

Build Back Better, Together.

2021 Fukushima Medical University International Symposium
on the Fukushima Health Management Survey

**10 years and beyond
with the Fukushima Health
Management Survey:
What needs to be done to enhance
the resilience of Fukushima's people?**

Report

February 13 (Sat) – 14 (Sun), 2021

Venue: The Celeceton Fukushima

Organizer: **Radiation Medical Science Center for the Fukushima Health
Management Survey, Fukushima Medical University**

All contents of this report,
including speakers' affiliation
and titles, are current as of the
time of the symposium
(February 13-14, 2021).

On the occasion of publishing the report of our international symposium



KAMIYA Kenji, MD, PhD

Executive Director, Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University

We would like to extend sincere thanks for your understanding of and cooperation with the activities of our Radiation Medical Science Center for the Fukushima Health Management Survey, headquartered at Fukushima Medical University.

In response to the nuclear accident at TEPCO's Fukushima Daiichi Nuclear Power Plant, following the Great East Japan Earthquake, this Center has been conducting the Fukushima Health Management Survey since June 2011, as commissioned by Fukushima Prefecture.

The objectives of this Survey are to follow the physical and mental health of prefectural residents over a long term, and to maintain and improve their health well into the future. This survey consists of a Basic Survey for estimating individual residents' external radiation exposure during the period when air dose rates were highest, and a set of four Detailed Surveys (Thyroid Ultrasound Examination, Comprehensive Health Check, Mental Health and Lifestyle Survey, and Pregnancy and Birth Survey). We report findings to an independent body of experts comprising the Prefectural Oversight Committee for the Fukushima Health Management Survey, and work together with Fukushima Prefecture while receiving their guidance and advice. As one such effort, our Center has been holding international symposiums, aiming to disseminate the latest findings from the Survey both domestically and internationally, to advance scientific knowledge gained so far through discussions with prominent researchers from all over the world and other participating specialists, and to apply the results to help maintain and improve the health of Fukushima residents.

Following the previous symposium last year, our third one convened February 13-14 (Sunday-Monday), 2021, at the Celeceton Hotel in Fukushima, with the theme of "10 years and beyond with the Fukushima Health Management Survey: what needs to be done to enhance the resilience of Fukushima's people?" In order to cope with the COVID-19 pandemic situation, the event was held online.

At the opening of the symposium, Dr. Takenoshita Seiichi, President of Fukushima Medical University, welcomed everyone on FMU's behalf, and we received encouraging words from national and local government representatives: Mr. Yokoyama Shinichi, Deputy Minister for Reconstruction, Ms. Horiuchi Shoko, Deputy Minister of the Environment, and Fukushima Governor Uchibori Masao. We also received heartwarming remarks from specialists of international organizations.

The symposium was viewed by 600 people over two days, and featured 40 health/medical professionals and others from Japan and abroad, including remote participants. The symposium ended successfully with robust discussions looking back the past 10 years of the Fukushima Health Management Survey.

In order to have a record of this symposium and to disseminate the outcomes of the Fukushima Health Management Survey, we are publishing this report.

We humbly request your continued support to make this survey more useful in maintaining and improving the health of Fukushima's people well into the future.

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Opening Remarks



TAKENOSHITA Seiichi, MD, PhD
President, Fukushima Medical University

Thank you for the kind introduction. Let me say a few words to welcome everyone to this international symposium of the Radiation Medical Science Center for the Fukushima Health Management Survey.

On March 11, 2011, a complex disaster never experienced in human history involved an earthquake, tsunami, and nuclear accident that greatly affected a wide area, including Fukushima Prefecture. I would like to express my deepest condolences for the loss of many precious lives, and my heart goes out to all those who are still having to live in evacuation.

Under such circumstances, I am thankful that we are able to hold this international symposium following the one last year. Unfortunately, this time it has to be delivered online as a countermeasure against COVID-19, but despite such circumstances, we are able to welcome many people throughout Japan and far beyond. On behalf of our university, I would like to convey my gratitude for that.

The Great East Japan Earthquake and the Fukushima Daiichi Nuclear Power Plant accident imposed a new mission on our university, which is to monitor the health of Fukushima residents into the future and to pass on the lessons and experiences of the nuclear accident to subsequent generations.

To fulfill this mission, we have been commissioned by Fukushima Prefecture to conduct the Fukushima Health Management Survey ever since June 2011. Considering residents' concerns associated with radiation effects and evacuation life, this Survey aims to maintain and enhance the health of prefectural residents long into the future, by evaluating their external radiation doses and grasping their health status for the prevention, early diagnosis, and early treatment of diseases.

The purpose of this international symposium is to widely disseminate knowledge and results obtained from the Survey both inside and outside the prefecture, while bringing global knowledge and experience here, to share with the world.

For the next two days, we have invited medical and health experts within and outside Japan, including representatives of international organizations, to talk about their advanced initiatives. Representing Fukushima, our doctors and researchers who have served at the front lines of the Survey will present their findings and results obtained over the last 10 years. We also invited others who are contributing to the recovery of Fukushima to speak heartfully about their experiences and thoughts.

We hope that this symposium will help enhance understanding of the Fukushima Health Management Survey among as many people as possible, while offering an opportunity to think together about how to build back Fukushima, better than ever.

Next month will mark 10 years from the disaster. Our endeavors thus far, toward reconstruction and revitalization of Fukushima, evoke the key words of “resilience” and “alliance.” Resilience is the power to move toward the future by flexibly adapting to the difficulties imposed by the earthquake and nuclear accident. Without flexibility that allows trial and error exploring different options, we could not have progressed in the face of such an unprecedented disaster.

In terms of alliances, we weren't hesitant to seek them in areas where we lack knowledge and expertise, so we partnered with a diverse range of institutions. It would be wrong for us to regard ourselves as the only bearer of Fukushima's historic mission, be self-satisfied with our efforts, and

avoid necessary collaboration with others. Instead, alliances enable us to steadily advance toward reconstruction and revitalization.

After 10 years, the reconstruction of Fukushima will enter a new phase. So far, the focus has been on rebuilding what was lost. Of course, that perspective is still needed. However, from now on, the vision of what to build on top of that is going to be essential. The question is how to advance past efforts of building resilience and collaborating through alliances, to become a global model of disaster reconstruction, and crystalize our experience into a vision which can be promulgated throughout the world.

I would like to conclude my opening remarks by praying that this international symposium, convening 10 years after the disaster, will serve as a starting point for turning change into evolution.

Welcome remarks



UCHIBORI Masao
Governor, Fukushima Prefecture
(Video message)

As Governor of Fukushima Prefecture, I would like to express my deepest respect and gratitude to all essential workers who labor day and night at the forefront of our fight against COVID-19. I would also like to express my sincere gratitude to the people of the prefecture and businesses for their cooperation in preventing the spread of infection.

The prefecture is committing its utmost efforts to protect the lives and health of our residents.

Now, I would like to extend my greetings to all the participants and presenters of the 2021 Fukushima Medical University International Symposium on the Fukushima Health Management Survey.

Following the accident at TEPCO's Fukushima Daiichi Nuclear Power Plant, Fukushima Prefecture has conducted the Fukushima Health Management Survey in cooperation with FMU, aiming to maintain and improve the health of prefectural residents long into the future.

The Survey consists of a Basic Survey covering all prefectural residents and four Detailed Surveys including the Thyroid Ultrasound Examination, and provides consultation and support based on survey results. Without the cooperation of FMU, with its high degree of expertise, we would not have been able to continue this extensive survey.

As we approach the 10th anniversary of the nuclear accident, prefectural residents' perception toward radiation health effects is changing. However, there still remains implicit anxiety, and therefore accurate information dissemination is extremely important.

In line with this, I expect that the symposium will serve as a forum for sharing and disseminating scientific knowledge and the latest information domestically and internationally through presentations and discussions covering 10 years of the Fukushima Health Management Survey, focusing on the Pregnancy and Birth Survey and healthcare for evacuees, and thereby further advance the revitalization of Fukushima.

The prefecture will continue to work closely with FMU to ease the anxieties of residents and to provide safety and peace of mind. We would like to ask for your continued support.

I would like to conclude my remarks by extending my sincere prayers for the fruitfulness of this symposium and for the good health and success of all the participants. Thank you, everyone, for your participation.

Congratulatory remarks



YOKOYAMA Shinichi

State Minister for Reconstruction, Reconstruction Agency
(Video message)

Thank you for inviting me to the 2021 Fukushima Medical University International Symposium on the Fukushima Health Management Survey. I was planning to visit Fukushima and deliver greetings directly to participants, but, unfortunately, the COVID-19 pandemic prevented this. Therefore, I would like to send a word of congratulations in this video letter.

I would like to express my gratitude to Fukushima Governor Uchibori and all the people concerned for their efforts at the forefront of recovery and reconstruction from the Great East Japan Earthquake.

Next month, it will be 10 years from that unprecedented disaster.

Reconstruction efforts have made great progress thus far, with earthquake and tsunami-stricken areas entering the final stage of reconstruction, while nuclear disaster-stricken areas have also begun full-scale reconstruction and revitalization.

On the other hand, in the course of the progress of reconstruction, we have identified issues that require continued attention and response as well as newly emerging issues. This means that we bear an extremely significant responsibility. In addition to conducting the Fukushima Health Management Survey, FMU is also playing a vital role in accepting disaster victims as well as functioning as a secondary radiation emergency hospital. FMU is the prefecture's only medical institution designated for Class I infectious diseases, and thus plays a leading role in responding to COVID-19, and serves as a core medical institution in the prefecture.

Furthermore, FMU is also providing great support for reconstruction of coastal Hamadori, by dispatching doctors to the Futaba Medical Center Hospital, offering telemedicine, and operating a multipurpose medical helicopter.

Today, we hear that FMU will present findings from the Fukushima Health Management Survey, with medical and health experts from Japan and abroad and representatives of international organizations presenting their great efforts and achievements. We hope that the sharing of advanced initiatives in Japan and overseas will lead to further health promotion for the residents of Fukushima Prefecture. I would like to extend my greetings in the hope that today's symposium will be fruitful.

Congratulatory remarks



HORIUCHI Noriko

State Minister of the Environment, Ministry of the Environment

(Video message)

Thank you for inviting me to the 2021 Fukushima Medical University International Symposium on the Fukushima Health Management Survey.

We are delighted that this international symposium is held in fullness, albeit online, despite the influence of COVID-19.

FMU has been convening such international symposiums since FY2018. I have heard that this international symposium aims to disseminate up-to-date findings from the Fukushima Health Management Survey both domestically and internationally, and to share our understanding with prefectural residents about the significance and results of the Survey.

I would like to express my sincere gratitude to the people of Fukushima Prefecture and FMU for preparing this international symposium in the midst of dealing with the COVID-19 pandemic.

In Fukushima Prefecture, the Fukushima Health Management Survey has been carried out for the purpose of maintaining and improving the health of residents into the future. We believe that the survey and support have continued to succeed thanks to the great efforts of everyone in Fukushima Prefecture and FMU.

The Ministry of the Environment is also conducting training to develop human resources involved in the Fukushima Health Management Survey in cooperation with experts from FMU. We have also compiled information on the survey results and its evaluation, and disseminated them both domestically and internationally.

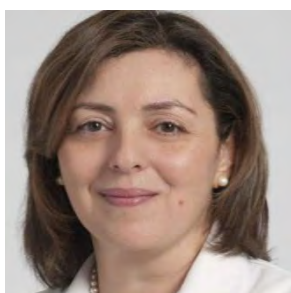
Furthermore, as a measure against anxiety regarding health effects associated with radiation, in 2014 we established the “Radiation Risk Communication Counselor Support Center” in Iwaki City. At the support center, we provide seminars for residents based on the needs of the region and training for local government employees and radiation counselors who support the residents close to them.

Reconstruction from the Great East Japan Earthquake has been and will continue to be the most important issue for the Ministry of the Environment. We will continue to work closely with Fukushima Prefecture and FMU to do our utmost for the health management and health concerns of the people of Fukushima Prefecture.

The 11th of next month will mark 10 years since the Great East Japan Earthquake. At today's international symposium, I hope that scientific knowledge and lessons learned over the past 10 years, shared among domestic and international experts and people of the prefecture, will lead to further progress in the reconstruction of Fukushima.

Finally, I would like to conclude my remarks by wishing good health and success to the people involved in the reconstruction of Fukushima.

Congratulatory remarks



May Abdel-Wahab, MD, PhD, FASTRO, FACR

Director, Division of Human Health, International Atomic Energy Agency, Vienna, Austria
(Video message)

Dear colleagues, participants, and distinguished panellists joining us from around the world:

It is with great pleasure that I endorse our symposium of the 10th anniversary of the Fukushima accident, hosted by Fukushima Medical University in cooperation with the IAEA.

In a few days, it will be 10 years since the Fukushima Daiichi Nuclear Power Plant accident. This is an opportunity to look back at the remarkable and commendable effort by the Japanese and international health community in addressing the accident and to draw on lessons learned. This effort will ultimately lead to enhancement of the readiness and response measures of health professionals and their ability to better support individuals and communities after such an accident.

The importance of effective cooperation, research, and education has never been so relevant and is demonstrated here today by the calibre of professionals who have joined us at this virtual table.

We do not need to look far to identify examples of our shared effort where we addressed issues of immediate importance with the general public, stakeholders, and returning population. The ongoing pandemic of COVID-19 has shown us again the importance of finding the right balance between technical details and the message we want to share with different stakeholders and decision makers, most of whom look to organizations and institutions with the relevant knowledge for reliable and evidence-based information.

Through manifold IAEA projects, it has been possible to address risk assessment, radiation monitoring, remediation, and disaster communication topics to allow for a more effective exchange between technical experts, physicians, and the general public, while minimizing the risk of misinformation. Building on past achievements, as well as reviewing and monitoring data, allows us to learn from the past and achieve better awareness in the future.

Specific practical applications were implemented, and impact was achieved via many international conferences, IAEA joint meetings—including STS (Science, Technology, and Society) and medical physics training sessions and workshops—and numerous publications and additional papers currently under preparation, such as the Guidance Book for Medical Doctors, to be soon published.

Symposiums and conferences like this one will continue to guide us to a greater understanding of how research, effective management as well as communication can help support affected communities build trust in their recovery and finally return to previously evacuated areas and allow the best possible outcome based on multidisciplinary participation and cooperation.

Today's virtual symposium is an example of how we must be ready to adjust our communication channels to better suit the trend of times. Though we are virtual, we all share the same commitment and enthusiasm to continue encouraging global collaborations via the exchange of information and lessons learned over the next two days.

We are delighted to be joined today by many eminent international scientists at this virtual event. Moreover, young researchers will have the opportunity to present their findings and points of view during our meeting.

I am confident that we will learn, interact, and share ideas during an engaging, challenging, and productive meeting. We look forward to your contributions and wish you all a successful and fruitful meeting.

In conclusion, we will continue, with the same commitment and enthusiasm, to encourage global collaboration and exchange of information and lessons learned, thus benefiting Japan and the world community.

Thank you for your attention.

Congratulatory remarks



Jacques LOCHARD, MAS

Vice-Chair, International Commission on Radiological Protection
(Video message)

Esteemed President of Fukushima Medical University,
Ladies and Gentlemen,
Dear Colleagues and Friends:

As Vice-Chair of ICRP, it is an honor for me to extend a few words of welcome to all of you.

Allow me first to reiterate the thanks of the Commission, and in particular those of its Chair, Claire Cousins, to the organizers of this 2021 International Symposium, for their kind invitation to address all the participants of Japan and abroad in this opening session.

Despite the circumstances that keep me in France, it is with a certain emotion that I will follow online this symposium. Indeed, I have a special attachment to Fukushima Medical University. It was to participate in the first international expert symposium held on campus in September 2011 that I came to Fukushima for the first time. In the years since, I have had the opportunity to come back many times, in particular to prepare the Memorandum of Understanding between FMU and ICRP that I signed in September 2014 on behalf of ICRP with the former President of FMU, Professor Shinichi Kikuchi.

It is within the framework of this agreement that the University has hosted numerous technical meetings, in particular several of the Task Groups of the Commission in charge of developing ICRP Publication 146: Radiological Protection of People and the Environment in the Event of a Large Nuclear Accident, which has just been published.

It is also the University that hosted, in February 2018, the strategic meeting on the future of the Fukushima Dialogue, which was decisive for the continuation of the Dialogue meetings and the creation of the NPO Fukushima Dialogue. In this regard, I would like to pay tribute to the officials of the University who have relentlessly supported the Fukushima Dialogue until its autonomy. May they be thanked for their more than precious help during so many years.

As the leading theme of the symposium is ‘what needs to be done to enhance the resilience of Fukushima’s people 10 years after the accident?’ I would like to say a few words about the concept of resilience.

First, I should mention that “What can we *still* do to improve the resilience of Fukushima’s people?” could have been the question, so as not to forget that a lot has *already* been done so successfully.

Then, to improve further the resilience, call to mind that the experience of catastrophic events all over the world, and in particular the Chernobyl disaster 35 years ago, have shown that resilience is not only a matter of science, technology, and economic resources; it is also a matter of psychology and human relations. But this human dimension of resilience cannot be decreed. It is an evolving process which takes a long time and which develops with respect for human dignity and ethical duty. Experts play a crucial role to promote the resilience and for that they must imperatively combine solid scientific and technical knowledge, and ethical values.

On behalf of the ICRP, I renew my thanks to Fukushima Medical University as well as to all the speakers and participants of the symposium which, I am sure, will count as another important

milestone in the reflection on the process of recovery from the Fukushima accident. I sincerely hope that this symposium will meet all your expectations.
Thank you for your attention.

Congratulatory remarks



Gillian HIRTH, PhD

Chair of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR)
(Video message)

Good morning everyone. My name is Gillian Hirth and I am the current Chair of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). I am very honored to be here to represent UNSCEAR during these next two days at this important international symposium, hosted by Fukushima Medical University.

With Japan and the international community, UNSCEAR mourns the tragedy of 2011 and, over the last almost 10 years, has evaluated the consequences of the Fukushima Daiichi nuclear accident that followed the Great East Japan Earthquake and tsunami. We hope our work provides support to the Japanese people and the international community in order to understand the health consequences from the radiation exposures that were experienced. UNSCEAR is a unique committee of the United Nations General Assembly that, for 65 years this year, has worked under the mandate of the General Assembly, to review the current scientific knowledge on radiation exposures and health effects in order to inform the General Assembly, its Member States, the scientific community, radiation protection organizations, the public, and all other interested stakeholders.

UNSCEAR appreciates the valuable work of universities, institutes, and organizations in Japan and internationally that has been conducted in order to understand the radiation exposures and their effects following the Fukushima Daiichi nuclear accident. The work of UNSCEAR greatly depends on the availability of high-quality peer-reviewed research and studies that are based on robust and quality data, so the efforts of universities, like Fukushima Medical University, to undertake the Fukushima Health Management Survey, and to organize international symposiums such as this one, that are open for all to participate and that bring us together to share our collective knowledge, is very important and very welcome. While we cannot physically be together, I am very happy to be here virtually, and would like to congratulate Fukushima Medical University on arranging this international symposium.

I look forward to sharing with you the work that UNSCEAR has undertaken in recent years, including a brief summary of our upcoming UNSCEAR 2020 Report that is planned for release on the 9th of March, in relation to our current understanding of the levels and effects of radiation exposure due to the Fukushima accident. Once again, congratulations to Fukushima Medical University. I look forward to our discussions and welcome to you all.

Congratulatory remarks



Zhanat CARR, MD, MSc, PhD

Scientist, Radiation and Health Unit, Department of Environment,
Climate Change and Health, World Health Organization (WHO),
Geneva, Switzerland
(Video message)

Dear Colleagues and Participants of the Symposium:

It is my great pleasure and honor to deliver this welcome address on behalf of the World Health Organization on the occasion of the 10-year mark since the triple disaster: the Great East Japan Earthquake, its tsunami, and the Fukushima Daiichi nuclear power plant accident that resulted from the natural disaster.

It is hard to believe that 10 years have already passed since March 2011—the time of the unprecedented triple disaster which shook Japan and the entire world. It is with great sorrow we remember the lives of thousands of victims of the tsunami and those lost during the early response to the nuclear accident, as a result of their evacuation. We unite with people of Japan who lost their loved ones, who lost homes, jobs and livestock, and those whose lives have changed forever.

During those first weeks and months, which were the hardest times of response to the disaster, the World Health Organization offered assistance to Japan. The Western Pacific Regional Office of WHO had sent an expert mission to the tsunami-affected regions and WHO Headquarters in Geneva supported the coordinated response of the international community to the Fukushima nuclear accident. WHO cooperated with relevant UN agencies to provide authoritative advice on topics related to water and food safety, international travel and trade. In 2012-2013, WHO performed a preliminary health risk assessment and published benchmark reports.

Those were tough months but what followed was equally hard: many months of living in shelters, many years of meticulous and persistent efforts toward reconstruction and recovery. The government and people of Japan are very strong and very patient. This nation is teaching the global community invaluable lessons of resilience and humanity. We, as a global community, are bowing to Japan in great respect, gratitude, and admiration.

WHO has established strong ties and good cooperation with Fukushima Medical University, leading to its designation as a WHO Collaborating Center for Radiation Disaster Preparedness, Response and Recovery. On May 18 of 2018, FMU became a member of the WHO's global network REMPAN. In this capacity it shares information about on-going follow up studies with the global expert community. This is extremely valuable and greatly appreciated, as the knowledge on health consequences of nuclear emergencies is still very limited and is based mainly on lessons from the Chernobyl accident in 1986:

- Based on the Chernobyl experience, childhood thyroid screening was placed at the center of attention and concerns of affected parents, physicians, and scientists. The issue of implementing a thyroid screening program was debated in international and national forums. WHO's International Agency for Research on Cancer (IARC) has issued recommendations on thyroid monitoring after nuclear accidents, where it applied the experience and latest evidence based on the issue.
- Similar to Chernobyl, the psychosocial impact of Fukushima on human health seems to be enduring today. This has led to WHO's developing a new framework for mental health and

psychosocial support, published in November 2020, where we took into account the experience of Fukushima experts as well as experience gained from other types of emergencies and natural disasters.

