyama City to share knowledge and lessons learned from the Fukushima accident with the international community, aiming to strengthen radiological protection for people and the environment and to advance nuclear safety, thereby assisting the reconstruction of Fukushima.

At the conference, a cooperation agreement was signed between Fukushima Prefecture and the IAEA (Figure 4); based on this agreement, FMU started a cooperation project in the field of human health with the IAEA.

This project, which focuses on human health and risk management, aims to i) strengthen radi-

ation medicine education by developing the capacity of medical professionals and medical students; ii) strengthen research cooperation in radiation disaster medicine, including PTSD; and iii) create a specific training package for medical physicists able to provide support in the event of a nuclear or radiological emergency. Based on the emerging discipline of Science, Technology, and Society (STS), active discussions were held on how to foster the next generation of medical professionals by building upon the experience of Fukushima.

Since 2012, various programs and activities have been implemented, including the FHMS, capacity building and research, enhanced awareness-raising, expert support, and information exchange. As a result, the following deliverables were produced:

Outline of the Practical Arrangements between Fukushima Prefecture and IAEA

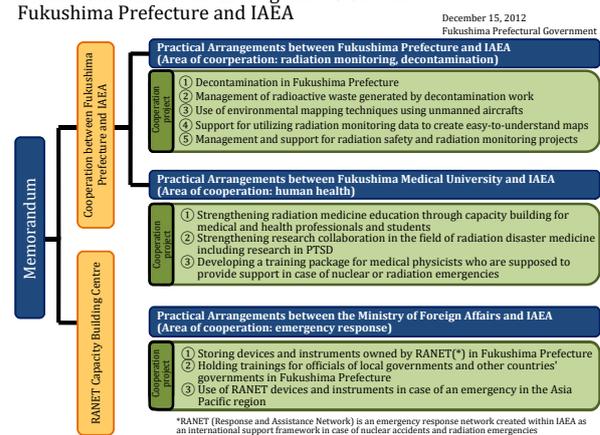


Figure 4. Outline of the Memorandum of Cooperation between Fukushima Prefecture and the IAEA

Source: the Ministry of Foreign Affairs website

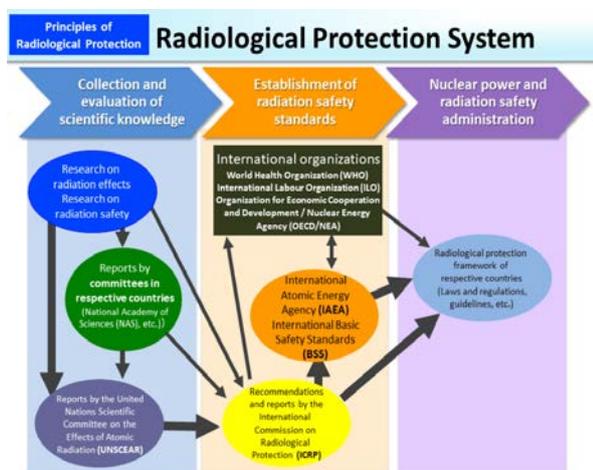


Figure 3. Principles of radiological protection
Source: Ministry of the Environment. "BOOKLET to Provide Basic Information Regarding Health Effects of Radiation" (FY2019 edition)⁷⁾

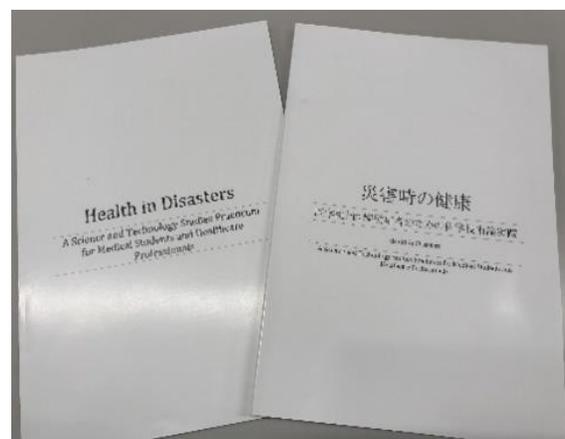


Figure 5. Handbook, "Health in Disasters: A Science and Technology Studies Practicum for Medical Students and Healthcare Professionals" (2016)

- STS handbook for medical student education
- A handbook on radiation disaster education for medical professionals, "Health in Disasters: A Science and Technology Studies Practicum for Medical Students and Healthcare Professionals" (Figure 5)

As of February 2021, this cooperative project is still underway to compile new deliverables. International meetings convene several times a year to share knowledge on the FHMS and current topics related to Fukushima's reconstruction.