Global cooperation has come into focus for being as important as ever during the response to the COVID-19 pandemic, where WHO is leading the battle against the virus and against misinformation. This battle underlines once again the importance of clear scientific information to be communicated to public. This aspect has a striking similarity with the response to nuclear accidents, during which people are facing similar challenges: both radiation and viruses are invisible enemies; people may have to shelter for a prolonged time; risk communication is often obscured by infodemic, and things may be unclear in the beginning; people can be frustrated, scared, angry... It is the medical doctors, nurses, and public health workers to whom people often turn for help, advice, and comfort. We applaud the work of all health professionals in Japan involved in mitigation of the triple disaster's consequences.

We look up to you and we look forward to continue our collaboration with you toward Fukushima's recovery. May we never face another nuclear disaster, but let us be prepared!

Thank you for your attention. Arigato gozaimasu! I wish you an interesting and rewarding symposium.

Summary of the 2021 Fukushima Medical University International Symposium on the Fukushima Health Management Survey



KAMIYA Kenji, MD, PhD

Executive Director, Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University

On February 13-14, 2021, approaching the 10th anniversary of the Great East Japan Earthquake and nuclear power plant accident, we held another international symposium on the Fukushima Health Management Survey (FHMS), aiming to summarize our implementation efforts for this large-scale survey over the decade since its launch in June 2011, and to discuss future prospects from a variety of perspectives. We hope that this report will serve as a basic reference for evaluation, discussion, and improvement of the FHMS. We would like to take this opportunity to express sincere gratitude to all participants, distinguished guests, international organizations, and other concerned parties for their generous support and cooperation in organizing this symposium and preparing this report. A brief overview of the symposium follows.

Day 1 started with an introductory presentation outlining the results and support activities in each survey of the FHMS, followed by Part I, “Fukushima Health Management Survey at Present” for the rest of Day 1 and the morning of Day 2. Presentations and discussions focused on the results and future prospects of four Detailed Surveys: Pregnancy and Birth Survey (PBS), Thyroid Ultrasound Examination (TUE), Comprehensive Health Check (CHC), and Mental Health and Lifestyle Survey (MHLS).

The theme of Session 1 was “Pregnancy and Birth Survey and parenting support.” For some time after the accident, there were misleading rumors about radiation effects on pregnancy and fetal well-being. The PBS revealed that rates of premature birth, low birth weight, and congenital anomalies were not different from national survey results or generally observed levels. We believe that the results of this survey provide a scientific basis for the safety of Fukushima as a place for giving birth and raising children. The survey also inquired about the mental and physical health of mothers who gave birth and are raising children in Fukushima, and their attitudes toward childcare. Support is offered to those who need it. In this session, three residents raising children in Fukushima gave presentations. They talked about gaining peace of mind from meeting with trustworthy scholars and having their radiation doses measured; this suggests the efficacy of our work.

Although the PBS, having achieved its initial purpose, will be terminated in March 2021 (the end of FY2020), we will continue to monitor childbirth and child rearing in Fukushima with follow-up surveys on depressive tendencies, and will share various findings and know-how obtained from the survey to prefectural and municipal programs that provide maternal and child health care.

Session 2 was entitled “Current status of and future perspectives on Thyroid Ultrasound Examination.” At its meeting held in July 2010, the Oversight Committee for the Fukushima Health Management Survey endorsed the evaluation of second-round survey results made by its Thyroid Examination Evaluation Subcommittee, which stated that at present, no causal relationship could be identified between thyroid cancers detected so far and radiation exposure. Corroborating this, a report released this past March by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) indicated that future health effects, e.g., cancers directly related to radiation exposure, are unlikely to be discernible.¹ At this international symposium, the results of the third-round survey conducted in FY2016 and FY2017 were reported, showing trends similar to the results of previous surveys.

It was also pointed out that to conduct a comprehensive analysis, including cancer cases not found through the TUE, it would be necessary to use cancer registry data, and some issues need to be addressed. Since thyroid cancer generally has a good prognosis, issues include examinations that reveal asymptomatic cancers unlikely to affect life expectancy (overdiagnosis) and choice of treatment strategies based on predicted prognosis. Such issues were presented and discussed at this symposium from epidemiological, medical/surgical, and psychological perspectives. In thyroid cancer, excessive surgery can be avoided by adopting appropriate risk-based treatment strategies; Japanese guidelines for thyroid tumor resection versus “watchful waiting” have had a significant positive impact on guidelines in Europe and the United States.

We believe it is important to ensure voluntary participation in the survey, while further expanding opportunities to receive examinations as those aged 0-18 at the time of the nuclear accident mature, and enhancing communication, including better explanations of the advantages and disadvantages of receiving examinations.

Session 3, “Physical and mental health care for evacuees and their recovery,” included presentations and discussions on the results of the Comprehensive Health Check (CHC), Mental Health and Lifestyle Survey (MHLS), and related topics. As for health effects after the nuclear power plant accident, the CHC showed an increase in diabetes and dyslipidemia associated with evacuation life, while white blood cell counts, often a marker of radiation effects, showed no statistical irregularities. Regarding mental health, the percentage of adult evacuees in need of support for depression and anxiety decreased significantly 4 to 5 years after the start of the survey, but this trend slowed down thereafter, and the percentage is still higher than the national average. The MHLS also showed that there is an issue associated with risk perception of radiation exposure. Even though no genetic effects due to radiation exposure have been found in the children of Hiroshima and Nagasaki survivors, one-third of people now living in Fukushima Prefecture—exposed to much less radiation—still worry about genetic effects. This poses a major challenge for our future risk communication activities.

Pertaining to the physical and mental health of prefectural residents, we received a variety of thought-provoking presentations from health and medical professionals and researchers within and outside Fukushima on themes such as *social capital* (human connections) and *well-being* (both physical and emotional). We continue to gain new knowledge, allowing better communication with disaster-affected residents, to maintain and promote their health.

Part II, “Fukushima Health Management Survey at Perspectives” was held on the afternoon of Day 2.

Session 4, “What needs to be done to enhance the resilience of Fukushima’s people,” featured two speakers: one addressing lessons from the 1995 Great Hanshin-Awaji Earthquake, and another discussing the 10-year record of Soma City’s recovery, with a message for future generations. Both speakers highlighted the importance of community recovery and the human resources needed to achieve it. We believe that these are important for the activities of our Center, which is looking after the reconstruction and revitalization of Fukushima from a health perspective.

Session 5, “Collaboration with international organizations,” featured experts representing four international organizations closely related to the Center’s activities. They shared their experiences of collaboration with Fukushima Medical University in various fields, including radiation risk and protection, radiation education, mental health, and related lessons from the nuclear accident. Scientific knowledge shared between FMU and UNSCEAR pertains especially to radiation health risks. FMU is also a WHO Collaborating Center on radiation disaster preparedness, response, and recovery. Other cooperative projects include working with the IAEA on education programs related to human health and radiation, and working with the ICRP on radiation protection and various community activities in Fukushima.

As we approach the 10-year anniversary of the nuclear accident, it remains important to continue to obtain cooperation and support from international organizations related to radiation, while seeking scientific advice and guidance from overseas experts, to better understand health effects on residents of the prefecture, and to address their concerns. In addition, we have a responsibility to communicate correct information about Fukushima through our activities in cooperation with these international organizations and experts.

This session included reports on some of FMU's activities with international organizations and student presentations. We hope that this symposium will serve as a foundation for future collaboration between FMU and authorities around the world.

Through this two-day symposium, we recognized once again the importance of *science* (evidence-based thinking), *collaboration*, and *human resources and education* in the reconstruction and revitalization of Fukushima. Although the coronavirus pandemic compelled us to put the symposium online, we were pleased by the opportunity to explain a decade of results from the Fukushima Health Management Survey to a wider audience beyond Fukushima Prefecture.

Many of the participants commented on the usefulness of the event, giving us much support and encouragement for our activities, through various comments and suggestions. The following is a selection of typical comments.

- I realized that I had forgotten about the fear and sadness that arose after the radiation disaster. I have a role to play in conveying this experience to the next generation. Opportunities like this symposium are good for gathering information to share with others.
- I think the discussion was well facilitated and thoughtful. I felt that frank dialogue was important and that this would promote healing among people of the prefecture.
- I think a strong system of information sharing is needed to counteract dishonorable remarks made against health care professionals.
- Now that 10 years have passed since the nuclear accident, I would like you to discuss low-dose radiation exposure.

The Japanese government designated the 10 years from FY2021 as the “Second Reconstruction and Revitalization Period.” The revised Basic Policy for Reconstruction and Revitalization of Fukushima includes, as in the past, “elimination of health concerns caused by radiation and realization of a safe living environment,” and continued implementation of the FHMS.

We have accumulated scientifically valid results from the FHMS, and now believe we are at the stage of further developing and making use of these results to support the health of all people of Fukushima Prefecture. We will make full use of the results of this symposium in our future activities for the FHMS and will steadfastly fulfill our mission to build a foundation for the reconstruction and revitalization of Fukushima by supporting resilience through meaningful engagement with the people of the prefecture.



Discussion in Session 5 Collaboration with international organizations

¹ From UN Vienna International Center Press Release, March 9, 2021
<https://unis.unvienna.org/unis/en/pressrels/2021/unisous419.html> (English)
https://www.unscear.org/docs/publications/2020/PR_Japanese_PDF.pdf (Japanese)

Presenters' biographies

Introduction

Introduction chair/Session 4 Special Lecture II chair

**OHTO Hitoshi, MD, PhD**

General Vice President, Fukushima Medical University/General Vice Director, FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Professor Emeritus Ohto is General Vice President of Fukushima Medical University. He graduated from FMU (MD) in 1977 and finished a PhD thesis of medicine in 1984 at the University of Tokyo. His research focuses chiefly on fetomaternal micro-transfusion and its consequences to mother and child, including transmission of pathogens and alloimmune responses. He has studied mother-to-infant transmission of hepatitis viruses, and infantile and maternal microchimerism during and after pregnancy. He has contributed to worldwide transfusion safety initiatives, especially the prevention of transfusion-associated graft-versus-host disease, which is uniformly fatal, by introducing universal irradiation of cellular transfusion components at FMU in 1989, first in the world. He guest edited a collection of articles with the theme "Disasters and Transfusion" in an international journal. He has published more than 200 peer-reviewed scientific papers in international top journals. He is currently serving in the Fukushima Health Management Survey as General Vice Director.

Introduction speaker/Session 5 chair

**KAMIYA Kenji, MD, PhD**

Vice President, Fukushima Medical University/Executive Director, FMU Radiation Medical Science Center for the Fukushima Health Management Survey/Vice President, Hiroshima University (HU) (Reconstruction Support Radiation Medicine)/Director, HU Radiation Emergency Medicine Promotion Center

Dr. Kamiya graduated from Hiroshima University School of Medicine in 1977, where he also completed a PhD in Pathology in 1986. From 1982 to 1987, he held a research appointment at the University of Wisconsin. After joining Hiroshima University's Research Institute for Radiation Biology and Medicine, he worked to advance radiation biology, radiation carcinogenesis, and radiation emergency medicine. In 1996, he became a Professor at Hiroshima University, and served as Director of the Research Institute for Radiation Biology and Medicine from 2001 to 2005 and 2009 to 2013. He has served as Director of the Radiation Emergency Medicine Promotion Center since 2004. Following Fukushima's 2011 nuclear accident, he was appointed as a Vice President of Fukushima Medical University, while serving concurrently as a radiation health risk management advisor to the Fukushima Prefectural Government, as well as working as an advisor to the Cabinet Secretariat's Advisory Group on Nuclear Disasters. In 2016, he became Executive Director of the Radiation Medical Science Center for the Fukushima Health Management Survey at Fukushima Medical University. In 2009, he received the Asian Association of Radiation Research Award, and was awarded the Prime Minister's Commendation to Contributors for Disaster Prevention in 2012. In 2020, he received the Japanese Radiation Research Society's JRRS Outstanding Contribution Award, among other awards. He served as President of the Japanese Radiation Research Society (2008-2011), Secretary General of the 15th Annual

International Congress on Radiation Research (ICRR2015), and as a member of both the Science Council of Japan and the Nuclear Regulation Authority's Radiation Council.

Session 1

Session 1 chair

**MUROTSUKI Jun, MD, PhD**

Director, Department of Maternal and Fetal Medicine, Miyagi Children's Hospital/Professor, Department of Advanced Developmental Medicine, Tohoku University Graduate School of Medicine

Dr. Murotsuki Jun is Director of the Department of Maternal and Fetal Medicine in Miyagi Children's Hospital and Professor of the Department of Advanced Developmental Medicine in Tohoku University Graduate School of Medicine. He graduated from Tohoku University School of Medicine in 1986. After residency training, he joined the Lawson Health Research Institute at the University of Western Ontario (Canada) to focus on fetal physiology and molecular biology. He became an Associate Professor of the Department of Obstetrics and Gynecology in Tohoku University in 2007. He became Director of the Department of Maternal and Fetal Medicine in Miyagi Children's Hospital in 2009, and he was assigned an additional post of Professor of the Department of Advanced Developmental Medicine in Tohoku University Graduate School of Medicine in 2010.

1-1 speaker/Session 1 Discussion chair

**FUJIMORI Keiya, MD, PhD**

Professor and Chair, Department of Obstetrics and Gynecology, Fukushima Medical University School of Medicine/Director, Office of the Pregnancy and Birth Survey, FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Dr. Fujimori Keiya is Professor and Chair of the Department of Obstetrics and Gynecology, Fukushima Medical University School of Medicine, Japan. He graduated from FMU School of Medicine in 1988, and continued there, completing a medical PhD in 1992. From April 1992, he did a two-year fellowship in the Division of Maternal Fetal Medicine, University of California, Irvine. In April 2002, he became an Assistant Professor at FMU Hospital's Perinatal Medical Center, concurrently serving in the Department of Obstetrics and Gynecology. In April 2008, he became an Associate Professor at the Center. From July 2008, he returned to the Division of Maternal Fetal Medicine at UC Irvine for another four months. In August 2009, he was appointed as Professor and Chair of the Department of Obstetrics and Gynecology, FMU School of Medicine. He served as Deputy Director of FMU Hospital for 3 years from April 2014. Since April 2020, he has been Dean of FMU's Graduate School of Medicine. In 2002 he received the Young Scientist Award from the Asia-Oceania Obstetrics and Gynecology Society.

1-2 speaker

**KAIWA Atsushi**

Director, Childcare Support Division, Children's Future Bureau, Fukushima Prefectural Government

Mr. Kaiwa graduated from Nihon University's College of Law

in 1993, and started his employment with the Fukushima Prefectural Government that same year. After working as Deputy Director General of Planning, Commerce and Industry Department, Kennan Regional Development Bureau, then Senior Director of Planning and Commerce and Director of the Regional Development Division (from April of 2014), he worked as Deputy Director of the Social Affairs and Environment Department and Assistant Director of the Social Affairs and Environment General Affairs Division (from April of 2017). Since April 2019 until the present, he has been Director of the Childcare Support Division, Children's Future Bureau.

1-3 (1) speaker



GOTO Aya, MD, MPH, PhD

Professor, Center for Integrated Science and Humanities, Fukushima Medical University/Deputy Director, Office of the Pregnancy and Birth Survey, FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Goto Aya is Professor of Health Information and Epidemiology at Fukushima Medical University Center for Integrated Science and Humanities. She also serves as Professor of International Community Health in the Graduate School of Medicine and Deputy Director of the Fukushima Health Management Survey (Pregnancy and Birth Survey) at FMU, and as a project manager for JICA's Evidence-Based Medicine promotion project in Vietnam. Dr. Goto's main research interests are reproductive health, parenting support, and health literacy. Her translational research has been conducted in close collaboration with local communities in Fukushima and Ho Chi Minh City, where it complements the capacity building of local health care professionals in health information as well as maternal and child health care. Since the Fukushima nuclear accident, Dr. Goto has been working closely with local public health nurses to help them respond appropriately to concerns among parents of small children about elevated background radiation. Recently, she started working with children in disaster-prone Asian countries toward health promotion and community development.

1-3 (2) speaker



ISHII Kayoko, MSN, PhD

Assistant Professor, Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University

After graduating from St. Luke's College of Nursing (currently St. Luke's International University) in 1993, Dr. Ishii worked in the Pediatric Department of St. Luke's International Hospital from 1993 until 1996. From 1996 to 1997, she worked as a midwife in the Obstetrics and Gynecology Department of Nishiyokohama International Hospital, before serving in a similar position at Yokohama Municipal Port Hospital from 1997 until 2001. From 2001 until 2004, she worked at Fukushima Medical University's School of Nursing in the field of nursing care for children. After receiving her Master's from St. Luke's College of Nursing in 2006, she returned to nursing care for children at FMU's School of Nursing from 2006 until 2010, when she took leave while pregnant with her second child. After the 2011 earthquake and tsunami, she worked part-time providing phone counseling for the Pregnancy and Birth Survey at the FMU's Radiation Medical Science Center for the Fukushima Health Management Survey, from February 2012 until July 2013, when she was appointed as an assistant professor in her specialty. Concurrently, she earned a doctorate from FMU Graduate School of Medicine's

Department of Public Health, where she currently works.

1-4 (1) speaker

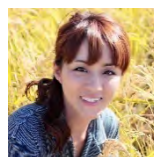


MATSUMOTO Nami

Second Outpatient Section of Obstetrics and Gynecology, Department of Nursing, Iwaki City Medical Center

Ms. Matsumoto graduated from the Department of Nursing, Kyorin University Faculty of Health Sciences, with a license in midwifery. Since 2009, she has been working in the Obstetrics Ward at Iwaki Kyoritsu General Hospital (currently Iwaki City Medical Center). She is the mother of three children, born in 2012, 2014, and 2017. Since 2020 she has worked at the Second Outpatient Section of Obstetrics and Gynecology at Iwaki City Medical Center.

1-4 (2) speaker



KATO Emi

Senior Executive Director, Kato Farm

Ms. Kato was born in 1981. After graduating high school, she worked at a number of organizations before starting her farming career in 2009, less than two years before March 11, 2011. Since 2015, she has increasingly enjoyed opportunities to take the stage at prefectural events to discuss her experiences. She acquired her Global G.A.P. certification in 2017. Since then, she has been a member of the Ministry of Agriculture, Forestry and Fisheries' Subcommittee on the Food Supply. In 2018, she launched Beat JAPAN, a volunteer organization that holds events both in Japan and overseas. In 2020, she launched a craft brewery. She is also: Committee Member, Ministry of Agriculture, Forestry and Fisheries Subcommittee on the Food Supply; Rice Advisor; Food Tourism Meister; Rice Paddy Environment Appraiser; Thai Yoga Instructor; Mother to three boys and one girl.

1-4 (3) speaker



ANBE Hiroshi, MD

Head, Obstetrics and Gynecology, Minamisoma Municipal General Hospital

Dr. Anbe is from Odaka Ward, Minamisoma City. After graduating from Futaba Prefectural High School, he attended Jichi Medical University, and after graduating in 1997, began his 2-year internship at Jichi Medical University Hospital. He worked at remote medical clinics for two years starting in 1998, one year at Tenei Village National Health Insurance Clinic, and 1 year at the Regional Medical Support Center of Minamiaizu District-Wide Municipal Area Association. From 2001 he spent a three-year residency in the Department of Obstetrics and Gynecology at Fukushima Medical University, and in 2004 he began working at the Department of Obstetrics and Gynecology at Fukushima Prefectural Minamiaizu Hospital. In 2008, he began working in the Department of Obstetrics and Gynecology at Minamisoma City General Hospital. Due to evacuations after the Great East Japan Earthquake, he moved to Ohta Nishinouchi Hospital in Koriyama City from April of 2011, and returned to Minamisoma Municipal General Hospital in April 2012.

Session 2

Session 2 chair



YOKOYA Susumu, MD, PhD

Director, Thyroid and Endocrine Center, Fukushima Global Medical Science Center, Fukushima Medical University

Prof. Yokoya Susumu has been the Director of the Thyroid and Endocrine Center, Fukushima Global Medical Science Center, Fukushima Medical University, since 2017. He graduated from the Faculty of Medicine, the University of Tokyo, in 1976 and immediately started his residency in the Departments of Pediatrics, Kanagawa Children's Medical Center (KCMC) and then Jichi Medical School (now renamed to Jichi Medical University). He also received post-graduate training in the Division of Endocrinology and Metabolism in KCMC. During his stay in Canada (1983-1985), he served as a research associate in the Department of Physiology, Faculty of Medicine, University of Manitoba, and focused on research of the growth hormone under the supervision of Prof. H. G. Friesen. He started working as a pediatrician in the Department of Pediatrics, Toranomon Hospital, Tokyo, in 1988, and was promoted to Department Director in 1993. He moved to the National Center for Child Health and Development (NCCHD) and became the Director of its Department of Medical Subspecialties in 2007 and was promoted to be a Deputy Executive Director of the Hospital in 2013. The Great East Japan Earthquake occurred in 2011 when he was President of the Japanese Society for Pediatric Endocrinology (JSPE) (2010-2014). He received the Kenji Fujieda Prize in 2012 and the JSPE Society's Prize in 2014.

2-1 speaker



SHIMURA Hiroki, MD, PhD

Professor and Chair, Department of Laboratory Medicine, Fukushima Medical University School of Medicine/Director, Department of Thyroid Ultrasound Examination, FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Dr. Shimura Hiroki graduated from Yamanashi Medical University School of Medicine in 1986 and completed a PhD in Endocrinology and Metabolism at the Postgraduate School of Yamanashi Medical University in 1990. After three years of advanced work in Prof. Kohn's lab at NIH (USA), he returned to Japan to serve as an educator, researcher, and medical caregiver in the Third Department of Internal Medicine at the University of Yamanashi, focusing on endocrine and metabolic diseases. In 2013, he became Professor and Chair of FMU's Department of Laboratory Medicine and was co-appointed to the Thyroid Ultrasound Examination program. From 2018, he has been Director of the Department of Thyroid Ultrasound Examination in the Radiation Medical Science Center for the Fukushima Health Management Survey.

2-2 speaker/Session 2 Discussion chair



KATANODA Kota, PhD

Chief, Division of Cancer Statistics Integration, Center for Cancer Control and Information Services, National Cancer Center, Japan

Katanoda Kota graduated from the Faculty of Law at the University of Tokyo in 1996. He acquired his master and PhD degrees from the same university in 1998 and 2002, respectively, with a research focus of brain imaging analytics.

After working for the National Institute of Health and Nutrition from 2002 to 2005, where he was engaged in the analysis of national surveillance data, he started to work for the National Cancer Center in the field of cancer statistics. He is now Chief of the Division of Cancer Statistics Integration, specializing in descriptive epidemiology, tobacco control, and simulation modelling research for cancer control.

2-3 speaker



SOBUE Tomotaka, MD, MPH

Professor, Division of Environmental Medicine and Population Sciences, Graduate School of Medicine, Osaka University

Dr. Sobue has been a Professor of the Division of Environmental Medicine and Population Sciences, Graduate School of Medicine, Osaka University, since 2012. He received his MD from Osaka University School of Medicine in 1983. He entered the Department of Cancer Control and Statistics, Osaka Medical Center for Cancer and Cardiovascular Diseases, in 1983. He started his research activity in the field of cancer epidemiology for lung cancer and evaluation studies of lung cancer screening. In 1986-87, he joined Johns Hopkins University School of Public Health and completed his MPH degree. In 1994, he moved to the National Cancer Center Research Institute, Tokyo, as a Section Chief, Cancer Information and Epidemiology Division. He became Chief of the Cancer Information and Epidemiology Division, NCC Research Institute, in 2002; a Chief of the Statistics and Cancer Control Division, NCC Research Center for Cancer Prevention and Screening, in 2003, and Chief of the Surveillance Division, NCC Center for Cancer Control and Information Services, in 2006. In 2012, he returned to his home university, starting contributions to student education as well as partly continuing the above activities. Since 2018, he has been serving as President of the Japan Epidemiological Association.

2-4 speaker



IMAI Tsuneo, MD, PhD

Honorary Director, National Hospital Organization Higashinagoya National Hospital/Visiting Professor, Aichi Medical University (Breast and Endocrine Surgery)

Dr. Imai Tsuneo graduated from Nagoya University School of Medicine in 1978. He had his basic surgical training at Bisai Municipal Hospital (1978-1983) and Okazaki Municipal Hospital (1983-1985). He has specialized in endocrine surgery since he joined the Endocrine Surgery Group at Nagoya University in 1985. He obtained a PhD degree from Nagoya University for his research about endocrine surgery. He spent 2 years as a research fellow at Southwestern Medical Center in Dallas, USA (1990-1992). He was promoted to Head of the Department of Breast and Endocrine Surgery, Nagoya University Hospital, in 2004. He became a Professor of the Division of Breast and Endocrine Surgery, Aichi Medical University, in 2013 and served concurrently as a General Manager of their Medical Safety Management Office in 2015. He was appointed President of Higashinagoya National Hospital in 2016, and retired and became Honorary Director in 2020. He also served as Chairman of the Board of Directors of the Japanese Society of Thyroid Surgery (2014-2018). He received an award given annually by the Japan Association of Endocrine Surgery in 2006.

2-5 speaker



SETOU Noriko, PhD

Associate Professor, Department of Disaster Psychiatry, Fukushima Medical University School of Medicine and FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Certified psychologist specializing in care for loss and grief, support for children with intractable diseases and their families, and stresses of support workers. After graduating from the Faculty of Education and the College of Medical Science at Kobe University, I obtained a Master of Psychology in clinical psychology at the Graduate School of Kobe Shinwa Women's University and a Doctor of Health Science from Kobe University Graduate School of Health Sciences. I worked in hospital pediatrics and became a Lecturer in the Faculty of Nursing and Rehabilitation at Konan Women's University in 2006 and an Associate Professor in 2009. In 2018, I joined the Department of Disaster Psychiatry, Fukushima Medical University, and in June of the same year, was co-appointed to the Office of Thyroid Ultrasound Examination (TUE) at FMU's Radiation Medical Science Center for the Fukushima Health Management Survey. Currently, I lead the "Thyroid Support Team" that provides psychosocial support to participants and their families in the secondary confirmatory examination in TUE.

2-6 Keynote Lecture chair



SUZUKI Shinichi, MD, PhD

Professor and Chair, Department of Thyroid and Endocrinology, Fukushima Medical University School of Medicine

Graduated from Fukushima Medical University School of Medicine in March 1983 and obtained PhD at Fukushima Medical University in 1990. He spent one year from March 2001 to April 2002 as visiting scientist at the Burnham Institute, CA, USA. He became Professor and Director, Division of Breast, Endocrine and Thyroid Surgery, Department of Organ Regulatory Surgery, FMU School of Medicine in 2010. In March 2013, he became Professor and Chair, Department of Thyroid and Endocrinology, FMU School of Medicine, and Director, Division of Thyroid and Endocrine Surgery, Fukushima Medical University Hospital. His specialties are endocrine surgery, molecular endocrinology and ultrasonography of thyroid. He became the Medical Administrator of Disaster Medical Care Coordination, Fukushima Prefecture, after the Fukushima disaster of March 2011. He served as Director of Department of Thyroid Ultrasound Examination, FMU Radiation Medical Science Center for the Fukushima Health Management Survey from 2012 to 2015. He is also the President of Japan Association of Endocrine Surgeons (JAES) and the former President of Japan Association of Breast and Thyroid Sonology (JABTS) and councils of Japan Thyroid Association (ATA) and Asian Association of Endocrine Surgeons (AsAES).

2-6 Keynote Lecture speaker



Gerry THOMAS, PhD

Professor of Molecular Pathology, Department of Surgery and Cancer, Imperial College London

Gerry Thomas has spent most of her research career on understanding the health effects of the Chernobyl accident, alongside her Japanese, Ukrainian, and Russian colleagues. She established the Chernobyl Tissue Bank

(www.chernobyltissuebank.com) in 1998, and has published extensively on the molecular pathology of thyroid cancer in children and young people. Following the Fukushima accident, she was asked to explain the health risks of radiation on both broadcast and written media in the UK and internationally. She has been involved in a number of expert groups for the IAEA, UNSCEAR, and IARC, the most recent of these focusing on thyroid monitoring after nuclear accidents. She has also been asked to provide advice to the Japanese and UK governments on communication of radiation risk, as well as providing expert advice to government agencies in other countries with regard to the health risks of nuclear power.

Session 3

Session 3 chair



YASUMURA Seiji, MD, PhD

Vice President (Fukushima Health Management Survey and Director (Fukushima Health Management Survey and New Faculty), Fukushima Medical University

Dr. Yasumura Seiji is a Vice President of Fukushima Medical University (FMU). He graduated from Yamagata University School of Medicine in 1984 and earned a PhD in its Public Health in 1989. He became a Senior Researcher at the Tokyo Metropolitan Institute of Gerontology, Tokyo, and subsequently progressed from Assistant Professor to Associate Professor in the Department of Public Health at Yamagata University School of Medicine. In 2000, he was appointed as Professor and Chair of the Department of Public Health, FMU School of Medicine. As a principal investigator at the start of the Fukushima Health Management Survey, he was first author of "Study Protocol for the Fukushima Health Management Survey" (Journal of Epidemiology, 2012) and co-edited "Public Health in a Nuclear Disaster" (Hiroshima University Press, 2016, with Prof. Kamiya Kenji). Prof. Yasumura now directs the Executive Committee of the Fukushima Health Management Survey, and is a member of the Science Council of Japan.

3-1 Keynote Lecture speaker



AIDA Jun, DDS, MPH, PhD

Professor, Department of Oral Health Promotion, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University/Professor, Division for Regional Community Development, Liaison Center for Innovative Dentistry, Graduate School of Dentistry, Tohoku University

Dr. Aida Jun is a Professor at both Tokyo Medical and Dental University and Tohoku University. He graduated from the Faculty of Dentistry, Hokkaido University, in 2003, completed a Master of Public Health course at the National Institute of Public Health in 2004, and completed a doctoral course at the Graduate School of Dentistry, Hokkaido University, in 2007. He was appointed as an Assistant Professor in the Department of International and Community Oral Health at the Graduate School of Dentistry, Tohoku University, in 2007, and a Visiting Researcher at University College London from 2010 to 2011. Dr. Aida became an Associate Professor in the Graduate School of Dentistry at Tohoku University in 2011 and concurrently served as a health officer for the Miyagi Prefectural Government from 2012 to 2019. He was appointed Director of the Clinical Epidemiology Statistics Support Office, Graduate School of Dentistry, Tohoku University, from 2014. Since 2020, he has been cross-appointed as a Professor at the Tokyo Medical and Dental University and Tohoku University. He has also served as a core member of the Japan

He has also served as a core member of the Japan Gerontological Evaluation Study and of the International Center for Oral Health Inequalities Research and Policy, and an Associate Editor of BMC Oral Health and the Journal of Epidemiology.

3-2 speaker



SAKAI Akira, MD, PhD

Professor and Chair, Department of Radiation Life Sciences, Fukushima Medical University School of Medicine/Director, Office of the Comprehensive Health Check and Health Promotion, FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Dr. Sakai Akira is a hematologist and oncologist. He received his Doctor of Medicine from Ehime University in 1986. Thereafter, he worked as a physician at Hiroshima University Hospital, Prefectural Hiroshima Hospital, and Hiroshima Municipal Hospital. He earned a PhD from Hiroshima University in 1993, and was a Visiting Fellow in the Laboratory of Pathology, Hematopathology Section, NIH/NCI (USA), from 1997 to 1998. Continuing in hematology and oncology, Dr. Sakai returned to Japan and became a Lecturer at Hiroshima University Hospital in 2003. Since November 2011, he has been serving as Professor of the Department of Radiation Life Sciences at Fukushima Medical University School of Medicine. His fields of expertise now include hematology, oncology, and radiation biology.

3-3 speaker/Session 3 Discussion chair/Session 4 Special Lecture I chair



MAEDA Masaharu, MD, PhD

Professor and Chair, Department of Disaster Psychiatry, Fukushima Medical University School of Medicine/Director of the Department of Health Survey Personal Support and Director of the Office of Mental Health and Lifestyle Survey and Care, FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Maeda Masaharu is Professor and Chair of the Department of Disaster Psychiatry at Fukushima Medical University School of Medicine in Fukushima, Japan. Dr. Maeda received his medical degree at Kurume University School of Medicine, Fukuoka, Japan, and completed residency training in psychiatry at Kurume University Hospital. He later returned to his alma mater in 1996 as Associate Professor, before assuming his current roles. Professor Maeda served as President of the Japanese Society of Traumatic Stress Studies from 2009 to 2013. He has been actively involved in providing psychiatric examinations and organizing psychiatric intervention teams for survivors of several major disasters that have occurred in Japan, particularly transportation disasters. Professor Maeda's current clinical and research interests lie in the widespread psychosocial effects resulting from the Fukushima nuclear accident. As Vice Director of the Fukushima Center for Disaster Mental Health, he also leads the Mental Health and Life Style Survey to facilitate the adequate care of residents who are at risk of developing mental health problems following the complicated nuclear accident.

3-4 speaker



IGARI Keiko

Director, Kawauchi Village Community Comprehensive Care Center, Kawauchi Village Social Welfare Council

Ms. Igari graduated from the Ibaraki Prefectural Mito Nursing School Department of Health Sciences in 1982, and worked as a public health nurse in the Village of Kawauchi from April 1982 until March 2020. From October 2020 until the present, she has been Director of the Kawauchi Community Comprehensive Care Center of the Kawauchi Social Welfare Council.

3-5 speaker



FUJITA Yukihiro

Senior Public Health Nurse, Section of Health and Hygiene, Division of Resident Welfare, Naraha Town

Fujita Yukihiro is a senior public health nurse of Naraha Town. He graduated from Kanazawa University Faculty of Science in 1997 and left the Graduate School of Natural Science of Kanazawa University in 1999 to join the Japan Overseas Cooperation Volunteers (JOCV) as a Science and Mathematics Teacher. In 2006, he graduated from the Japanese Red Cross College of Nursing and started his career as a public health nurse. He worked at Miyake Village, Tokyo (2006-2007), Citigroup Health Insurance Society (2007-2009), and Hinohara Village, Tokyo (2009-2012), as a public health nurse. Thereafter, he joined the academic staff of Community Health Nursing at the Japanese Red Cross College of Nursing (2012-2013). After the Great East Japan Earthquake, he worked as a Red Cross volunteer. He did victim support activities such as mental health care and first aid station support in Iwate, Miyagi, and Fukushima Prefectures. In 2013, he started working at Futaba Town, whose government office first evacuated to Kazo City, Saitama, and since 2018, he has been working as a public health nurse at Naraha Town. Currently, he is working on creating a "Health and Wellness Town" in Naraha in cooperation with residents. He is also seeking ways and means to reduce medical costs. When he gets home, he is a father of two dearest sons.

3-6 speaker

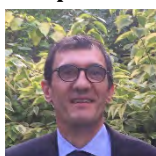


HARAGUCHI Yayoi, PhD

Professor, College of Humanities and Social Sciences, Ibaraki University

Dr. Haraguchi Yayoi is a Professor at the College of Humanities and Social Sciences, Ibaraki University. She received her MA from the University of New Orleans in 1996, and her PhD in Sociology from Tokyo Metropolitan University in 2001. She has nearly 20 years of teaching and research experience in environmental sociology. Her area of specialization includes disaster reconstruction, disaster resilience, and environmental justice. She joined Ibaraki University in 2004 as a Lecturer and became a Professor in 2014. She served as its Executive Advisor to the President and the Director of the Office of Equality and Diversity between 2015 and 2020. She currently serves as its Education and Research Council member. After the 3.11 disaster, she started to be involved in various social activities and research projects focusing on evacuees' support activities. She currently leads the General Incorporated Association FUAI-net, an evacuees' support organization based in Ibaraki, as Representative Director, which provides a base for rebuilding the impacted people's lives.

3-7 speaker



Thierry SCHNEIDER, PhD
Director, Nuclear Protection Evaluation
Centre (CEPN, France)

Thierry Schneider is Director of CEPN (Nuclear Protection Evaluation Centre), a French research team dedicated to radiological protection. He got a PhD in Economics, in the field of health and insurance. He has been involved in a number of research projects related to the assessment and management of radiological risk. Since 1990, he has been involved in the methodological and practical developments related to rehabilitation of living conditions of the populations affected by the Chernobyl accident and, since November 2011, he has participated in the ICRP Dialogue Initiative in Fukushima Prefecture and in research projects on post-accident management in cooperation with several Japanese organizations, including FMU. He is currently Chair of the NEA/OECD Committee on Radiological Protection and Public Health (CRPPH), member of Committee 4 of the International Commission on Radiological Protection (ICRP), and President of NERIS, the European Research Platform on Emergency and Recovery Response and Preparedness.

Session 3 Discussion chair



OHIRA Tetsuya, MD, PhD
Professor and Chair, Department of
Epidemiology, Fukushima Medical
University School of Medicine/Director,
Department of the Health Survey Public
Support, FMU Radiation Medical Science
Center for the Fukushima Health
Management Survey

Dr. Ohira graduated from Fukushima Medical University School of Medicine in 1990. After working as a general and psychosomatic physician at Aizu Chuo General Hospital Ikemi Memorial Center for Psychosomatic Medicine, Hamamatsu University Hospital Department of Internal Medicine Second Division, and Kikugawa General Hospital Department of Internal Medicine, he enrolled in the Doctoral Program in Social and Environmental Medicine, the University of Tsukuba Graduate School of Medicine in 1995, earning a PhD (Medicine) in 1999. He became Chief Physician of the Department of Epidemiology and Mass Examination for Cardiovascular Diseases at the Osaka Medical Center for Health Science and Promotion (currently the Osaka Center for Cancer and Cardiovascular Disease Prevention) in 2000. He became Associate Director of the Health Development Division at the Osaka Prefecture Health Sciences Center in 2001. He worked as a researcher in the Division of Epidemiology and Community Health at the University of Minnesota from 2004 to 2006, when he joined the Department of Public Health at the Graduate School of Medicine at Osaka University (as an Assistant Professor in the Faculty of Medicine). In 2008, he became an Associate Professor of the same department. In 2013, he became a Professor in the Department of Epidemiology at the Radiation Medical Science Center for the Fukushima Health Management Survey, and Chair of the Department of Epidemiology at Fukushima Medical University's School of Medicine. In addition, he serves as the Director of the Department of Health Survey Public Support at the Radiation Medical Science Center and is also the Deputy Director of the Health Promotion Center.

Session 4

4-1 Special Lecture I speaker



KATO Hiroshi, MD, PhD
Director, Hyogo Institute for Traumatic
Stress

Dr. Kato graduated from Kobe University School of Medicine in 1984. After his residency, he provided psychiatric emergency services in Tokyo for 10 years. After the Kobe Earthquake in 1995, he joined a special program to offer mental health services for five years. He has been a pioneer of disaster-related mental health in Japan, and he has been at the forefront of mental health relief work activities for many years. Besides disasters in Japan, he has flown to the sites of the 1999 Taiwan Earthquake, the 2004 Indian Ocean Earthquake and Tsunami, and the 2008 Sichuan Earthquake. He and his professional colleagues in these countries have shared their experiences and contributed to the training of mental health professionals of each country. Dr. Kato has been recognized internationally as one of the leading Asian authorities in this field.

4-2 Special Lecture II speaker



TACHIYA Hidekiyo, MD
Mayor of Soma City

Dr. Tachiya graduated from Fukushima Medical University School of Medicine in 1977, obtaining his doctor's license (No. 236736) in the same year, and began his internship at Kesen-numa General Hospital (currently Kesen-numa City Hospital). In 1979, he began working at Tohoku University Hospital. In 1980, after working at Soma Public Hospital (currently Soma Public General Hospital), he opened Tachiya Internal Medicine Clinic in 1983. In 1986, he became the Chairman of Tachiya Hospital Medical Corporation (currently Soma Central Hospital). In 1995 he served one term as a member of the Fukushima Prefectural Assembly before being elected Mayor of Soma City in 2002, where he is currently serving his 5th term. In addition, he is President of the Japan Association of City Mayors, President of the Fukushima Prefecture Mayors' Association, Chairman of the Soma Regional Municipal Association, President of the National Medical Mayors' Association, and Vice Chairman of the National Alliance for the Promotion of Road Maintenance.

Session 5

5-1 Special Lecture speaker

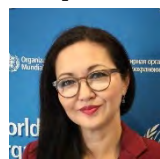


Gillian HIRTH, PhD
Australian Representative to the United
Nations Scientific Committee on the Effects
of Atomic Radiation (UNSCEAR) and the
current Chair of UNSCEAR for the 66th and
67th sessions/Deputy Chief Executive
Officer and Head, Radiation Health
Services Branch of the Australian
Radiation Protection and Nuclear Safety
Agency (ARPANSA)

Dr. Hirth completed a PhD in environmental radiochemistry at the University of Melbourne in 1999. After a Post-Doctoral Research Fellowship at the Australian Nuclear Science and Technology Organization, Dr. Hirth worked for the Australian Defence Organization from 2003 to 2010 in the

field of hazardous materials and environmental management; this work included the management of radiation sources and facilities, nuclear materials, occupational exposures and radioactive waste across the organization. Dr Hirth commenced at ARPANSA in 2010 and undertook a number of roles, including working on the UNSCEAR 2013 Fukushima report before commencing as the Director of the Monitoring and Emergency Response Section in March 2014, a position she held until August 2016, when she was appointed as the Head, Radiation Health Services Branch. She was subsequently appointed as the Deputy CEO in March 2017. Dr Hirth is the current Australian representative on the Commission on Safety Standards of the International Atomic Energy Agency (IAEA) for the 7th term, 2020 to 2023. Dr Hirth is a member of the International Commission on Radiological Protection (ICRP) Committee 4 for the term 2017-2021, and is a member of the Board of Council of the International Union of Radioecology.

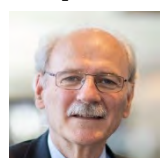
5-2 speaker



Zhanat CARR, MD, MSc, PhD
Scientist, Radiation and Health Unit, Department of Environment, Climate Change and Health, World Health Organization, Geneva, Switzerland

Dr. Carr received her MD degree at the State Medical Institute in Semipalatinsk, Republic of Kazakhstan (1989); PhD degree in Radiation Oncology from Medical Radiology Research Center in Obninsk, Russia (1993); and MSc degree in Radiation Biology from St. Bartholomew's College, Royal London School of Medicine & Dentistry, University of London, UK (1999). She completed a postdoctoral fellowship in Radiation Epidemiology in the Division of Cancer Epidemiology & Genetics at the National Cancer Institute (NCI) of the National Institutes of Health (NIH), in 2000-2002, prior to joining WHO's Radiation Health Program in July 2002. At the WHO, she is a focal point for radiation emergency preparedness and response activities. Dr. Carr coordinates two global expert networks—REMPAN and BioDoseNet—where her tasks are related to capacity building, development of technical guidelines, strengthening preparedness through training and exercise, risk communication and advocacy, and inter-agency and international cooperation. Dr. Carr's expertise includes: public health and medical preparedness and response to radiation emergencies; radiopathology; radiation biology, epidemiology, oncology, and protection; international health and policy development pertaining to radiation health; capacity building and sustainable development; project management and program evaluation.