(2) SHAMISEN Project (2015 to 2017)

In May 2015, Dr. Elisabeth Cardis of the Center for Research in Environmental Epidemiology in Barcelona, Spain, visited FMU and invited us to participate in a research project which aims to accumulate lessons learned from people affected by nuclear accidents, including Fukushima and Chernobyl. The project was meant to develop recommendations regarding medical and health research on people who were or may be affected by past and future nuclear accidents. Behind this was the realization that existing recommendations related to nuclear accidents tended to be too technical, paying little attention to social, ethical, and psychological issues, and directed more toward professional decision-making than to support for survivors.

This project, funded by the European Commission through its Open Project for the European Radiation Research Areas (OPERRA), brought together researchers from various European countries and from FMU, Hiroshima University, Nagasaki University, and the National Institute of Radiological Sciences (Now the National Institutes for Quantum and Radiological Science and Technology: QST) in Japan. The project was launched in December 2015, with the reverse acronym SHAMISEN (Nuclear Emergency Situations: Improvement of Medical and Health Surveillance). After a series of thematic workshops and international conferences, its "Recommendations and Procedures for Preparedness and Health Surveillance of Populations Affected by a Radiation Accident" was published in July 2017 (Figure 6).

The recommendations are directed toward radiation protection authorities, medical experts,

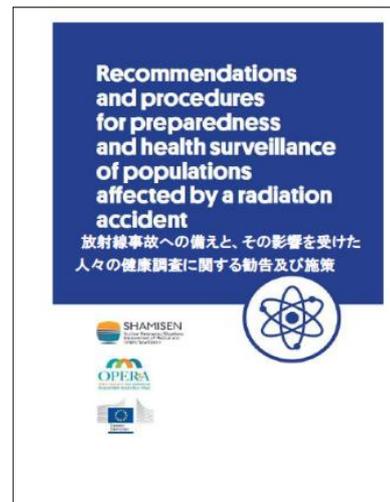


Figure 6. Cover page of the Recommendations and Procedures for Preparedness and Health Surveillance of Populations Affected by a Radiation Accident (July 2017)

affected populations, other scientists, and citizens, with the aim of improving the health and living conditions of people who may have been affected by a nuclear accident.

The recommendations consist of general principles for all phases of a nuclear accident: the preparatory, early and intermediate, and long-term recovery phases, as well as individual recommendations on such topics as health surveillance, epidemiological studies, dose reconstruction, evacuation, and how to train and communicate with health personnel and other actors involved in liaising with affected populations. The general principles indicate that health surveillance strategies should be promoted with the goal of people's overall well-being, and that the autonomy and dignity of the affected people should be firmly respected.⁸⁾

In August 2017, FMU invited Dr. Elisabeth Cardis, SHAMISEN coordinator, to present the project's results at FMU.

(3) Collaborative activities with the World Health Organization (WHO)

The Fukushima Global Medical Science Center, to which our Center belongs, was designated as a WHO Collaborating Center (WHO-CC) in May 2018. WHO-CCs that conduct radiation-related activities in Japan are the Radiation Effects Research Foundation (RERF), Nagasaki University, the National Institutes for Quantum and Radiological Science and Technology (QST), and

FMU. These four institutions are also members of WHO-REMPAN. REMPAN (Radiation Emergency Medical Preparedness and Assistance Network) is an international network established by WHO in 1987, a year after the Chernobyl accident, to respond to nuclear disasters and radiation accidents. FMU supports this international network for radiation in its efforts to strengthen the response capacity of each country, reconstruction and long-term follow-up of people affected by nuclear accidents, and education, training and information dissemination on radiation disaster preparedness and response.

In October 2012, Dr. Zhanat Carr, the WHO-REMPAN coordinator, visited FMU to discuss progress of the FHMS and future cooperative activities. Since then, we have been strengthening our collaboration with WHO through various international conferences and workshops. In addition to the aforementioned designation as a WHO-CC, collaboration with WHO includes Dr. Carr's service as chair and presenter at our international symposiums, such as the one our Center co-organized with WHO in January 2019 (see 4.2), (1), below).