5-3 speaker



Jacques LOCHARD, MAS
Vice-Chair, International Commission on Radiological Protection (ICRP)/Professor, Department of Health Risk Control, Atomic Bomb Disease Institute, Nagasaki University/Visiting Professor, Hiroshima University

Jacques LOCHARD was educated in Economics at the University of Pantheon-Sorbonne in Paris. He joined the Nuclear Protection Evaluation Centre (CEPN), a French non-profit organization for research on the economic and societal dimensions of radiological protection, in 1977. He was the director of the Centre from 1989 to 2016. He first contributed to the development of methodologies for the practical implementation of optimization principles in the nuclear industry. Since the early nineties he has been actively involved in the rehabilitation of the living conditions of the population affected by the Chernobyl accident in

Belarus, and more recently by the Fukushima accident in Japan. Jacques LOCHARD has been President of the French Society of Radiation Protection (SFRP), Executive Officer of the International Radiation Protection Association (IRPA) and Chairman of the Committee on Radiation Protection and Public Health (CRPPH) of the OECD Nuclear Energy Agency. He is currently Vice-Chair of the International Commission on Radiological Protection (ICRP), a Professor at Nagasaki University, and Visiting Professor at Hiroshima University.

5-4 speaker



May ABDEL-WAHAB, MD, PhD
Director, Division of Human Health (NAHU), International Atomic Energy Agency (IAEA), Vienna, Austria

Dr. Abdel-Wahab has over 30 years of patient care, teaching, and research experience in the field of radiation oncology. She has served as a member/chair on various national and international committees, such as United Nations Interagency Task Force (UNIATF) on the Prevention and Control of Non-Communicable Diseases (NCDs), which coordinates UN-wide NCD activities, and the Steering Committee on the UN Joint Program on Cervical Cancer Prevention and Control, working at global and national levels with participating countries to support national comprehensive cervical cancer control. She is a Steering Committee member of the Lancet Oncology Commission on Imaging and Nuclear Medicine. She has served as chair of ASTRO Committees for Healthcare Access & Training and IHE-RO, working on interconnectivity issues at various levels of patient care. Dr. Wahab is published widely, is a participant on expert panels, and is experienced in education and curriculum development. Prior to joining IAEA, she was section head of GI Radiation Oncology at the Cleveland Clinic, USA, and Professor at the Cleveland Clinic Lerner School of Medicine, Case Western University. She is a fellow of both the American College of Radiology (ACR) and the American Society of Radiation Oncology (ASTRO) and was featured on the Best Doctors in America listing, among other honors.

5-5 speaker

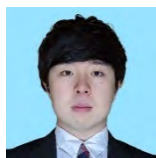


SAITO Kiyoshi, MD, PhD
Vice President, Fukushima Medical University/Director, Fukushima Global Medical Science Center/Director, Futaba Emergency and General Medicine Support Center/Professor and Chair, Department of Neurosurgery, FMU School of Medicine

Dr. Saito Kiyoshi graduated from Nagoya University School of Medicine in 1980. After neurosurgical residency at the Japanese Red Cross Nagoya Daini Hospital, he moved to Massachusetts General Hospital (Harvard Medical School) in 1984 and worked as a research fellow for three years. From 1988, he worked in the Department of Neurosurgery at Nagoya University and was appointed as an Associate Professor in 2003. In 1992, he spent 3 months at Sanjay Gandhi Postgraduate Institute of Medical Sciences, India, as a JICA specialist. In 2009, he became Professor and Chair of the Department of Neurosurgery, Fukushima Medical University. At FMU, he was appointed President of our affiliated hospital in 2016 and became a Vice President of FMU in 2019 (concurrently serving as Director of both the Fukushima Global Medical Science Center and Futaba Emergency and General Medicine Support Center). Since 2017, he has been President of the Japanese Society for Hypothalamic and Pituitary Tumors. He also presided over the 7th Japan-India Neurosurgical Conference in 2016, the 57th Annual Congress of the Japan Municipal Hospital Association in 2018, the 32nd Annual Meeting of Japanese

Society for Skull Base Surgery, and the 15th Asian-Oceanian International Congress on Skull Base Surgery in 2020.

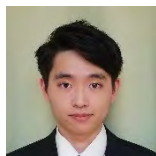
5-6 (1) speaker



ISHIWATA Kei
Fukushima Medical University School of Medicine

Ishiwata Kei enrolled at FMU in 2016 and is now in year five of a six-year medical curriculum. He was living in Fukushima City when the Great East Japan Earthquake struck. He studied abroad in Belarus in 2019.

5-6 (1) speaker



NAGAO Ryota
Fukushima Medical University School of Medicine

Nagao Ryota is in year five of a six-year medical curriculum at FMU. He was living in Tokyo when the Great East Japan Earthquake struck. He studied abroad in Belarus in 2019.

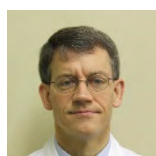
5-6 (2) speaker



KINOSHITA Luna
Fukushima Medical University School of Medicine

Ms. Kinoshita Luna entered Fukushima Medical University's School of Medicine in 2017. She belongs to International Community Health through FMU's MD-PhD Program. In 2018, she and other students established the POMk (Popularization of Medical knowledge) Project, a student organization that provides hands-on learning about health for elementary and junior high school students. Luna has been serving as POMk's President for 3 years. She presented "Analysis on new medical students' understanding of human body and health" at the 51st Annual Meeting of the Japan Society for Medical Education. In the summer of 2019, she studied at Celal Bayar University, Turkey, as part of a research exchange program organized by IFMSA (International Federation of Medical Students' Associations). Later that year, she attended and presented at NICE (National Immunohaematology Continuing Education) in Adelaide, Australia, and, back in Japan, gave a campus tour of FMU for dignitaries from the United States Embassy in Tokyo and the U.S. Department of Health and Human Services.

General MC/Session 5 Discussion chair



Kenneth E. NOLLET, MD, PhD
Professor, Department of Blood Transfusion and Transplantation Immunology, Fukushima Medical University School of Medicine and FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Kenneth Nollet earned MD and PhD degrees from the Mayo Clinic, and stayed at Mayo to specialize in pathology and transfusion medicine. After Mayo, he joined North Central Blood Services of the American Red Cross. Concurrently, he served as blood bank medical director of the Minneapolis Veteran's Affairs Medical Center and became an assistant professor at the University of Minnesota. Dr. Paul Holland invited Nollet to be an associate medical director at

BloodSource in Sacramento, a position held until Dr. Holland's retirement. Thereafter, Dr. Nollet was recruited by Dr. Joanne Pink to be the Australian Red Cross Blood Service's National Medical Education Program Manager and to work as a transfusion medicine specialist in Queensland. By invitation of Professor Ohto Hitoshi, Nollet joined Fukushima Medical University's Department of Blood Transfusion and Transplantation Immunology in 2008. Contrary to evacuation advice given to American citizens after the Great East Japan Earthquake, Dr. Nollet stayed at Fukushima Medical University to participate in disaster relief and, for the long term, Fukushima Prefecture's revitalization. He became a full professor in 2013.

Introduction

Chair



OHTO Hitoshi
(FMU)

Summarizing a decade of Fukushima Health
Management Survey results

KAMIYA Kenji (FMU)

Introduction: Summarizing a decade of Fukushima Health Management Survey results



KAMIYA Kenji, MD, PhD

Vice President, Fukushima Medical University (FMU)
Executive Director, FMU Radiation Medical Science Center
for the Fukushima Health Management Survey
Vice President, Hiroshima University (HU) (Reconstruction
Support/Radiation Medicine)
Director, HU Radiation Emergency Medicine Promotion
Center

In response to the Fukushima nuclear disaster, Fukushima Prefecture commissioned Fukushima Medical University's Radiation Medical Science Center to conduct the Fukushima Health Management Survey (FHMS), with the aim of assessing post-disaster health of prefectural residents. As 2021 marks 10 years since the Survey's inception, our center has compiled a decade of results to identify central issues that have emerged. We have also been re-thinking fundamentals in order to offer Fukushima residents a more useful and convenient Survey. This presentation overviews Survey results from the past decade.

The FHMS consists of a Basic Survey to estimate external radiation exposure doses and four Detailed Surveys to assess health status:

- 1) Thyroid Ultrasound Examination (TUE),
- 2) Comprehensive Health Check (CHC),
- 3) Mental Health and Lifestyle Survey (MHLS), and
- 4) Pregnancy and Birth Survey (PBS) (Slide 1).

The Basic Survey has estimated the external doses received by more than 460,000 participants during the first 4 months after the accident, showing that 99.8% of residents had doses of less than 5 mSv. (Slide 2).

In the TUE, the fourth-round survey is in its final stages, and 5-year recurring examinations for those reaching age 25 have begun. In total, 246 individuals have been found to have thyroid lesions deemed malignant or suspicious for

malignancy. Assessing whether any of these lesions can be attributed to radiation has been the task of Fukushima's Prefectural Oversight Committee, an independent body that oversees the FHMS (Slide 3).

Based on first- and second-round survey results, the Committee concluded that no causal relationship could be identified between thyroid cancers detected so far and radiation exposure.

Examinations are being conducted only after obtaining consent from those who have received and understood an explanation about the advantages and disadvantages of having a thyroid examination.

The Committee has recognized and discussed advantage/disadvantage issues related to thyroid examinations and other ethical issues, prompting efforts to consider the future course of thyroid examinations.

The CHC showed an increase in conditions such as overweight, hypertension, diabetes, dyslipidemia, chronic kidney disease, liver dysfunction, and polycythemia among evacuees (Slide 4). The increase in risk factors for cardiovascular diseases, such as overweight, hypertension, diabetes, and dyslipidemia makes it important to conduct health management by controlling these factors.

According to the MHLS, the percentages of people with low general mental health scores, indicative of (probable) depression (Slide 5), trauma-related symptoms, and problematic behavior in children were higher than national averages immediately after the accident. There is also an improving trend in lifestyle habits, with increases in sleep satisfaction and frequency of regular exercise, and decreases in the proportion of smokers and problem drinkers over time.

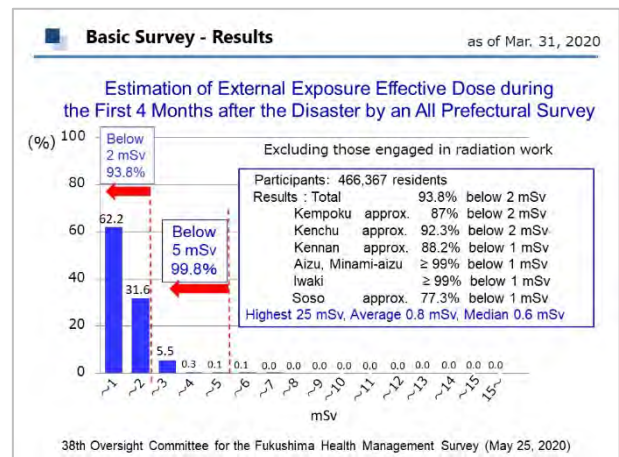
The PBS found no differences in the rate of preterm birth, low birth weight, or the rate of congenital anomalies compared to the overall population of Japan (Slide 6). A high percentage of pregnant and nursing women with depressive tendencies was found after the accident, but it has been decreasing over time.

Based on the results of each of these surveys, we offer various types of support for residents who are in need.

Slide 1

Outline of the Fukushima Health Management Survey			
<p>■ Type of survey (Basic Survey to estimate individual external exposure dose for four months after the accident and Detailed Survey to understand individual health conditions)</p>			
Type	Participants	Number	Method of survey / response
Basic Survey	Residents / visitors of Fukushima Prefecture during the disaster	Approx. 2.06 million	Fill in survey form → post
Detailed Survey	Preliminary baseline All residents of age 18 or less at the time of the disaster Full-scale In addition to those mentioned above, people who were born from April 2, 2011 to April 1, 2012	Approx. 368,000	Consult at school / medical institution / public facility
Thyroid Examination	Residents of 13 municipalities in evacuation zones (Implemented as prefectural project except for above)	Approx. 381,000	Consult of medical institution / municipal health examination venue etc.
Comprehensive Health Check	Residents of 13 municipalities in evacuation zones	Approx. 210,000	Fill in survey form → post or Web response
Mental Health and Lifestyle Survey	Those who received a Maternal and Child Handbook in Fukushima Those who delivered in Fukushima	12,800 - 16,000 / each year	Fill in survey form → post or Web response
Pregnancy and Birth Survey			

Slide 2



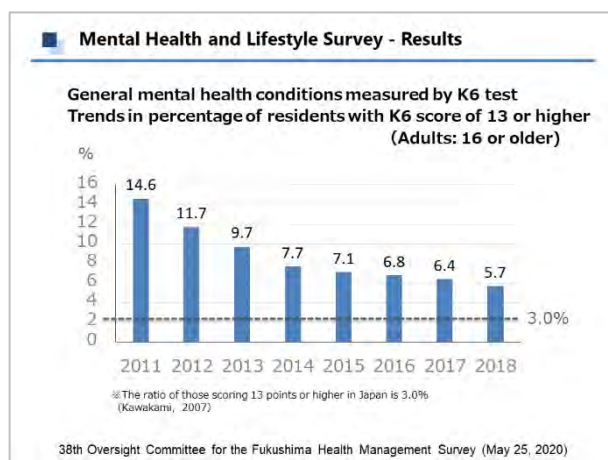
Slide 3

Thyroid Ultrasound Examination - Results As of Mar. 31, 2020					
Fiscal Year	2011-2013 Preliminary Baseline (1 st Exam)	2014-2015 Full-Scale Survey (2 nd Exam)	2016-2017 Full-Scale Survey (3 rd Exam)	2018-2019 Full-Scale Survey (4 th Exam)	2017- Survey for Age 25
Number of target population	367,637	381,244	336,670	294,240	66,637
Participation rate of primary exam	81.7%	71.0%	64.7%	61.5%	8.4%
Target population of confirmatory exam	2,293	2,227	1,501	1,362	244
Participation rate of confirmatory exam	92.9%	84.1%	73.4%	60.1%	68.9%
Malignant or suspicious for malignancy (FNAC)	116	71	31	27	7
Number who received surgery	102	54	27	16	4
Pathological diagnosis	Papillary cancer	100	53	27	16
	Undifferentiated cancer	1			
	Others	1	1		1

Slide 4

Comprehensive Health Check - Results
<p>Diseases that are considered as being attributable to evacuation due to the Great East Japan Earthquake</p> <ul style="list-style-type: none"> Obesity Hypertension Diabetes Dyslipidemia (HDL-C) Chronic Kidney Diseases Liver Functional Impairment Polycythemia
<p>Diseases that increased after the earthquake</p> <ul style="list-style-type: none"> Atrial Fibrillation
<p>Diseases that increased after the earthquake but reduced after 2013</p> <ul style="list-style-type: none"> Hepatobiliary enzyme abnormality (liver function indicator): Daily exercise and breakfast are the key factors.

Slide 5



Slide 6

Pregnancy and Birth Survey - Results					
	Rate of preterm deliveries		Rate of low birth weight infants		Rate of congenital anomalies
	Fukushima	National*	Fukushima	National*	Fukushima General standard
FY 2011	4.8	5.7	8.9	9.6	2.85
FY 2012	5.7	5.7	9.6	9.6	2.39
FY 2013	5.4	5.8	9.9	9.6	2.35
FY 2014	5.4	5.7	10.1	9.5	2.30
FY 2015	5.8	5.6	9.8	9.5	2.24
FY 2016	5.4	5.6	9.5	9.4	2.55
FY 2017	5.4	5.7	9.4	9.4	2.38
FY 2018	5.3	5.6	9.2	9.4	2.19

* Vital Statistics (Ministry of Health, Labor and Welfare) ** Clinical Practice Guidelines for Obstetrics 2014

Part I Fukushima Health Management Survey at Present

Session 1

Pregnancy and Birth Survey and parenting support

Chair



MUROTSUKI Jun
(Miyagi Children's Hospital)

- 1-1 Pregnancy and Birth Survey in Fukushima Prefecture
FUJIMORI Keiya (FMU)
- 1-2 Support systems for mothers and children in Fukushima Prefecture
KAIWA Atsushi (Fukushima Prefecture Childcare Support Division)
- 1-3 Mothers' voices regarding pregnancy and childrearing in Fukushima
 - (1) Pregnancy and Birth Survey data
GOTO Aya (FMU)
 - (2) Telephone counseling results
ISHII Kayoko (FMU)
- 1-4 My experience of the 2011 disaster and childrearing
 - (1) MATSUMOTO Nami (Iwaki Medical Center) (Iwaki City)
 - (2) KATO Emi (Kato Farm) (Fukushima City)
 - (3) ANBE Hiroshi (Minamisoma Municipal General Hospital)
(Minamisoma City)

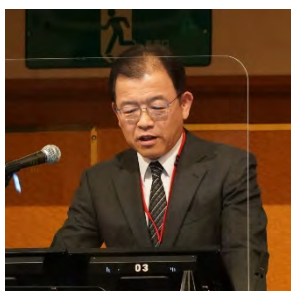
Discussion

Chairs: MUROTSUKI Jun (Miyagi Children's Hospital)

FUJIMORI Kieya (FMU)

Discussants: Session 1 presenters

1-1 *Pregnancy and Birth Survey in Fukushima Prefecture*



FUJIMORI Keiya, MD, PhD

Professor and Chair, Department of Obstetrics and Gynecology, Fukushima Medical University School of Medicine

Director, Office of the Pregnancy and Birth Survey, FMU Radiation Medical Science Center for the Fukushima Health Management Survey

The Pregnancy and Birth Survey is intended to address anxieties that pregnant women and mothers in Fukushima Prefecture may have, and provide necessary support by assessing their physical and mental health since the Great East Japan Earthquake and accident at TEPCO's Fukushima Daiichi NPS. Over 8 years from 2011 to 2018, questionnaires have been sent to 102,425 pregnant women who received Maternal and Child Health Handbooks in Fukushima Prefecture. The response rate was 58.2% in the first year of 2011, but has since fluctuated around 50% (Slide 1).

The rate of preterm births (births between 22-37 weeks' gestation) was between 4.6% and 5.6%, with no increase compared to the national survey rate of 5.6% to 5.7% (Slide 2). The rate of low birth weight (less than 2,500 g) was 8.6% to 9.8%, unchanged from national survey rates of 9.4% to 9.6% (Slide 3). The incidence of congenital anomalies was 2.19% to 2.85%, consistent with the commonly reported range of 3% to 5% (Slide 4).

Depressive tendency among mothers was high at the beginning of the survey, but has gradually decreased since then, and is now on par with the national level (Slide 5).

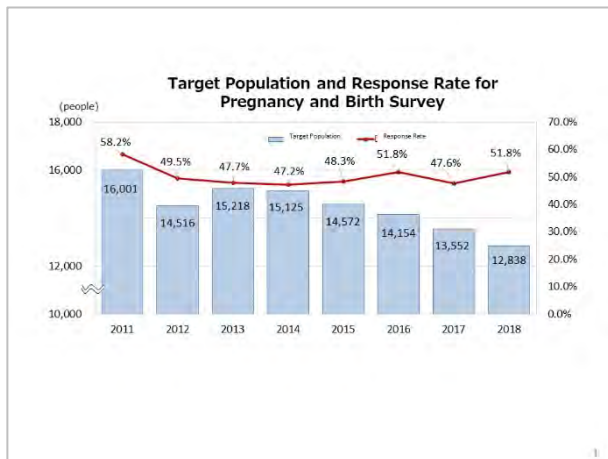
In the content of free comments, "radiation effects of radiation on the fetus and child" was the most common topic in 2011, accounting for 29.6%, but the proportion has decreased to 1.8% in 2018.

In addition, our Department of Obstetrics and Gynecology has been conducting a survey on the number of spontaneous and induced abortions and the number of abortions at all obstetric and gynecological facilities in Fukushima Prefecture since January 2011, the time of the earthquake (100% response rate). The total number of pregnancies was obtained from the Live Birth Survey in Vital Statistics of Japan. The analysis was conducted for the entire prefecture and for its three major areas (Hamadori, Nakadori, and Aizu) in 3-month units, based on the month of the event (the current number of weeks of pregnancy; cross-sectional method), or based on the month of pregnancy (estimated by counting backward from the current number of weeks of pregnancy and examined prospectively from the time of pregnancy; longitudinal method).

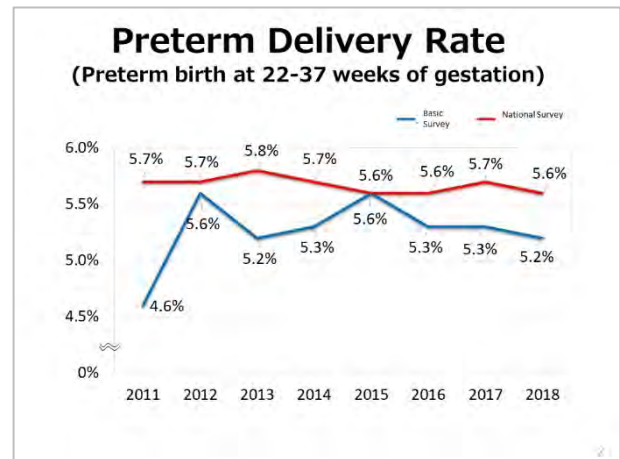
The results showed that both spontaneous and induced abortion rates did not change substantially from immediately after the earthquake (Slide 6). Also, spontaneous abortions showed no specific periodicity, whereas rates of induced abortion showed seasonal cycles of 6 and 12 months. Although the number of abortions appeared to increase from April to June 2011, immediately after the earthquake, the number of abortions typically increases during this season, and therefore, the decrease was not considered to be a direct effect of the earthquake.

With regard to low-dose radiation exposure, just talking about "safety" in scientific terms does not lead to "peace of mind" among people. With little objective data available, in order to create a "safe" and "secure" environment in which people can live, it is important to conduct surveys throughout the prefecture and actively disclose objective scientific data to show "safety," while providing necessary support for the people of Fukushima Prefecture.

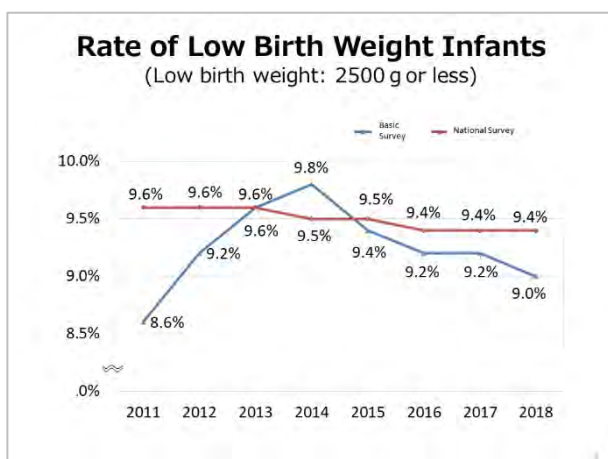
Slide 1



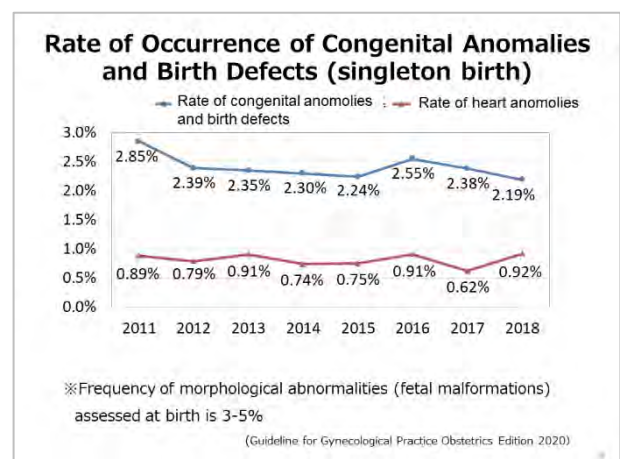
Slide 2



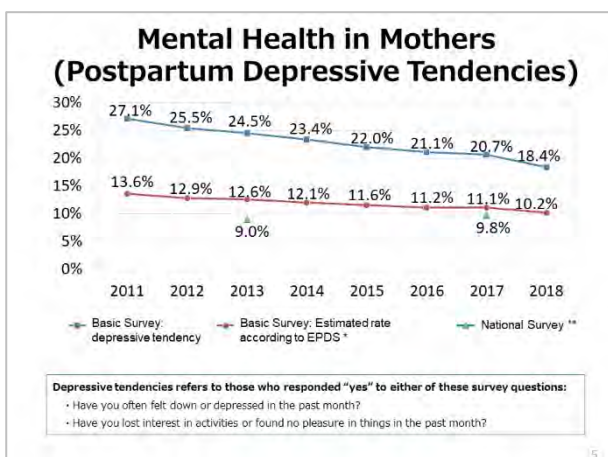
Slide 3



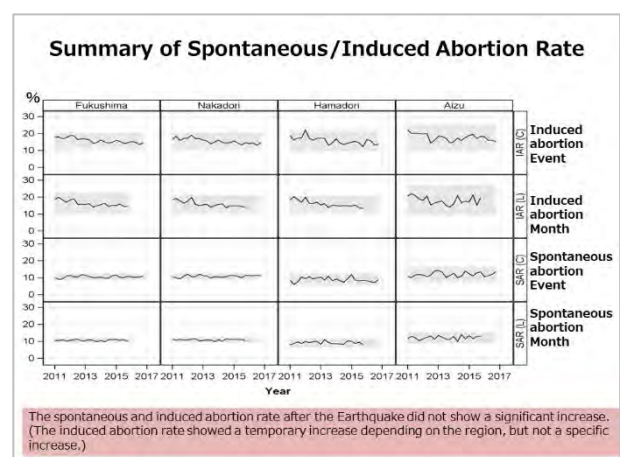
Slide 4



Slide 5



Slide 6



1-2 *Support systems for mothers and children in Fukushima*



KAIWA Atsushi
Director, Childcare Support Division, Children's
Future Bureau, Fukushima Prefectural Government

In the modern social environment, pregnant women and mothers are often isolated due to the rise of nuclear families, weakened regional ties, and poor childrearing support. Anxieties and burdens associated with pregnancy, childbirth, and child-rearing are increasing.

Fukushima Prefecture has partnered with local municipalities in order to provide seamless support from pregnancy through child-rearing. This collaboration worked to promote the establishment of municipal "Comprehensive Support Center(s) for Childrearing Generation." It also helps private organizations drive the formation of organizations offering child-rearing support in the form of home visits.

As 2021 marks the 10-year anniversary of the Great East Japan Earthquake and tsunami, I will also report on efforts made in Fukushima Prefecture in the past decade to provide support to mothers and children. This includes providing home visits for those households raising children in evacuation housing, providing telephone support and home visits to expectant and nursing mothers, and collaborative efforts between medical institutions. (Slide 1).

At present, 58 of 59 municipalities have established Comprehensive Support Centers for Families with Children, which provide information and consultation on maternal and child health services, such as health checks, and child-rearing support services, such as support through community child-rearing support centers (Slide 2).

The prefectural government has commissioned the Fukushima Midwives Association to set up a "Fukushima baby

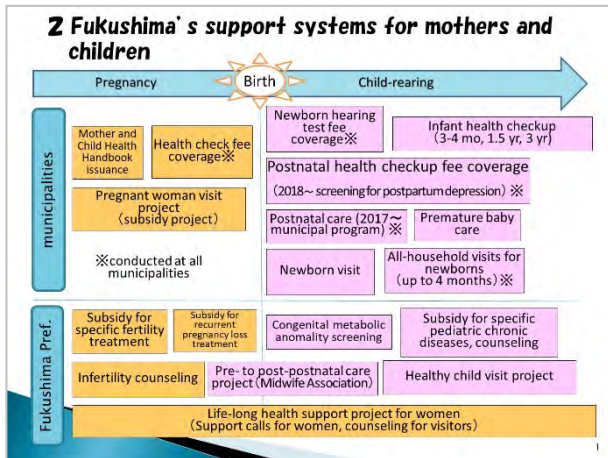
telephone health consultation" service to provide advice to pregnant women, parents of infants, and their families on various issues such as the health of pregnant women and infants, breastfeeding, and childrearing. Midwives' advice and support are also provided through home visits before and after birth, at maternity homes, and in child-rearing salons (Slide 3).

In addition, in order to promote child-rearing support by private organizations, the prefectural government is training human resources involved in "Home Start," volunteer home visits in which those with childrearing experience visit families with preschool children to listen to their needs and provide child-rearing support. The prefecture is also supporting the establishment of organizations that provide Home Start service (Slide 4).

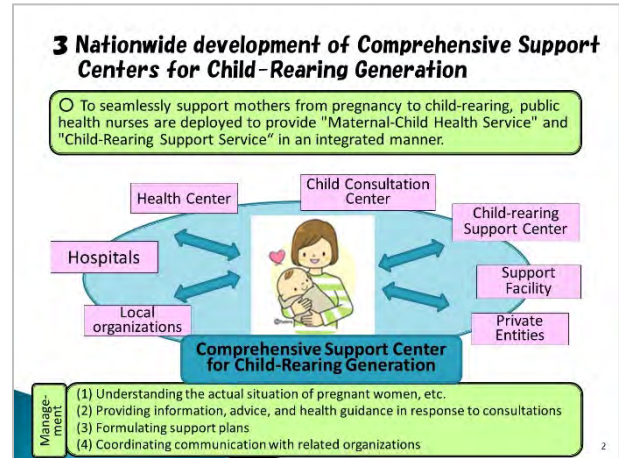
Furthermore, the prefecture is conducting a "Child Healthy Home Visit" project, in which staff from the prefectural health and welfare office visit families with children who have evacuated from the municipalities in the Soso District to public reconstruction housing in the prefecture (Slide 5).

Also, referral forms are distributed to obstetric and gynecological medical facilities to assess the need for support among pregnant women in the early stages of pregnancy and refer the information to municipalities, so that municipal public health nurses can follow up with them by telephone or visit (Slide 6).

Slide 1



Slide 2



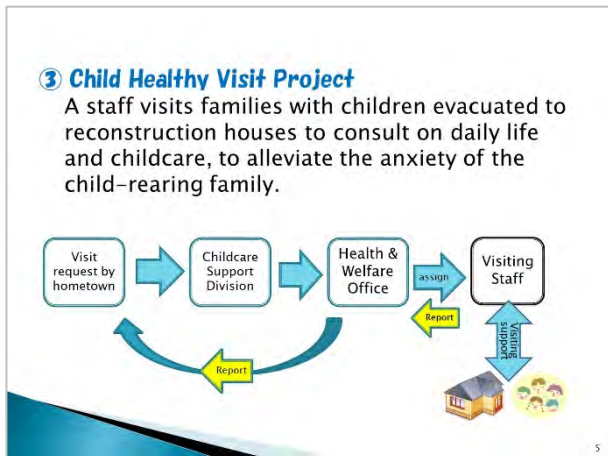
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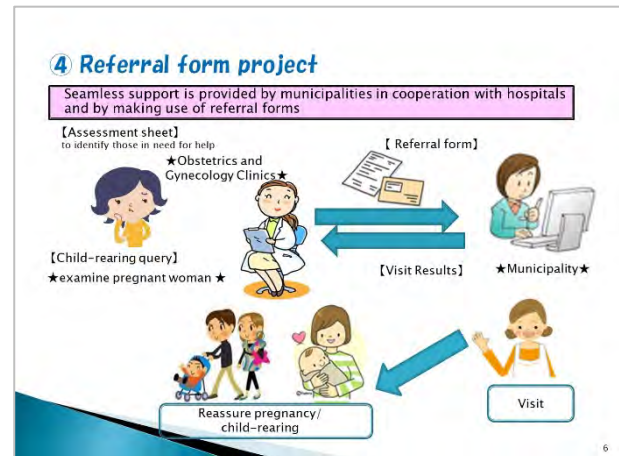
Slide 4



Slide 5



Slide 6



1-3(1) Mothers' voices regarding pregnancy and child rearing in Fukushima: Pregnancy and Birth Survey data



GOTO Aya, MD, MPH, PhD

Professor, Center for Integrated Science and Humanities,
Fukushima Medical University
Deputy Director, Office of the Pregnancy and Birth Survey,
FMU Radiation Medical Science Center for the Fukushima
Health Management Survey

The Pregnancy and Birth Survey assesses mothers' mental health and parenting attitudes along with their own and children's physical health. The prevalence of mothers' depression symptoms was high immediately after the disaster and gradually decreased afterwards (Slides 1 and 2). Results from the analyses of 2011-2014 survey data showed that mothers' concerns about radiation were associated with both their depression symptoms and lower pregnancy intention (Slides 3 and 4). Quality of obstetrical care was another factor associated with both outcomes; mothers who had changed obstetrical care facilities were significantly more likely to present with depression symptoms, and dissatisfaction with obstetrical care was inversely associated with pregnancy intention. Providing quality obstetrical and mental health care was found to be a key to support mothers during the early years after a nuclear disaster. On a brighter note, disaster-related factors (e.g., concerns about radiation and evacuation) were not associated with lower maternal confidence, which suggests a degree of resilience among Fukushima mothers (Slide 5).

Hans Rosling, who was a professor of international health at Karolinska Institute and a data visionary (a developer of the Gapminder), listed rules of thumb for people to think twice before they interpret data in a skewed way. He warns that people tend to focus on negative news and pay attention only to non-comparable simple numbers as though they never change over time.

To control such temptation, Rosling recommends people to be aware that negative news will be exaggerated, use proportions when comparing data, and watch out for slow long-term changes. Following Rosling's recommendations, the Pregnancy and Birth Survey showed a decline in a proportion of mothers with depression tendency over time and little negative influence of disaster on maternal confidence although it increased depression risk and suppressed pregnancy intention.

In the face of a health crisis posed by an invisible risk, it is a natural reaction for mothers to worry about their own and their family's health. COVID-19 is yet another example of such a crisis. We hear mothers being careful about letting children play outside and trying to navigate themselves through a large amount of confusing information. Learning from our past experiences, we should believe in mothers' resilience and guide their concerns toward positive preventive actions (Slide 6).

References: *BMC Psychiatry*; 15, 59. *Asia Pacific Journal of Public Health* 2017; 29(2), 139S-150S. *Journal of Epidemiology* 2019; 29(8), 308-314

Slide 1

Parenting after the disaster

Two-item depression screen

- ✓ Asked about depressed mood and anhedonia over the past month.
- ✓ Mothers who answered yes to one of these questions were classified as being positive.

Mishina H, et al. Test performance of two-question screening for postpartum depressive symptoms. *Pediatrics International*. 2009;51: 48-53.

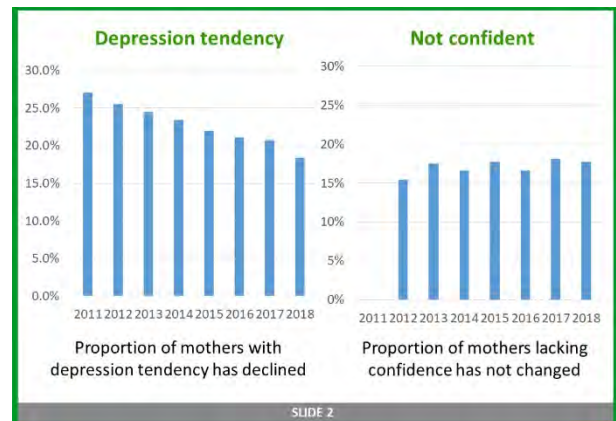
Maternal confidence

- ✓ "Are there any moments when you don't feel confident about child rearing?"
- ✓ Answer options were "no", "yes", or "not sure".

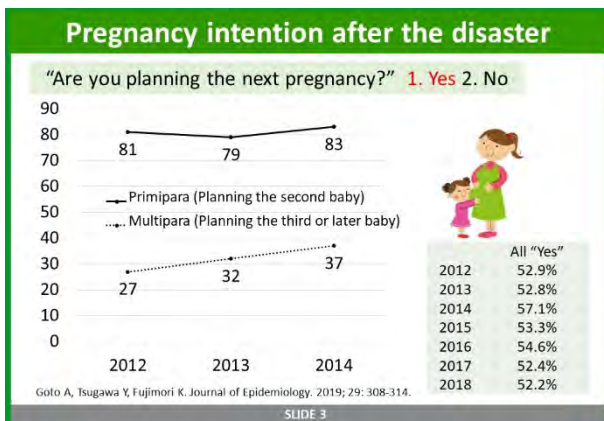
Goto A, et al. Associations of Psychosocial factors with maternal confidence among Japanese and Vietnamese mothers. *Journal of Child and Family Studies*. 2010; 19: 118-127.

SLIDE 1

Slide 2



Slide 3



Slide 4

Primipara	Next pregnancy intention	
Concern about radiation contamination of breast milk	No	Yes
No (n=6251)	1,224 (19.6)	5,027 (80.4)
Yes (n=69)	25 (36.2)	44 (63.8)

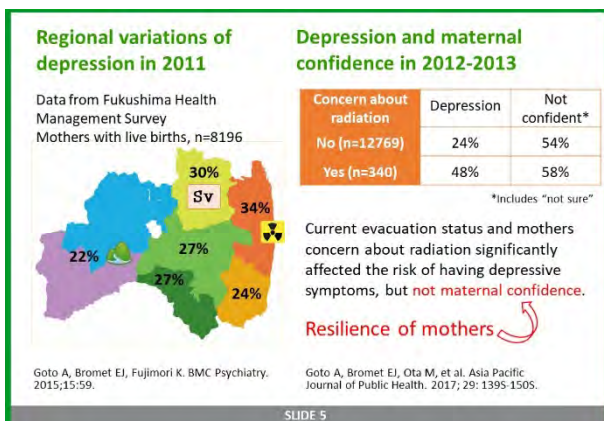
Multipara	Next pregnancy intention	
Concern about radiation contamination of breast milk	No	Yes
No (n=7051)	4,975 (70.6)	2,076 (29.4)
Yes (n=119)	25 (70.6)	44 (29.4)

※ Other associated factors
Common among primiparas and multiparas: Age, subjective health, depression symptoms
Primiparas: Satisfaction with obstetrical care and child abnormality at birth

Rational decision making among the first-time mothers

SLIDE 4

Slide 5



Slide 6

Summary

- In the face of a health crisis posed by an invisible risk, it is a natural reaction for mothers to worry about their own and their family's health.
- Learning from our past experiences, we should **believe in mothers' resilience** and guide their concerns toward positive actions.
- More in-depth investigation is needed to explore how some mothers are able to turn a negative experience into a **positive gain**.

SLIDE 6

1-3(2) Mothers' voices regarding pregnancy and childrearing in Fukushima: Telephone counseling results



ISHII Kayoko, MSN, PhD

Assistant Professor, Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University

In the Pregnancy and Birth Survey, started in FY2011, telephone support by midwives, public health nurses, and other qualified support staff is provided to those exhibiting depressive symptoms (those who fall under the two depressive tendency items in the questionnaire) or those identified in need of support based on the content of their free comments. If more specialized support is required, specialists from the Department of Radiology, Department of Obstetrics and Gynecology, and other departments of Fukushima Medical University, as well as clinical psychologists, provide telephone support, and we request the municipalities where the respondents live to provide ongoing support (Slide 1). Each year, telephone support has been provided to around 1,000 respondents, or about 10-15%, but the current number of telephone support recipients has been declining (Slide 2).

The characteristics of the telephone support recipients in the FY2011 survey included: a high percentage of those who had given birth for the first time, living in the evacuation zone, unable to receive a prenatal health check as scheduled due to the earthquake, and those who formula fed their babies due to concerns about radiation contamination. In addition, the proportions of those who had undergone cesarean section and those whose children had congenital anomalies were also higher than among those who didn't receive telephone support. Therefore, it is important not only to respond to anxieties about radiation, but also to provide support for routine childcare, and in particular, to provide extensive

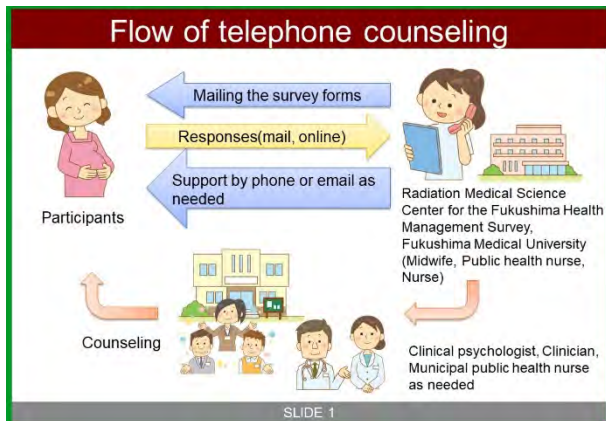
support for pregnant and nursing mothers who are considered to be at high risk (Slide 3).

In FY2011, the most common content of telephone consultation was "concerns about radiation effects" at 29.2%, which decreased to 3.4% in FY2018, and since FY2012, the most common contents of consultation have been about the "mother's own physical and mental state" and "childrearing (daily life)" (Slide 4). The same trend was observed in the follow-up survey, conducted four years after the birth of a baby. Among respondents to the FY2011 survey, a high proportion of respondents (25.6%) consulted about "concerns about radiation effects," but this decreased to 5.7% in FY2014, and consultations about "the mother's own physical and mental state" was the most common content. (Slide 5).

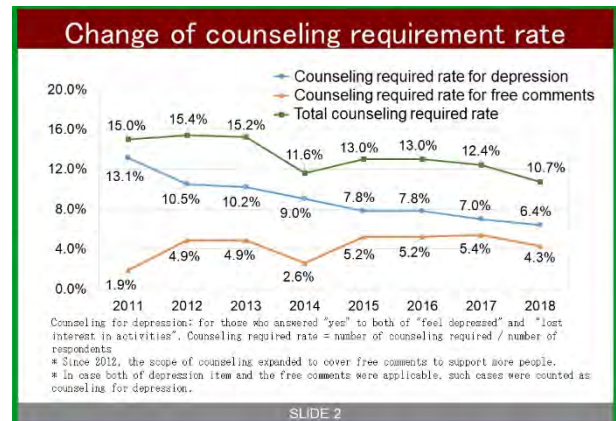
Examples of consultation about "the mother's own physical and mental state" include "I am suffering from stiff shoulders and back pain" and "I am burdened by the sound of my child crying." In the consultation on "concerns about radiation effects," the respondents were more worried about the future of their children than the present, such as "My concern for my child will never go away" and "I am afraid that if something happens to my child in the future, I will look back on the past and regret it." Currently, consultations about coronavirus are increasing, and anxieties about childrearing are increasing, just as they were immediately after the earthquake, such as "I feel depressed because there is no place where I can consult about childrearing," and "It has become difficult to get support from my parents," etc.