(4) Collaborative activities with UNSCEAR

Every year, many studies on radiation sources and effects are published by researchers from around the world. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) comprehensively evaluates a wide range of such studies, to develop a politically neutral international scientific consensus, which form the basis for periodic reports.⁷⁾

In order to apply lessons learned from the Fukushima accident to radiation protection around the world, FMU has been publishing papers based on data from the FHMS. The vast majority of these papers are peer-reviewed by independent scientific referees, after which they are widely accessible to a global audience, including UNSCEAR. UNSCEAR, in turn, makes its own assessments of peer-reviewed data and produces independent reports for a global audience.

In addition, UNSCEAR and FMU are deepening cooperation in the area of human resources. In November 2014, when Dr. Wolfgang Weiss—UNSCEAR's 58th (2011) and 59th (2012) annual

session chair—visited FMU, we presented FHMS results, mainly from the Basic Survey and Thyroid Ultrasound Examination program. In June 2015, three FMU faculty (Profs. Maeda, Nollet, and Yasumura) presented current findings from the FHMS and the psychological impact of the 2011 disaster to UNSCEAR delegates attending their 62nd annual session in Vienna, Austria. When an UNSCEAR delegation led by then Secretary Malcolm Crick visited FMU in November 2016, we provided an overview of the FHMS, emphasizing dosimetry and the thyroid examination program, after which both sides exchanged ideas and reaffirmed their continued cooperation. In May 2017, other FMU faculty presented at UNSCEAR's 64th annual session, addressing risk assessment and perceptions after the nuclear accident.

(5) Collaborative activities with ICRP (International Commission on Radiological Protection)

The International Commission on Radiological Protection (ICRP), an independent not-for-profit organization, formulates recommendations for dealing with radiation risks, taking account of UNSCEAR reports along with political, social, and cultural factors, to advance nuclear policies around the world and contribute to IAEA safety standards. While UNSCEAR focuses on purely scientific facts and quantitative risk assessments, ICRP aspires to advance a culture of radiation protection, including qualitative aspects of risk management and response to risks (see Figure 3).

In September 2012, Prof. Jacques Lochard, Mr. Christopher Clement, and others from the ICRP visited FMU to advance cooperation by holding a joint seminar to promote dialogue with residents of disaster-affected areas and development of human resources, and to disseminate results. In November of the same year, the ICRP and FMU jointly organized a seminar, wherein the ICRP reported on its post-disaster support activities in Fukushima, and FMU reported on its initial response to the disaster and the outline of the FHMS. We also discussed current thought on radiation health effects.

In February 2014, the ICRP and FMU con-

cluded a Memorandum of Agreement (MoA) on cooperation related to the nuclear accident and its long-term effects, and since then, joint seminars have been held several times. In March 2017, a delegation led by then ICRP Chair Dr. Clair Cousins visited FMU after visiting the difficult-to-return zone and exchanged opinions on future collaboration, and in November of the same year, a memorandum of agreement was signed between the ICRP and FMU, Hiroshima University, and Nagasaki University, aiming for further cooperation in operating the Radiation Disaster and Medical Science Research Center, a joint initiative by the three universities. In March 2020, Prof. Jacques Lochard visited FMU to deepen exchanges with students and discuss future collaboration.

(6) Collaborative activities with other research institutions

- In November 2012, Dr. Joachim Schutz of the International Agency for Research on Cancer (IARC), a specialized organization of WHO, visited FMU and discussed the possibility of cooperation in radiation risk assessment, risk communication, and long-term epidemiological research. In January 2013, IARC's Section of Environment and Radiation agreed to conduct a general joint research project with FMU on radiation cancer epidemiology, including personnel exchange. Based on this agreement, we held a workshop on long-term cancer risk research (October 2013) and a workshop on thyroid cancer after the nuclear accident (March 2019), and pursued other collaborative activities. In addition, a specialist from FMU contributed to the preparation of an IARC Technical Publication, "Thyroid Health Monitoring after Nuclear Accidents," published in September 2018.
- We concluded inter-university agreements with Belarusian State Medical University and Gomel State Medical University to promote academic and educational cooperation (September 2013). The faculty members from the two universities visited FMU and shared their experience of the Chernobyl nuclear accident (January 2014, January 2015).
- Representatives from the Korea Institute of

Radiological and Medical Sciences (KIRAMS), which plays a central role in nuclear disaster medicine in South Korea, visited FMU and exchanged opinions on the findings from the FHMS and from their research (October 2014). Subsequently, mutual exchange of researchers took place, and in January 2017, a memorandum of understanding was signed to promote cooperation in various fields of radiation emergency medicine.