Lastly, I would like to mention what I think is necessary for raising children in Fukushima. Since people have different values, not limited to radiation, it is important to have somebody who accepts you as you are, listens to you, and helps you sort out your feelings; to ask for help from others when necessary; to think of your own measures to continue living in Fukushima with determination; and to find your own way of raising children, regardless of whether you have radiation anxiety or not, and have self-confidence about it (Slide 6).

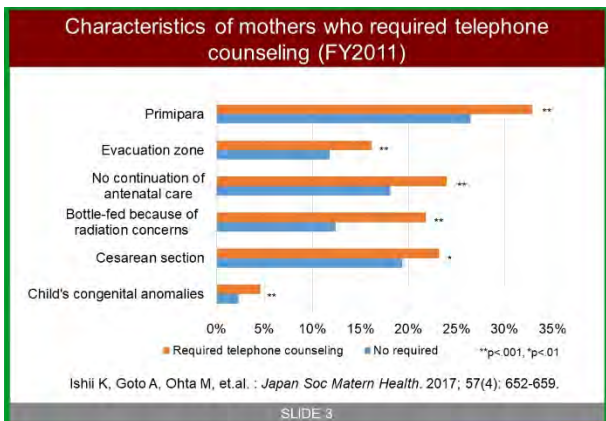
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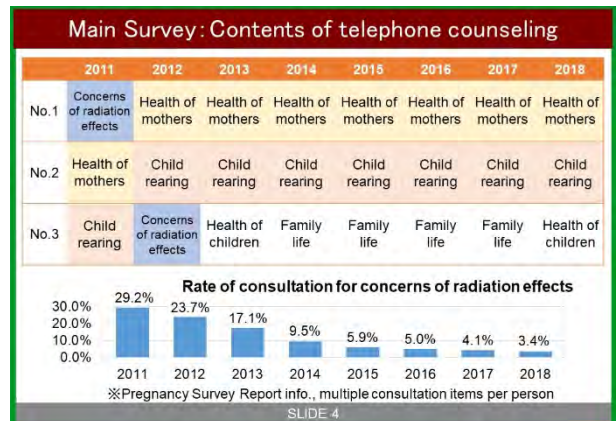
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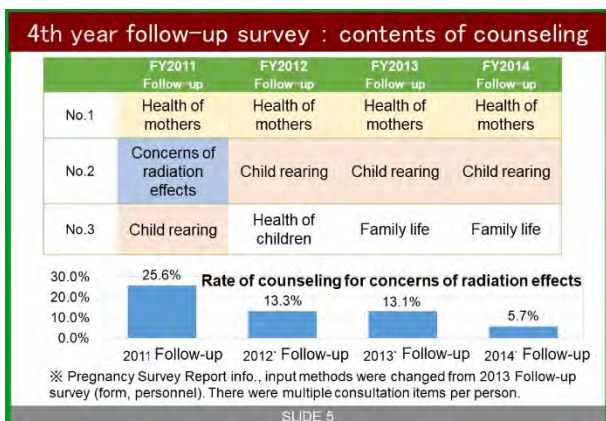
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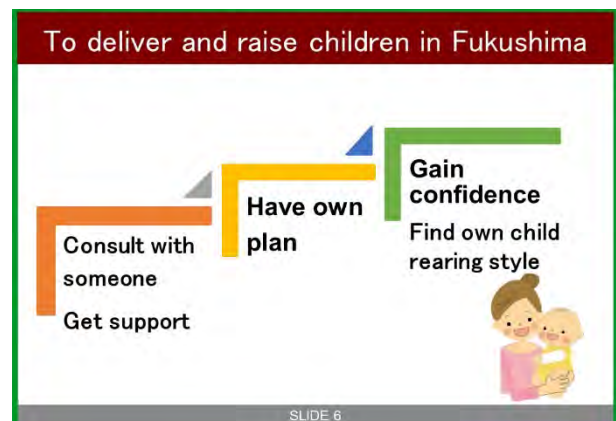
Slide 4



Slide 5



Slide 6



1-4(1) *My experience of the 2011 disaster and childrearing (Iwaki City)*



MATSUMOTO Nami

Second Outpatient Section of Obstetrics and Gynecology,
Department of Nursing, Iwaki City Medical Center

Iwaki City, where I live, was not designated as an evacuation zone after the nuclear accident, and therefore, I continued working as a midwife in wards and outpatient settings to help pregnant women give birth and start their child rearing with peace of mind. Later, I also became pregnant, and I was worried about internal radiation exposure, especially when it came to purchasing food. Eventually, radiation monitoring of drinking water and food began, and I gradually came to understand that they are safe to drink and eat. Still, it was very stressful to live in a situation where there was no guarantees about absolute safety.

Before giving birth, I went back to my parents' home in Nagano Prefecture. I was very relieved to have the support of my parents in raising my child, and also to be able to eat without worrying about the effects of radiation.

After the birth, I found out that radiation testing of breast milk was being conducted, and I decided to take the test, hoping it would ease my anxiety. However, I also felt anxious whether I could continue breastfeeding if the radioactive material is detected. So, when I received the result of "not detected," I felt so relieved and recovered confidence for continuing to breastfeed. I was glad that I took the test.

After the nuclear accident, I was very careful when going out with my children. When my older child was one or two years old, I carried a radiation dosimeter with me and measured airborne radioactivity around various places at my child's height and around things my child could touch (Slide 1). We were able to avoid

places with high radiation levels, and my anxiety about invisible radiation was lessened. The certificate of the dosimeter loaned from the city has the accumulated dose for the measured period written on it. I put it on my mother and child health handbook so that I can tell my children about those days when they grow up (Slide 2).

In the years after the disaster, many parents were worried about their children playing outside, and I often let my children play at home or in indoor playgrounds. The indoor playground was used by many parents and children even on weekdays (Slide 3). Gradually, more and more parents let their children play outside, and after the birth of my second child, I often saw children playing in outdoor parks. However, I heard that according to the results of a questionnaire survey on child rearing after the earthquake, many children were not getting enough exercise because they were playing outside in parks less and playing indoors more. I realized that radiation had an impact on children's lives.

Among the books I found after the earthquake was "*Hashire Diizeru Kikansha Dede*" (Run, Diesel Engine De-de, by Suto Asae, illustrated by Suzuki Mamoru, published by Doshinsha) (Slide 4). This is a true story about diesel locomotives that carried fuel to Fukushima, which was short of fuel right after the earthquake. When I read it for the first time, I was moved to tears as I remembered the time of the disaster. I read it to my children as a regular picture book. My older son has recently begun to understand the disaster, but he still doesn't seem to understand the nuclear accident. I would like to use this book as an opportunity to tell my children what happened in Fukushima when they become interested. I also hope that my husband's family, who had the painful experience of losing their home in Namie Town, will share their experiences and feelings with my children.

Although I may continue to feel anxious about radiation, I would like to continue to enjoy raising my children with the help and consultation of those around me.

Slide 1

Radiation Meter Lent Out
by Iwaki City



Slide 2

Results of Actually Measured
Radiation Doses



Slide 3

Play Areas in Iwaki City



Slide 4

The Picture Book I Encountered



1-4 (2) My experience of the 2011 disaster and childrearing (Fukushima City)



KATO Emi
Senior Executive Director, Kato Farm

My husband and I started farming in 2009 and we now are one of the largest-scale rice producers in Fukushima City. However, the Great East Japan Earthquake of March 11, 2011 changed our lives completely. It was a year and a half after we started farming, and we were just starting to feel fulfilled physically and mentally through farming. And I was pregnant with our third child. On the night of March 15, we decided to evacuate with our children to Shiga Prefecture, where we stayed for two weeks. Although we had conflicted feelings, we returned to Fukushima and started preparing to resume farming as the radiation level had been reduced by half (Slide 1).

However, I had no idea how much of an impact the radioactive materials would have on our bodies and on the rice we would grow. I couldn't decide what to do as a farmer and a mother, so I decided to ask my eldest son frankly. When my eldest son said to me, "I want to live with my whole family (even though I might get sick)," I decided not to give up and prepared to give birth to and raise my children in Fukushima and to grow rice (Slide 2). Five months after the disaster, I safely gave birth to my third son.

Although we were determined to grow rice, we were tormented by harmful rumors about agricultural products from Fukushima and began to think about what kind of message we should send out in order to continue farming in Fukushima. My husband and I discussed a lot and decided to "enjoy farming, enjoy raising children, and communicate our daily life as it is" (Slide 3). Once farming resumed, we became busy in our own way and felt less anxious.

However, when the thyroid examinations for my first and second sons started and I found out that both of them got A2 results, I was so scared that I just cried, not knowing the details of the results. There were times when I felt mentally depressed because I was worried about my life in Fukushima, but I met a scholar whom I could trust and he taught me many things that made me feel relieved (Slide 4). It was a very gratifying encounter. Now, my children are growing up and living in good health.

For the past 10 years, I have been thinking about what I can leave behind for the children through agriculture. I have come to believe that we parents should show them our efforts to live our best lives and our willingness to take on various challenges so that they can be proud of having grown up in Fukushima. With the desire to put a stop to the increase in abandoned farmland and to promote Fukushima overseas, we established an agricultural production corporation five years ago and launched various projects (Slide 5).

As I continued to send out various messages, I had many important encounters, which led me to think not only about myself, but also about the region and agriculture.

What I have realized through the help of children and people around me over the past 10 years is that no matter what happens, if you do not give up, some good will come out of it. Thinking about the future of Fukushima and the future of agriculture and taking on new challenges is the best way I can repay them (Slide 6). I would like to continue to grow rice with my family in my beloved Fukushima to make people smile.

Slide 1

Life in Shiga Prefecture

There was not much information in Shiga Prefecture.

Every day all we could do was check the radiation dose level.

I consulted with a friend who is an OB/GYN on whether there were any dangers to giving birth and raising children in Fukushima Prefecture.

Every day we struggled with what we should do next.

We decided to follow government policy.

After 2 weeks, the radiation dose levels were half what they had been after the disaster, so we decided to move back to Fukushima.

Slide 2

The Words I Received from My Eldest Son

Which is better?

Living apart from mom and dad,

Or staying together as a family,
though we may get sick?

Slide 3

What We Decided as a Couple

We will not talk about safety or security.

We will enjoy farming.

We will enjoy raising our children.

We will show the world our day-to-day lives.



Slide 4

We do not know what is certain,
but perhaps we can believe.

-- From my meeting with a scholar

Slide 5

International Events Abroad



Slide 6

Using my own interpretation,

I will return the kindness of so many who supported us...

...by considering the future of Fukushima and agriculture and accepting new challenges.



1-4 (3) My experience of the 2011 disaster and child-rearing (Minamisoma City)



ANBE Hiroshi, MD
Head, Obstetrics and Gynecology, Minamisoma Municipal
General Hospital

I was the sole full-time doctor in the Department of Obstetrics and Gynecology at Minamisoma Municipal General Hospital when the Great East Japan Earthquake struck (Slide 1). My family, including a 6-year-old son, 3-year-old daughter, and 6-months-pregnant wife, were waiting for construction to finish on our new house in the city. The house I grew up in was in Odaka, where my parents were still living. As both my parents' home and the hospital I worked at were located 13 kilometers and 23 kilometers, respectively, from the Fukushima Daiichi Nuclear Power Plant, everyone in my family had to evacuate. We decided to evacuate to Koriyama City, not only my wife's hometown, but also, the city where my brother lived. However, my father was bedridden in hospital, and I myself had hospitalized patients to look after, so neither of us could leave. We finally evacuated to Koriyama 7 days later on March 18, and from that point began a lengthy evacuation from our hometown.

My son entered an elementary school in our evacuation destination, but he could not get used to it. My daughter entered a kindergarten also in the evacuation destination, but she only went for one day. In July, our second son was born and we moved into a rented apartment. My parents' house had holes in the ceiling and roof and was demolished and the land cleared. My father, who had been in the hospital, was transferred three times, became weaker and weaker, and died of pneumonia on June 17. Our family cemetery was in the restricted area, so my mother kept his ashes. After one year of evacuation, my family decided to return to Minamisoma City.

The reason was that my son and daughter could not get used to the school life in the area we evacuated to, and we decided that normal life is possible in Minamisoma City (Slide 2). I also decided that reopening the obstetrics and gynecology department of Minamisoma Municipal General Hospital, capable of deliveries, was something only I could do for the recovery of my hometown (Slide 3).

Living and raising children in Minamisoma meant a life with anxiety about radiation, but this was resolved as the decontamination process was completed and the evacuation order was lifted. After experiencing the evacuation, what the children needed was emotional care and peace of mind. The most important thing was not to speak out my anxiety, but to give them words of reassurance (Slide 4).

Ten years have passed since the disaster, and radiation anxiety is no longer a part of our normal lives (Slide 5). I feel that the coronavirus pandemic of the past year is a battle against an invisible enemy, just like radiation. I have been spending more time with my children and doing what I can in the city and indoors. It is because I learned from my evacuation that psychological state is important (Slide 6).

Our evacuation ended after one year and we returned to our hometown. I feel that I acted with correct knowledge about radiation levels as a doctor, and I have no regrets about my decisions. I would like to continue with obstetric care in my hometown and bring many new lives in this disaster-affected area.

Slide 1

Minamisoma Municipal General Hospital

- Hospital Beds: 230
(30 beds in Obstetrics and Gynecology)
 - Full-time Doctors: 13
(1 in Obstetrics and Gynecology)
 - Deliveries: 230
 - Surgeries: 130
(FY 2009)
- FY2010 followed a similar trend.
Located 23 km from the nuclear power plant



Slide 2

Why I Decided to Return (My Family)

- Since evacuation, my oldest son and daughter did not adjust well to life in their new schools.
(Students can enter both Haramachi Daiichi Elementary School and Aoba Kindergarten from the same building.)
- We were finally able to resume construction on the house we had been building.
(We secured a rental apartment until construction was completed.)
- The issues around radiation in Minamisoma had been clarified and settled, and we knew it would be possible to live a normal life going forward in Minamisoma.

Slide 3

Why I Decided to Return (Work)

A doctor working at an obstetrics and gynecology clinic in Minamisoma City, who had been continuing to provide medical treatment, had been diagnosed with terminal cancer. Since an obstetrics and gynecology clinic in Soma City was going to stop delivering babies due to the retirement of the doctor, all obstetrics and gynecology clinics were at threat of closing from April 2012. 7 midwives in Minamisoma Municipal General Hospital believed that the Obstetrics and Gynecology Department would resume, and so refused to retire (hoping for my return). I myself had been considering how I could contribute to my hometown, and concluded that I would return to re-open the Obstetrics and Gynecology Department at Minamisoma Municipal General Hospital, so it could handle deliveries.

Slide 4

Raising Children in Minamisoma

- No walking to school together until radiation concerns were cleared. Parents did drop-off and pick-up.
- Dosimeters were installed throughout the city, such as parks and schools.
- Everyone carried a film badge dosimeter, and regularly measured radiation doses.
- The result was fewer opportunities to play outside, more friends to make, but more games inside like video games.
Initially, activities like swimming and sports tournaments were held indoors at indoor pools and the gymnasium, but restrictions were gradually lifted. Outdoor activities increased, and children began walking together to school again.

Slide 5

10 Years On from the Disaster

- Fears over radioactivity have faded away in everyday life.
- WBC for pregnant women in hospitals was completed in 5 years. No individuals with cesium were detected.
- The outpatient clinic for radioactivity consultation was completed in 1 year (Dr. Murotsuki was also a member)
- No one requested a breast feeding test.
- As a result, roughly 2 years after the earthquake, decontamination work was completed, the evacuation order was lifted, and anxieties about radiation disappeared.

Slide 6

Final Thoughts

- What I felt very keenly during our time in evacuation as well as after returning was that a stable mental state was incredibly important. As a doctor, I have no regrets about what I did and about deciding to return home, based on what I learned about radiation levels. If anything, I feel it was the right action to take.

I feel like this year of the Coronavirus is much like radiation, in that I am fighting an invisible enemy. So, I spend more time with my children, and we do what we can in the city indoors, because I learned back then the importance of a healthy mental state.

Session 1

Pregnancy and Birth Survey and parenting support

Proceedings of discussion



Chair: MUROTSUKI Jun (Miyagi Children's Hospital)*
FUJIMORI Keiya (FMU)

Discussants: KAIWA Atsushi (Fukushima Prefecture Childcare Support Division)
GOTO Aya (FMU)
ISHII Kayoko (FMU)
MATSUMOTO Naim (Iwaki Medical Center, Iwaki City)
KATO Emi (Kato Farm, Fukushima City)
ANBE Hiroshi (Minamisoma Municipal General Hospital, Minamisoma City)

* Remote participants



Dr. Murotsuki Dr. Fujimori

In Fukushima Prefecture, which was affected by various rumors immediately after the earthquake, child rearing support is one of the pillars of the Fukushima Health Management Survey (FHMS). In this session, chaired by Dr. Murotsuki Jun of Miyagi Children's Hospital, who is a member of the FHMS Oversight Committee, we heard about the results of the Pregnancy and Birth Survey (PBS) in the FHMS and the support system of the prefectural government. We also asked three people with childrearing experience to look back on the past 10 years since the nuclear accident and to share their thoughts on reconstruction, in order to introduce the current situation of childbirth and childrearing in Fukushima Prefecture to people in Japan and abroad.

First, Dr. Fujimori Keiya, Director of the Office of the Pregnancy and Birth Survey, Radiation Medical Science Center for the FHMS (Fukushima Medical University), explained the 8-year results and issues of the Pregnancy and Birth Survey and the results of the survey on changes in the rates of miscarriages and abortions in Fukushima Prefecture. Then, Mr. Kaiwa Atsushi, Director of Fukushima Prefecture Childcare Support Division, explained the current childcare support system in the prefecture and municipalities. Next, Dr. Goto Aya and Dr. Ishii Kayoko of FMU reported on the mental health trends of mothers based on the results of support provided in the Pregnancy and Birth Survey and actual support cases. Lastly, Ms. Matsumoto Nami (Iwaki City), Ms. Kato Emi (Fukushima City), and Dr. Anbe Hiroshi (Minamisoma City) shared their experiences under the title of "My experience of the 2011 disaster and childrearing." Their stories of how they made big decisions under different circumstances and overcame the hardships of the disaster while trying their best to raise their children were very impressive.



Mr. Kaiwa

In the discussion that followed, the speakers exchanged their opinions on the current status and prospects of childrearing support in Fukushima in response to questions from the audience. The following is an overview of the discussion. Many of the questions from the audience were about the rationale behind the results of the Pregnancy and Birth Survey and about comparisons with national averages and other similar surveys; in general, there seemed to be a high level of interest in the results of various surveys to support pregnant women.

The questions about the PBS were: (1) the causes of the increase in low birth weight (less than 2,500g) babies by 2014, (2) whether mothers' anxiety about childrearing and depressive tendency were related to their marital status, economic status (household income), and/or fathers' participation in childrearing, and (3) whether support efforts included any referrals to government or private-sector support programs.

With regard to (1), Dr. Fujimori explained that it would be more correct to say that the low birth weight rate was lower in 2011 and 2012 than the national average, but it approached the national average in 2014. The same trend was seen in the preterm birth rate (percent of those delivered before 37 weeks' gestation). According to Dr. Fujimori, the reason for this is not clear, but it may be related to the fact that there were various restrictions on behavior immediately after the earthquake, and the same trend may be seen for the past year, as people refrained from going out due to the corona pandemic.



Dr. Goto

With regard to (2), Dr. Goto answered that factors associated with postnatal depression, other than the area of residence, include change of hospitals, first childbirth, history of mental illness, perinatal complications, and anomalies of the newborn. It should be noted that the PBS does not ask about the status of fathers or socioeconomic status, making it difficult to show any associations of these with postnatal depression. The status of fathers is an important point that needs to be looked into in the coming survey.

With regard to (3), Dr. Ishii answered that support staff introduce non-profit organizations in Fukushima and those elsewhere that provide support for expectant and nursing mothers who have evacuated outside the prefecture. She explained that she did not have the opportunity to introduce programs offered by the Ministry of Education, Culture, Sports, Science and Technology or the private sector because these programs were soon closed due to the large number of applications.



Dr. Ishii

In addition, in relation to the PBS, the following questions were asked: (1) what is the basis and validity of the estimated 3-5% nationwide incidence of congenital anomalies, introduced for comparison, and (2) are there any differences about mothers' intentions for subsequent pregnancy compared to other prefectures?

Regarding (1), Dr. Fujimori answered that the frequency of congenital anomalies is based on the figures given in the Guideline for Obstetrical Practice (2020) and that there are two overseas papers in that guideline supporting those figures. Regarding this, Dr. Murotsuki expressed his opinion that the range of 3-5% itself was typical, and that he personally agreed that there was no effect of the accident-derived radiation on the frequency of congenital anomalies shown in the PBS, but he also said that a more careful process would be needed to reach this conclusion. Regarding (2), Dr. Goto presented data from the National Fertility Survey (2015), which showed that approximately 90% of first-time mothers who have



Ms. Matsumoto



Ms. Kato

been married for less than 5 years are thinking about subsequent pregnancy, and this figure is about 40% for women who have had more than one prior pregnancy.