3. Past activities: Dissemination of scientific findings from the FHMS to the world

1) Publications and presentations

Since the Great East Japan Earthquake and nuclear power plant accident, we have been actively submitting papers to share the findings from the FHMS with the world. 182 papers have been accepted as of October 2020 (see 220 for the list of publications).

2) International exchange of researchers

(1) Major dispatch of researchers

- In August 2014, FMU presented FHMS data at the 20th World Congress of Epidemiology, a meeting of the International Epidemiological Association that convened in Anchorage, Alaska, as the health of residents after the nuclear accident had become an important theme for discussion among epidemiologists.
- At the 15th Ministerial Meeting of the Global Health Security Initiative held by the Japanese government (Ministry of Health, Labour and Welfare) in Tokyo, we introduced the FHMS under the title, "Challenges in Fukushima Three Years after the Great East Japan Earthquake." (December 2014, Figure 7).
- At the 15th International Conference on Radiation Research (ICRR) in Kyoto, we reported on our emergency medical response at the time of the nuclear accident and current status of the FHMS (May 2015).
- FMU faculty members participated in the US Radiation Injury Treatment Network (RITN)

- Biennial Workshop and were also invited to speak at the National Institutes of Health, the World Bank, American Red Cross and other organizations to explain the current situation in Fukushima (July 2015).
- At a seminar held by the Korea Hydro and Nuclear Power's Radiation Health Institute (KHNP-RHI) in South Korea, we reported on public health and mental health issues related to the Fukushima accident, and emphasized the fact that no deterministic radiation effects have been documented (September 2015).
 - At the Foreign Press Center Japan (Tokyo), FMU staff gave presentations to foreign press correspondents on the health of prefectural residents and future prospects, including the efforts of the FHMS (February 2016, March 2017).
 - At the National Academies of Sciences, Engineering, and Medicine (NASEM) Workshop on "Challenges in Initiating and Conducting Long-Term Health Monitoring of Populations Following Nuclear and Radiological Emergencies in the United States" (New York, USA), an FMU faculty member introduced the efforts of the FHMS (March 2019).



Figure 7. The 15th Ministerial Meeting of the Global Health Security Initiative (December 2014)

(2) Sharing information with researchers visiting FMU

- A delegation from the Swedish Ministry of Health and Social Affairs visited FMU and received explanations about our disaster response and the FHMS (September 2012).
- The Vice Minister of Buenos Aires City Government in charge of emergency response visited FMU and exchanged opinions on nuclear disaster response, radiation medicine education, and the role of local medical institutions in times of disaster (October 2012).

- Mr. Alex Cheng-Yuan Tsai, a member of the Legislative Yuan of Taiwan, visited FMU to learn about our nuclear disaster response and the FHMS (April 2013).
- The Director General of IRSN (French Institute for Radiation Protection and Nuclear Safety) and a media delegation visited FMU to learn about the FHMS (December 2013).
- Members of the French Embassy in Japan visited FMU for a question and answer session about how to prepare for a nuclear emergency (November 2014).
- A satellite symposium of the 2015 World Health Summit Regional Meeting convened at FMU in April, at which we presented the current situation of Fukushima, including the FHMS, to world medical leaders (May 2015, Figure 8).
- A delegation of the CLI (Local Committees of Information) on nuclear safety from Manche, France visited FMU to discuss the FHMS (March 2017).
- Mr. Ostap Semerak, Minister of Environment and Natural Resources of Ukraine, visited FMU to learn about the reconstruction of Fukushima after the Great East Japan Earthquake and FMU's activities (May 2018).



Figure 8. World Health Summit 2015 Fukushima Satellite Symposium (May 2015)

4. Past activities: enhancement of information dissemination to the international community, local residents, and society

1) International symposium on the 5-year anniversary of the Great East Japan Earthquake and Fukushima nuclear accident (March 2016)

In March 2016, five years after the Great East Japan Earthquake and the nuclear power plant accident, an international symposium was held at FMU under the theme of "Five Years Since the Great East Japan Earthquake, Tsunami, and Nuclear Crisis: Let's not forget this path and connect it to the future." The aim of the symposium was to share with a wide range of people the efforts that had been made toward the reconstruction and revitalization of Fukushima.

In addition to Fukushima Governor Uchibori Masao, Japanese government officials, international organizations, and people who were working for the revitalization of Fukushima were invited to the symposium, for a total of 265 attendees.⁹⁾ In particular, representatives from international organizations such as IAEA, ICRP, UNSCEAR, and WHO all participated in the symposium and expressed their messages and continued support for FMU (Figure 9).



Figure 9. Venue (Fukushima Medical University Auditorium)

2) International symposiums hosted by the Center

(1) First International Symposium (January, 2019)

Evacuation orders started to be lifted after a considerable time following the nuclear accident, and affected residents were able to return to their hometowns. However, they had been exposed not only to direct damage, but also to various risks, including health effects, psychological effects, and decline in wellbeing due to evacuation and relocation.¹⁰⁾

In this context, the Center held an international symposium in January 2019, inviting researchers in public health, risk communication, and related disciplines. Through the symposium, we shared with participants the lessons learned from our eight years of experience and the future prospects for a better reconstruction of Fukushima, aiming to send a message from the front lines of Fukushima and to envision a better future.

The symposium was held in Fukushima City



Figure 10. Recruitment flyer



Figure 11. Venue: The Celecotton Fukushima (Fukushima City)

on January 14-15, 2019, attended by about 370 people (Figures 10 and 11). Under the theme of "Build Back Better: From the World to Fukushima, from Fukushima to the World," the symposium included: "Message from Fukushima: Lessons and Perspectives," "Disaster Public Health," and "Communication with the Public after a Disaster." In addition to reports on the progress of the FHMS, experts from various fields, including 5 international experts, presented aspects of their research and activities.¹¹⁾

(2) Second International Symposium (February 2020)

For the Second International Symposium, we aimed to present findings and lessons learned from the FHMS in an easy-to-understand manner in order to deepen popular understanding of the survey. We also decided to focus on themes that would be of particular interest to Fukushima residents.

This Second International Symposium was held in Fukushima City on February 2-3, 2020, attended by about 300 people (Figure 12). Under the theme of "Build Back Better, Together: Fukushima Health Management Survey Updated, Focusing on Thyroid and Mental Health," experts, including three from overseas, presented on the current status of each survey of the FHMS and related topics in two sessions, namely "Current status of thyroid examination and thyroid treatment" and "Mental health of Fukushima people



Figure 13. A lecture during the symposium, The Celecton Fukushima (Fukushima City)

and care for them: what should we do now?" (Figure 13). Many of the participants commented that the symposium was meaningful. The outline of the symposium is as follows (from a summary report by Kamiya Kenji, Executive Director of the Center.¹²⁾).

- In July 2019, the Oversight Committee for the FHMS deliberated on, and endorsed, an evaluation of thyroid examination results from the Full-Scale Survey (the second-round survey) by its Thyroid Examination Evaluation Subcommittee. The evaluation was grounded on an analysis of UNSCEAR-estimated absorbed thyroid doses and actual detection rate of thyroid cancer, from which no positive correlations emerged after confounding factors were taken into account. For future evaluations, more detailed methods for estimating absorbed thyroid doses and longer observation periods will be needed.
- When offering thyroid examinations, we provide detailed explanations of their advantages and disadvantages to those who are eligible, and also offer psychological support to those who consent to be examined, beginning before and continuing after each examination.
- The cases of thyroid cancer found in Fukushima have different characteristics from those found in Chernobyl. Moreover, while thyroid cancer treatment in Japan complies with national guidelines, there is considerable variation in guidelines and practices around the world.
- As for mental health, the results of the FHMS show that the proportion of those with ongoing needs for support is higher in Fukushima than the national average, and higher still among those who evacuated outside the pre-



Figure 12. Recruitment flyer

fecture than among those who remained in Fukushima.

- Even eight years after the earthquake, the psychological impact on parents and children continues, and long-term support is needed. Regarding evacuees who relocated outside the prefecture, "ambiguous loss" is a mental health concept related to their prolonged and complicated situation, which needs to be taken into account when offering support for these evacuees.
- It is important for experts and communities to support the earnest efforts of the evacuees themselves, by strengthening ties with them.
- As a health and medical care provider, the Center will analyze and evaluate survey results with scientific rigor, and use the results to maintain and improve the health of the people of Fukushima Prefecture in fulfillment of our ongoing mission.

(3) Third International Symposium (scheduled to convene in February 2021)

This symposium will be held in the year that marks the 10th anniversary of the nuclear accident, and we will review the past efforts of the FHMS in order to continue to support the resilience of the region. In addition, by inviting international organizations and internationally renowned experts to share their experiences and knowledge through this symposium, we hope that the FHMS continues to contribute to the

reconstruction and revitalization of Fukushima and to the international community. The focus will be on the Pregnancy and Birth Survey and health care for evacuees, in addition to the thyroid examination program, and the current situation and future prospects will be discussed (Figure 14).