In Fukushima, in addition to the PBS, various surveys have been conducted to support childrearing, such as Japan Environment and Children's Study (JECS), and we asked the three speakers of Session 1 their opinions about these surveys. Ms. Matsumoto said that when she answered questionnaires herself, she wondered what these would be useful for, but by working in an outpatient setting of obstetrics and gynecology, she has found that support to mothers and children provided by municipal public health nurses is actually provided based on the results of such surveys. Ms. Kato commented that she felt relieved just by being asked in

writing, "Are you feeling anxiety in your heart?" Dr. Anbe commented that when he talks with patients, he tells about his own experiences and thoughts, rather than relying on questionnaire results.

Regarding the support system for childcare in Fukushima Prefecture, there were questions about the implementation of radiation testing of breast milk, conducted by the prefecture, how the support system has changed since the earthquake, and what the differences are from other prefectures. Mr. Kaiwa replied that a total of 410 breast milk radiation tests had been conducted through March 2020, without any detecting radioactive cesium. As for differences in the support system before and after the earthquake and with other prefectures, Mr. Kaiwa explained that the "Prenatal and Postnatal Support Project" including breast milk testing and the "Healthy Child Home Visit" to support families raising children in the affected municipalities were started after the earthquake and the prefecture is providing various forms of support for pregnant and nursing mothers living in the prefecture as well as those living as evacuees away from the affected municipalities.

Regarding issues related to childrearing in the disaster-affected area and in Fukushima as a whole, the first issue raised was that it is difficult for various support measures to reach expectant and nursing mothers. This was mainly the opinion of three people with childrearing experience, but in essence, the support measures do not necessarily lead to peace of mind for the expectant and nursing mothers, because the system is not necessarily easy for them to use, there is a lack of distribution of information, and the system is disconnected from the community.



Dr. Anbe

Dr. Anbe and Ms. Matsumoto also pointed out that the importance of mental health support for expectant and nursing mothers has been increasing in recent years. In order for expectant and nursing mothers with diverse anxieties to live every day with peace of mind, it is important for medical institutions to strengthen cooperation with the prefecture and municipalities, and for health care providers to communicate a variety of information.

Finally, Dr. Anbe and Ms. Kato expressed their sense of security that they are able to raise their children in Fukushima under the various care and support systems of the prefectural and municipal governments, as well as their concern that people's understanding of Fukushima and the desire to support the affected areas will fade away 10 years after the nuclear accident. They expressed their desire to continue to communicate the current situation in Fukushima.

Summarizing the above, Dr. Fujimori said that the significance of this symposium, held near the 10-year anniversary of the nuclear accident, was to show that Fukushima offers a safe environment for

childbirth and childcare, and that although there are various issues, including mental health care, Fukushima Prefecture has a childcare support system in place to meet these needs. The discussion was concluded by noting that data from the PBS and the presentations by those who had experienced childrearing in Fukushima showed that the prefecture has support systems in place to meet various challenges.

In Dr. Anbe's presentation, he said, "The sound of birth in the delivery room is sacred." As Dr. Murotsuki mentioned at the beginning of the session, maternal and childcare support is extremely important when considering the future of Fukushima and Japan. In order to ensure that the next generation of children, who will play an important role for the reconstruction of the disaster-affected area, grow up healthy, it is expected that the results of the PBS will be passed on to the prefectural and municipal governments and help them to further improve the childcare support system in Fukushima Prefecture.

Session 2

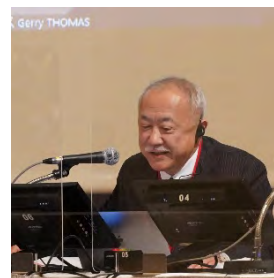
Current status of and future perspectives on Thyroid Ultrasound Examinations (TUE)

Chair



YOKOYA Susumu
(FMU)

2-6 Keynote Lecture Chair



SUZUKI Shinichi
(FMU)

- 2-1 Current status of the Thyroid Ultrasound Examination program and the results of the second Full-Scale Survey (the third-round survey)
SHIMURA Hiroki (FMU)
- 2-2 Evaluation of Thyroid Ultrasound Examination program in Fukushima
—current situation and future challenges
KATANODA Kota (National Cancer Center)
- 2-3 What is overdiagnosis of cancer?
SOBUE Tomotaka (Osaka University)
- 2-4 Surgical treatment for low-risk and high-risk thyroid cancer in Japan
IMAI Tsuneo (National Hospital Organization Higashinagoya National Hospital)
- 2-5 Challenges and future directions of support for examinees and their families during the secondary confirmatory examinations
SETOU Noriko (FMU)
- 2-6 Keynote Lecture
**Comparison of radiation effects on the thyroid gland
10 years after Chernobyl and Fukushima**
Gerry THOMAS (Imperial College London)

Discussion

- Chair: YOKOYA Susumu (FMU)
KATANODA Kota (National Cancer Center)
- Discussants: Session 2 presenters

2-1 *Current status of the Thyroid Ultrasound Examination program and the results of the second Full-Scale Survey (the third-round survey)*



SHIMURA Hiroki, MD, PhD

Professor and Chair, Department of Laboratory Medicine,
Fukushima Medical University School of Medicine
Director, Department of Thyroid Ultrasound Examination,
FMU Radiation Medical Science Center for the Fukushima
Health Management Survey

The Thyroid Ultrasound Examination (TUE), as part of the Fukushima Health Management Survey, started after the Great East Japan Earthquake and subsequent nuclear crisis. The TUE Preliminary Baseline Survey (PBLs), as well as the first and second Full-Scale Surveys (FSS), have been completed. The fourth FSS and the secondary examination of the third FSS are currently underway. In addition, the 5-year recurring surveys that begin at age 25, as part of the FSS, started in FY2017.

Currently, the analysis of data from the second FSS (third-round survey) is in progress. Together, the third-round survey and the survey at age 25 for examinees born in FY1992 had a participation rate of 61.3%, which showed a downward trend. The proportion of those with Grade B results in primary examinations was 0.73%, almost the same as previous examinations. The implementation rate of fine needle aspiration cytology (FNAC) was 0.04%, and the detection rate of nodules diagnosed as malignant or suspicious for malignancy was 0.015%, showing a downward trend. These numbers tended to rise with age (Slides 1, 2, and 3).

Thyroid cancer is known as a malignancy with risks of overdiagnosis and overtreatment, and, in recent years, reports have been published from overseas that warn of overdiagnosis. The Fukushima Prefectural Oversight Committee for the Fukushima Health Management Survey summarized advantages and disadvantages of receiving thyroid examinations, including the risk

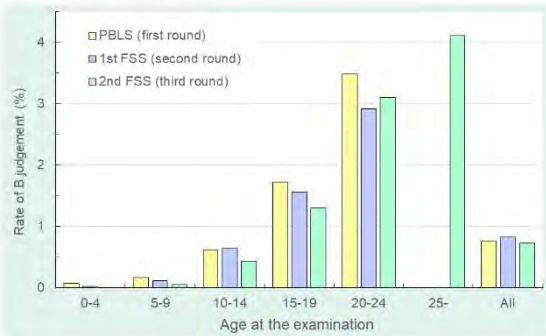
of overdiagnosis. Currently, our efforts to explain these include sharing an explanatory document before each examination. We are also making efforts to provide easy-to-understand explanations before each examination, with documents tailored to elementary and junior high school students and videos that can be viewed on the Internet.

In Japan, limited implementation of FNAC based on Japanese management guidelines for thyroid nodules, minimal surgery and limited radioiodine therapy based on actual risks associated with thyroid cancer, and active surveillance for ultra-low risk papillary thyroid cancer are in place. Furthermore, surgery is limited due to the fact that borderline malignancies—such as noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP)—are regarded as benign in Japan, probably resulting in lower risk of overdiagnosis than in Europe and the United States. In fact, in the TUE program, the rate of FNAC has been substantially lower than in South Korea. In addition, our usual surgery is unilateral thyroid lobectomy, so there are fewer complications. These facts suggest that disadvantages of overdiagnosis and overtreatment are lower in Japan (Slide 4).

In this program, we will pursue the advantages of accurate analysis of the results and active information disclosure, explanations in conjunction with primary examinations, dialogs at on-site sessions, and accurate diagnosis of thyroid cancers that may require treatment, etc. Furthermore, we would like to minimize disadvantages by conscientious explanations in examination settings, telephone support, psychological support in conjunction with secondary examinations, the Support Project by Fukushima Prefecture, and general measures against overdiagnosis based on FNAC guideline (Slides 5 and 6).

Slide 1

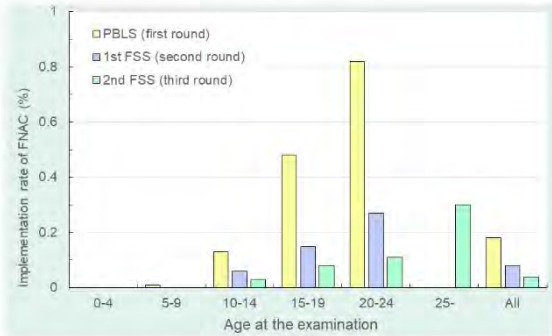
Rate of B judgement



Document 3-2 in the 15th meeting of Prefectural Subcommittee for the TUE program

Slide 2

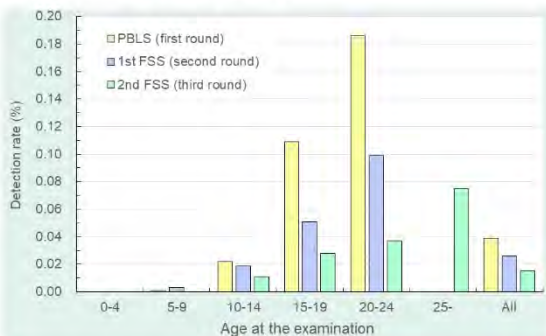
Implementation rate of FNAC



Document 3-2 in the 15th meeting of Prefectural Subcommittee for the TUE program

Slide 3

Detection rate of nodules diagnosed as malignant or suspicious for malignancy



Document 3-2 in the 15th meeting of Prefectural Subcommittee for the TUE program

Slide 4

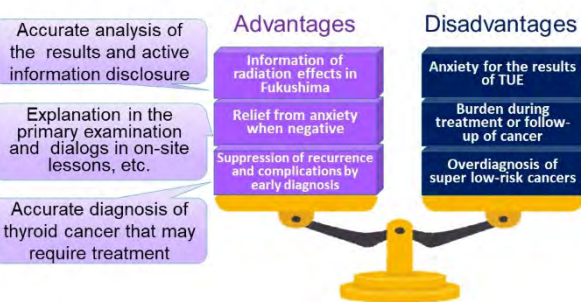
Differences between Japan and overseas in thyroid cancer diagnosis and treatment

- ✓ **Limited implementation of FNAC** based on the guideline for management of thyroid nodules.
- ✓ **Management of low-risk thyroid cancer**
 - Smaller conservative surgery
 - Restricted radioiodine therapy
 - Active surveillance
- ✓ **Limited diagnosis and treatment of borderline malignancy**, such as noninvasive follicular thyroid neoplasm with papillary-like features (NIFTP), etc.
- ✓ **Costs** for ultrasound examination

When considering international recommendations, it is necessary to consider the differences between Japan and overseas in the diagnosis and treatment of thyroid cancer.

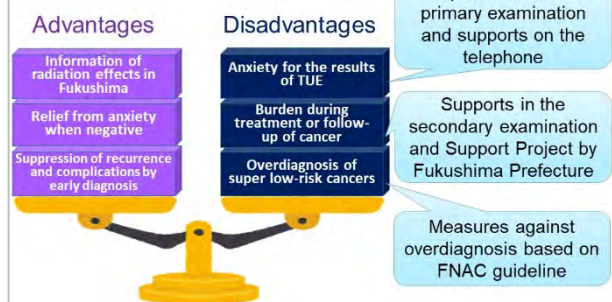
Slide 5

Measures to ensure advantages in the TUE program



Slide 6

Measures to reduce disadvantages in the TUE program



2-2 *Evaluation of Thyroid Ultrasound Examination program in Fukushima—current situation and future challenges*



KATANODA Kota, PhD

Chief, Division of Cancer Statistics Integration, Center for Cancer Control and Information Services, National Cancer Center, Japan

A Thyroid Ultrasound Examination (TUE) program has been conducted in Fukushima Prefecture for residents who were 18 years old or younger around the time of the earthquake (more precisely, those born on or after April 2, 1992). The Preliminary Baseline Survey (the first-round survey) started on October 9, 2011, followed by a Full-Scale Survey that started in FY2014 and 5-year recurring surveys for those age 25 and over, commencing in FY2017. As of March 2020, there were 241 cases of malignant or suspected malignant thyroid lesions recorded (including 196 treated surgically) (Slide 1). Some of the issues that have emerged thus far include that the survey year varies by region, that the participation rate has fallen with increasing age (especially for those over 18 years old), and that the percentage of those receiving cytological examinations has gone down in recent years (Slides 2, 3, and 4).

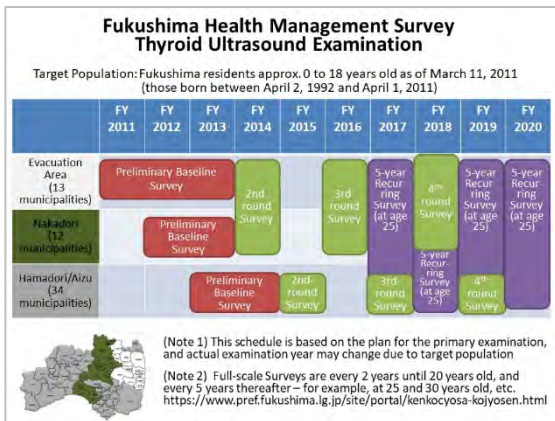
No clear dose-response relationship has been observed between regional dose estimates and the detection rate of cancers or suspicious thyroid lesions in either the Preliminary Baseline Survey or the second-round and subsequent surveys. Difficulties arise when trying to separate possible dose effects from effects arising from regional difference in survey years. For example, in the case of the second-round survey, about 75% of the participants (ages 6-14 as of the accident date) with an estimated absorbed thyroid dose of 20 mGy were examined in 2015 or later; more than 95% of those with 20-25 mGy and 25-30 mGy doses had examinations in 2014, and about 77% of those with 30 mGy or above

were surveyed in 2015 or later. Most participants in these dose groups are from the cities of Aizuwakamatsu, Koriyama, Fukushima, and Iwaki, respectively (Slides 5, 6, and 7).

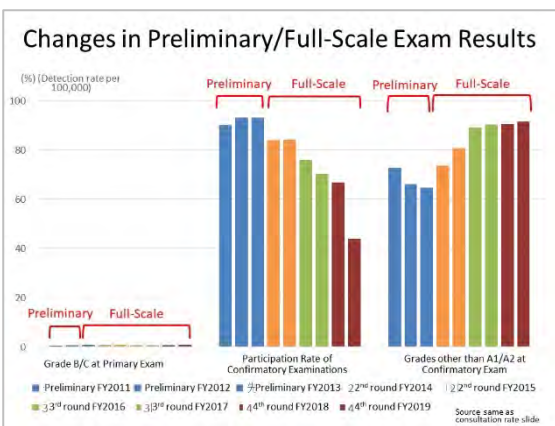
In order to deal with the extremely low participation rate among people aged 18 and over, it will be necessary to ascertain the occurrence of thyroid cancer among those who have not received examinations by using the National Cancer Registry along with findings within the TUE framework. To analyze the relationship between radiation dose and thyroid cancer, it is necessary to consider individual radiation doses rather than the average doses estimated for each municipality.

In addition, there are challenges of how to ensure fully informed decision making and how to follow up on cases in which surgery is not performed (Slide 8). Further considerations are necessary about the desirable form of the TUE including the voluntary nature of thyroid examinations, especially when conducted in schools.

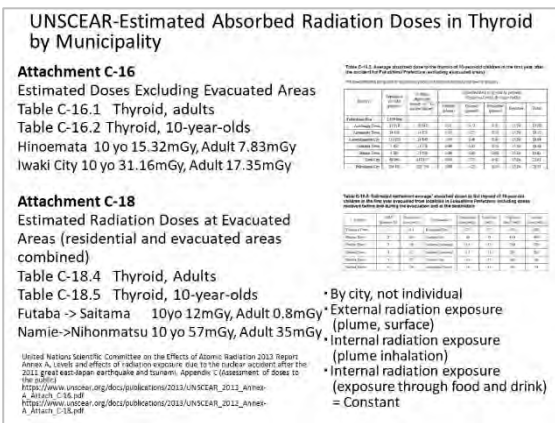
Slide 1



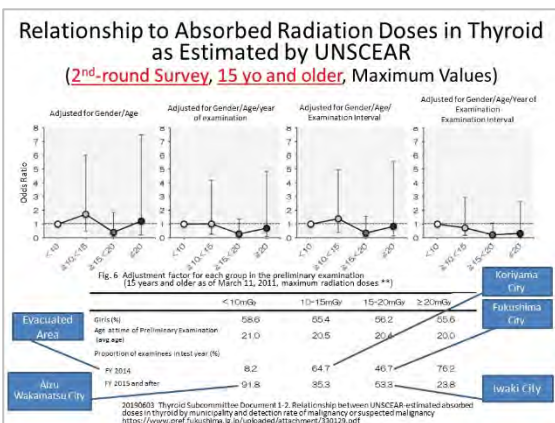
Slide 3



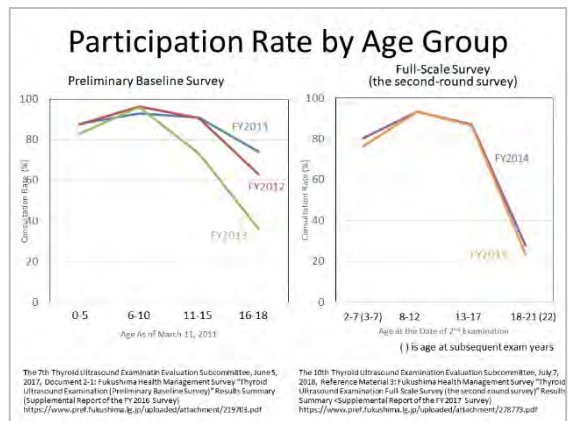
Slide 5



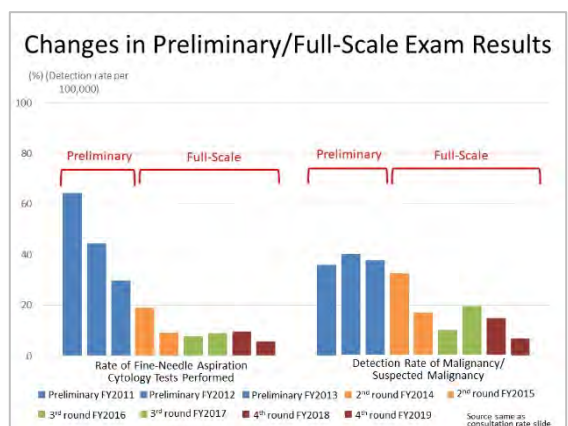
Slide 7



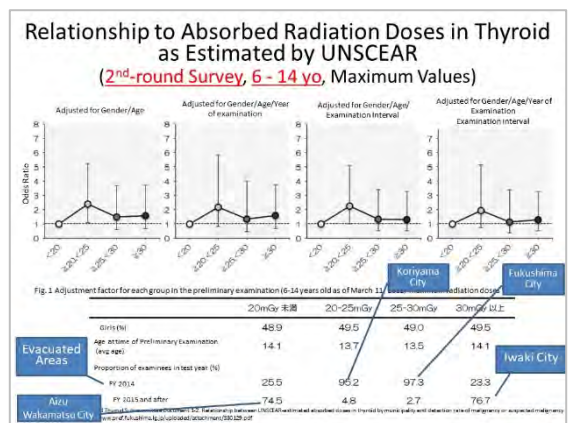
Slide 2



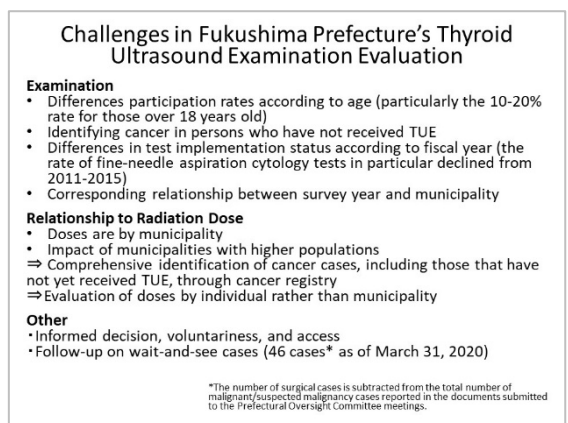
Slide 4



Slide 6



Slide 8



2-3 *What is overdiagnosis of cancer?*



SOBUE Tomotaka, MD, MPH
Professor, Division of Environmental Medicine and
Population Sciences, Graduate School of Medicine, Osaka
University

effective). In this way, overdiagnosis is commonly observed in most cancer screening (Slides 5 and 6).

Overdiagnosis is one of the most important harms caused by cancer screening. It is necessary to develop methodologies to evaluate its impact quantitatively. Different from other harms, there is no incorrect judgement during the process. Since overdiagnosis is difficult to recognize as a harm, not only for laypersons but also health professionals, special efforts are needed for disseminating proper understanding.

Overdiagnosis can be defined as a screen-detected cancer that would not have become clinically significant during the patient's lifetime. It does not mean cases in which pathologically non-malignant tumors are incorrectly diagnosed as malignant (i.e., true positive versus false positive cases). Overdiagnosis is determined by two factors, namely, the growth speed of a cancer and an individual's remaining lifespan. It is difficult to determine whether an individual case is an overdiagnosis case or not. As a result, the natural history of an overdiagnosis case is rarely observed since it is usually removed surgically (Slides 1, 2, and 3).