5. Other Activities

- FMU received two buses for conducting thyroid examinations, through the largesse of the Rotary Clubs of Seoul, Central and Northeastern Thailand, Western Hokkaido, Fukushima, and Kanagawa. A representative from Thailand attended the presentation ceremony (May 2013).
- We made a presentation on the FHMS at a public forum related to the 3rd United Nations World Conference on Disaster Risk Reduction, held in Sendai (March 2015).
- The Center's faculty introduced risk communication activities at a public high school in the prefecture (August 2018).
- Reports submitted to the Prefectural Oversight Committee are published online. Translations into English are also published on the Center's website. (The Japanese originals are considered authoritative, but periodic translations are intended to make major findings and trends more readily accessible to a global audience.)

6. Summary

1) Results

Looking back over the past 10 years of the Center's international collaboration activities, we can summarize them as follows.

(1) International collaboration activities from immediately after the nuclear accident to around 2014

The main focus of our activities was to build a network with international organizations and foreign countries that have knowledge about how to respond to a nuclear accident, and to obtain various kinds of support and knowledge. Immediately after the accident, there were also inter-



Figure 14. Recruitment flyer

national discussions on how to monitor and maintain the health of Fukushima residents.

Many residents did not have sufficient knowledge about radiation and its health effects and needed basic knowledge on these subjects. For this reason, various international conferences and lectures by experts were held to share information, with the hope of reducing anxiety among residents and countering harmful rumors. International collaboration activities to obtain scientific advice and support necessary to promote the FHMS also contributed to this effort.

(2) International collaborative activities from around 2014 to around 2018

In addition to providing the world with up-to-date information on the current situation in Fukushima through the cooperative activities of many international organizations, the main focus of our activities was to consider and provide concrete ways to respond to the anxieties of the affected residents.

Each of the residents in the affected areas already had access to basic knowledge of radiation, while there was a need for concrete answers to their individual anxieties and questions. As for the methodology of risk communication, there was a limit to what we could communicate through lecture meetings for large groups, so dialogue-based risk communication for small groups was necessary. The ICRP continued to hold "dialogue seminars" with residents, themed around rehabilitation of living conditions, and UNSCEAR made visits within and outside Fukushima to explain the outline of their report.¹³⁾

As for the FHMS, interim results and evaluations were presented, scientific findings from the survey were disseminated internationally, and the results of international collaboration activities were used in feedback to affected residents and others.

(3) Current international collaborative activities approaching the 10-year milestone

Currently, the main focus of our activities is to aggregate knowledge from the FHMS and to continuously disseminate the information using networks and methods acquired through our past activities.

This will enable FMU to bolster its ability to respond to new long-term issues, including the improvement of the health of prefectural residents, supported with knowledge obtained from Japan and abroad, and also to make appropriate use of our data as a platform for a database of academic knowledge that can be shared internationally.

For this purpose, it is important to build and maintain further long-term relationships of trust with various domestic and international stakeholders, including residents of the affected areas and all people of Fukushima Prefecture. In addition to holding international symposiums, the Center believes that it is necessary to be more flexible and effective in disseminating information in various forms, taking into account the new changes in the social environment, such as the COVID-19 pandemic.

2) Future international collaboration activities

Fukushima Prefecture has set the following goals related to the Center's international collaboration activities in the FMU's mid-term objectives.¹⁴⁾

FMU's mid-term objectives (excerpt)

- [3] Goals related to reconstruction support after the Great East Japan Earthquake, etc.
- 3. Goals related to education and research in radiation medicine, etc.
 - (1) Promote projects related to education and research on radiation medicine at the Fukushima Global Medical Science Center.
 - (2) Disseminate to the world findings from the Fukushima Health Management Survey and related projects, including those related to health effects of radiation exposure.

In the future, efforts to revitalize and create communities in Fukushima will enter a new stage.

As a health and medical institution, we believe that it is important to analyze and evaluate the results of the FHMS in a scientific manner to maintain and improve the health of the people of the prefecture, and to disseminate the results

locally, nationally, and internationally to deepen everyone's understanding and to support the reconstruction of Fukushima from a health perspective. While utilizing the results of international symposiums and the knowledge gained from various stakeholders, we will steadily continue to fulfill our mission of laying the foundation for the reconstruction and revitalization of Fukushima through the practice of wholehearted health monitoring.

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