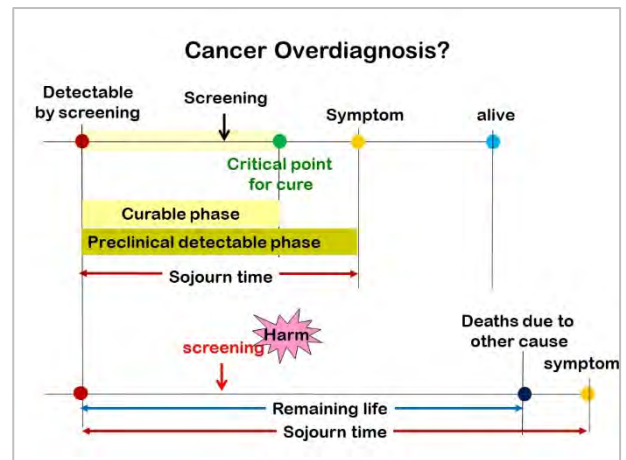
At a population level, it can be seen that the incidence among those who have screening is higher than those who do not have screening. Although it is inevitable that incidence increases with early-detected cases immediately after screening, it continues for long time, such as 5 or 10 years. With increased screening, incidence increases while mortality or advanced-cancer incidences do not decrease. This suggests overdiagnosis, akin to prostate cancer (PSA), lung cancer (CT) and breast cancer (mammography) cases (Slide 4). In Japan, mass screening for neuroblastoma (urine test) was conducted in 1984-2002. Since mortality reduction was not observed in evaluation studies in Canada and Germany, it was halted in 2003. After the cessation, the incidence for those aged 1 year or less decreased sharply, while the incidence for those aged 1 year or more did not increase (it should increase). Mortality did not change for any age group (it should increase, if the screening is

Slide 1

What is overdiagnosis of cancer?

- Due to slow-growing nature,
- Cancer which will not be symptomatic during the life time,
- Is detect by screening
- Difficult to determine individual cancer
- Recognized at population level

Slide 2



Slide 3

Cancer Overdiagnosis ?

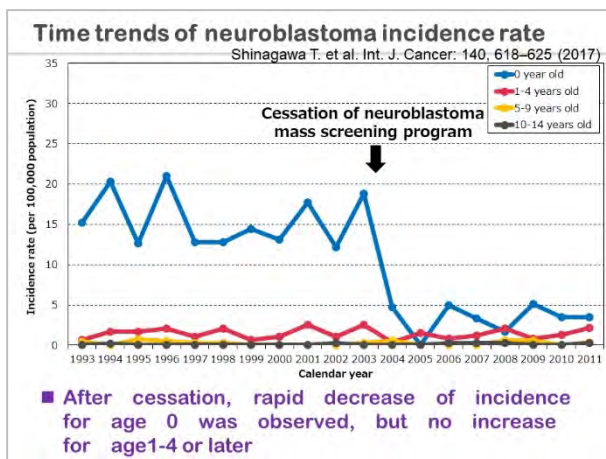
- Not meaning the cases that pathologically non-malignant tumor are incorrectly diagnosed as malignant (**True positive, not false positive cases**)
- It is determined by growth speed of cancer and individual remaining lifetime
- Different from other harms, there is no incorrect judgement during the process
- It is difficult to determine for individual case whether it is overdiagnosed or not
- It is based on the fact that cancer incidence increases above the expected level
 - RCT for cancer screening evaluation
 - Time trends of cancer incidence

Slide 4

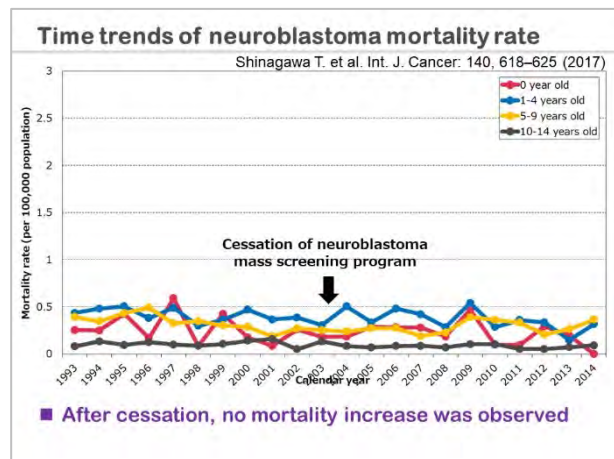
Overdiagnosis for various sites of cancer

- Lung cancer (CT)
 - Prostate cancer (PSA)
 - Breast cancer (mammography)
 - Colorectal cancer (FOBT, Colonoscopy)
 - Cervical cancer (cytology)
- Overdiagnosis is hardly observed, because screening will reduce incidence.
- Neuroblastoma (urine) Japan
 - Thyroid cancer in adulthood (ultrasound) Korea

Slide 5



Slide 6



2-4 *Surgical treatment for low-risk and high-risk thyroid cancer in Japan*



IMAI Tsuneo, MD, PhD

Honorary Director, National Hospital Organization
Higashinagoya National Hospital
Visiting Professor, Aichi Medical University (Breast and Endocrine Surgery)
Visiting Professor, Fujita Health University (Endocrine Surgery)

More than 90% of thyroid cancers are papillary thyroid cancer (PTC), and the prognosis of PTC is favorable. The basic goals of initial therapy for patients with PTC are to improve overall and disease-specific survival, and to reduce the risk of persistent/recurrent disease while minimizing treatment-related morbidity and avoid unnecessary therapy. We published the Clinical Practice Guidelines on the Management of Thyroid Tumors in 2010. Accurate disease staging and risk classification are essential (Slide 1).

Very low-risk PTC indicates tumors measuring 1 cm or smaller, without lymph node or distant metastasis on imaging studies. Low-risk PTC indicates tumors measuring 1.1–2 cm without lymph node or distant metastasis. In contrast, high-risk PTC indicates tumors having at least one of the following clinical features: 1) tumor size exceeding 4 cm; 2) extra-thyroidal extension to adjacent structures except for the sternothyroid muscle, or extra-nodal extension to adjacent structures from metastatic lymph node(s); 3) clinical node metastasis larger than 3 cm; and 4) distant metastasis detected on imaging studies. Intermediate-risk PTC indicates tumors not belonging to the very low-, low-, or high-risk class (Slide 2).

Total thyroidectomy is not recommended for very low- and low-risk PTC, whereas total thyroidectomy is recommended for high-risk PTC. For intermediate-risk PTC, the extent of thyroidectomy (i.e., total thyroidectomy or

lobectomy) should be decided individually according to the prognostic factors and patient background characteristics. Active surveillance is recommended for adult patients (over 20 years old) with very low-risk PTC (Slide 3).

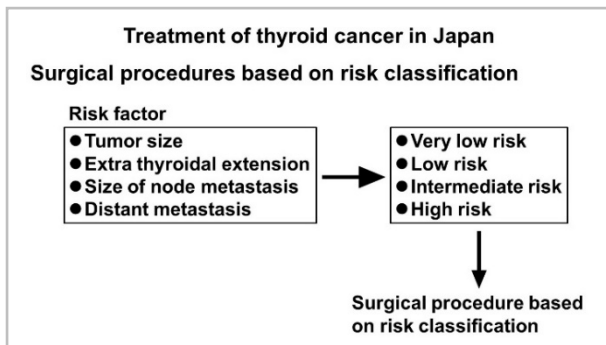
Thyroid lobectomy is used to remove only one of the thyroid lobes, leaving the other intact. Total thyroidectomy involves the removal of the entire thyroid gland. Each procedure has both merits and demerits (Slides 4 and 5).

Why is total thyroidectomy not indicated for all patients with PTC? There are many essential nerves and organs adjacent to thyroid gland. It is important to preserve their functions (Slide 6). Despite the development of surgery to reduce complications, the laryngeal nerve is fragile and parathyroid glands are difficult to find. There is a certain risk of incidental damage or excision in thyroid surgery, even in skilled and experienced hands.

The prognosis of PTC is favorable. Therefore, surgical procedures are decided based on risk stratification, balancing merits and demerits (Slide 7).

Japanese clinical practice guidelines on the management of thyroid tumors are freely accessible online (in Japanese). Before Japanese guidelines were first published in English in 2011, total thyroidectomy had been widely recommended in Europe and the United States, even for low-risk patients. After 2011, Europe and the United States revised their guidelines based on those of Japan. Now, the Japanese management of PTC is becoming standard (Slide 8).

Slide 1



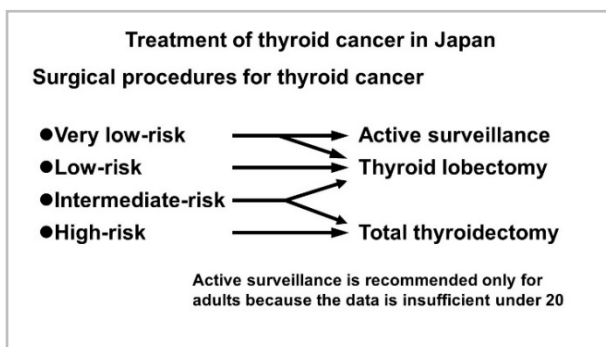
Slide 2

Japanese clinical practice guidelines on the management of thyroid tumors

Risk classification


	Very low-risk	Low-risk	Intermediate-risk	High-risk
1) Tumor size	1cm or smaller	1.1~2cm	2.1~4cm	4.1cm or larger
2) Extrathyroidal or extra-nodal extension	No extension	No extension	No apparent extension	Apparent extension
3) Size of node metastasis	No metastasis	No metastasis	Smaller than 3cm	Larger than 3cm
4) Distant metastasis	No	No	No	Yes

Slide 3



Slide 4

Thyroid lobectomy



About half of thyroid gland is removed and the other side of thyroid is preserved

Merit

- High probability of free from thyroid hormone supplement
- Less morbidity

Demerit

- A little more cancer recurrence

Low risk thyroid cancer

Slide 5

Total thyroidectomy & lymph node dissection


Thyroid gland is thoroughly removed and lymph nodes are cleared

Merit

- Less cancer recurrence
- Radioactive iodine therapy is possible

Demerit

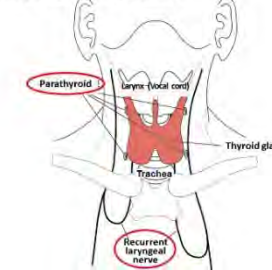
- Life long thyroid hormone replacement is necessary
- A little more morbidity



High risk thyroid cancer

Slide 6

Is wide excision better than limited one when thyroid tumor is malignant?



There are many essential nerves and organs adjacent to thyroid gland. It is important to reserve these functions

Many young people suffer from thyroid cancer and the prognosis is favorable. It is principal to keep their quality of life.

Slide 7

Is wide excision better than limited one when thyroid tumor is malignant?


Despite the development of surgery to reduce the complication, laryngeal nerve is fragile and parathyroid glands are difficult to find. There is a certain risk of these morbidity in thyroid surgery even by the skilled and experienced hands.

↓

The prognosis of thyroid cancer is favorable. Therefore, surgical procedures are decided based on risk stratification, with balancing merit and demerit.

Slide 8

Japanese clinical practice guidelines (2nd edition) on the management of thyroid tumors



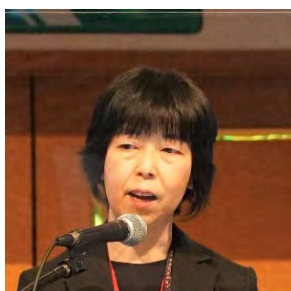
Free access through internet (in Japanese), the target audiences are physicians caring for patients with thyroid tumors.

Total thyroidectomy had been widely recommended in Europe and USA.

2011 Japanese guidelines published in English
2014 British Thyroid Association revised
2015 American Thyroid Association revised
2018 Italian Thyroid Association revised

The above associations revised their guidelines following Japanese guidelines. Now the Japanese management is becoming standard.

2-5 *Challenges and future directions of support for examinees and their families during the secondary confirmatory examination*



SETOU Noriko, PhD

Associate Professor, Department of Disaster Psychiatry and Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University

A Thyroid Support Team was established to provide psychosocial support for examinees and their families during the secondary confirmatory examination of the TUE (Thyroid Ultrasound Examination). During the examination, questions from examinees, or their families, may include: Are my current symptoms related to this nodule? Should I attend the next TUE? What kind of treatment is done for thyroid cancer? In response to such questions, the doctor first provides a detailed explanation based on the results of the ultrasound examination. Then the support team member checks to see if they understand the explanations and whether there are any questions, and then adds supplementary or necessary information (Slides 1 and 2).

At present, we are conducting a survey to discover what kind of anxiety the examinees and their families have during the secondary confirmatory examination and how their anxiety changes through such psychological support about, for example, “examination,” “examination results,” “effects of radiation,” “thyroid cancer,” and “heredity.” According to the results so far, anxiety was reduced after such session for most of the items, but anxiety among family members was generally higher than among examinees, and 30~40% of the families still felt anxiety about radiation effects, especially thyroid cancer, after the session (Slide 3).

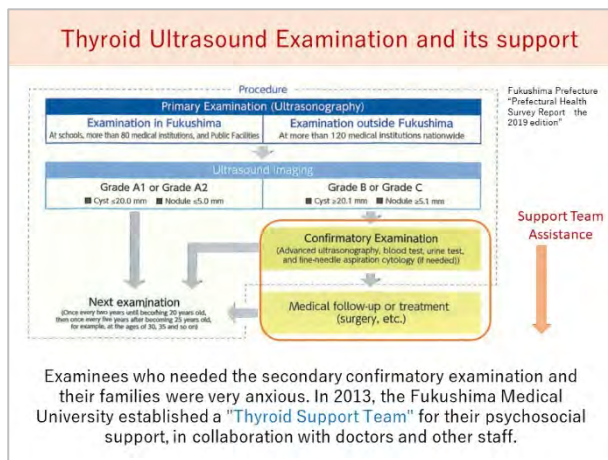
Ten years have passed since the Great East Japan Earthquake; individual anxiety levels and thoughts have become more diverse, and the opinions of examinees and their families may differ. Based on the results of our survey, we

thought it would be important to encourage communication between examinees and their families so that they could understand each other's thoughts (Slide 4).

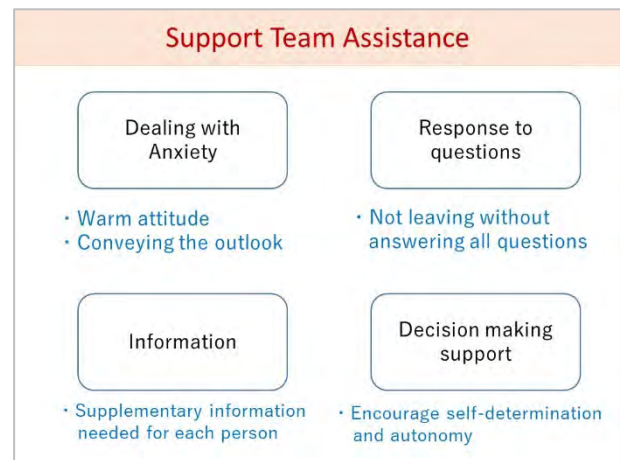
The concept of “resilience,” which refers to the ability to recover on one's own, is particularly important in supporting adolescent and young adult (AYA generation) examinees. A tree that's been knocked down by a strong storm can grow into a large tree under its own power with proper trimming, grafting, nutrition, light, and water. There should be neither too little nor too much water and nutrients (Slide 5).

Children who were seven years old when the Great East Japan Earthquake occurred are now seventeen, old enough to understand TUE and cancer screening if given careful explanations in easy-to-understand language. In the past 10 years, examinees have encountered many events that have greatly affected them, their families, and communities, e.g., the nuclear accident, Typhoon 19, and now the coronavirus pandemic. That is why it is important to enhance a support system to “create a nurturing environment” (Slide 6). In the secondary examination, we aim to correct any misunderstandings, fill current information gaps, and anticipate future information needs to avoid confusion, so examinees can constructively attend to their own health. We will believe in their ability to achieve personal growth, and continue to provide them a safe haven in the context of care.

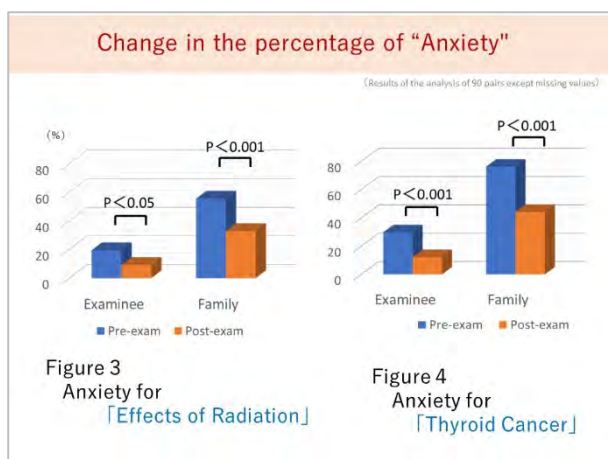
Slide 1



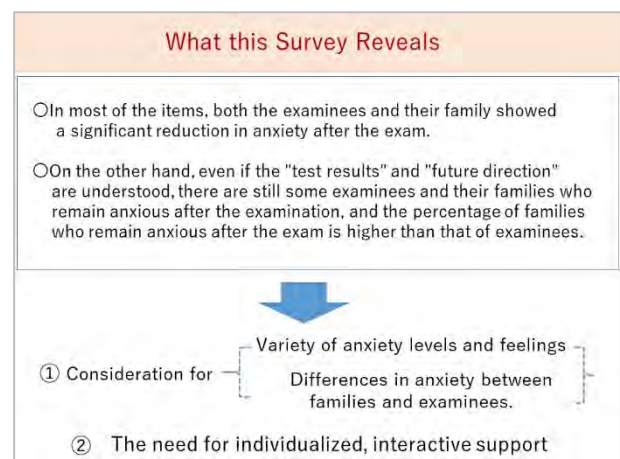
Slide 2



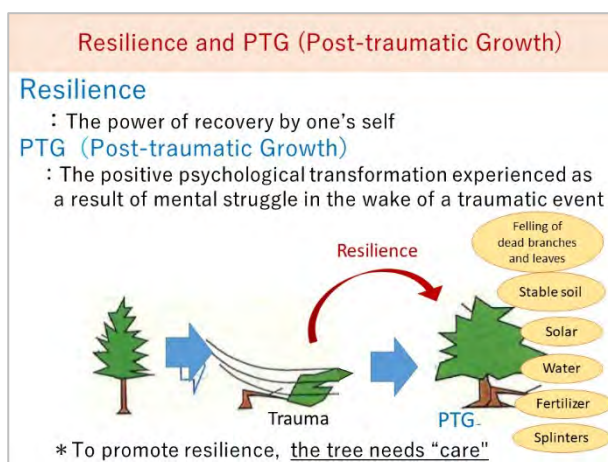
Slide 3



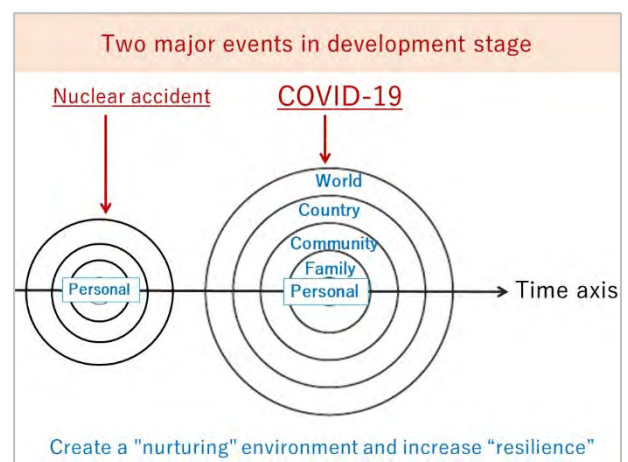
Slide 4



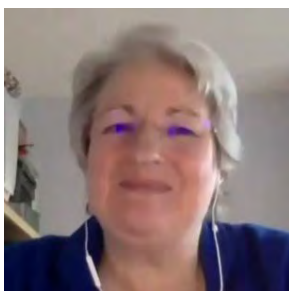
Slide 5



Slide 6



2-6 *Comparison of radiation effects on the thyroid gland 10 years after Chernobyl and Fukushima*



Gerry THOMAS, PhD

Professor of Molecular Pathology, Department of Surgery and Cancer, Imperial College London

Thyroid cancer in those who were children at the time of exposure has been shown to be the only radiological consequence of the Chernobyl Nuclear Power plant accident in 1986. The risk of thyroid cancer is closely correlated with the dose of radioiodine received by the child's thyroid. Consumption of food or drink contaminated with radioiodine has been shown to play a key role in increasing the radiation dose. Younger children receive higher doses because they consume more milk products than adults, and they have a smaller thyroid. In addition, the thyroid cells are still undergoing repeated division in the young child as a result of natural growth. This further increases the risk of retention of alterations in the DNA of the thyroid cells caused by radiation exposure.

The increased incidence of thyroid cancer was observed within 4 years after the Chernobyl accident, in those under 19 years of age at the time of the accident and resident in the areas most heavily contaminated by radioiodine in fallout, resulting in doses in many cases much greater than 100-500 mGy. Those who were born after the radioiodine had decayed in the environment, or who lived in less contaminated areas, do not show this increased risk (Slides 1 and 2).

Following the Fukushima accident, a comprehensive health survey was implemented. A sensitive ultrasound examination of the thyroid gland was offered to all aged 18 and under at the time of the accident, to allay public fears. However,

use of sensitive thyroid ultrasound also reveals the natural incidence of sub-clinical thyroid cancer in a population. Care therefore needs to be taken in differentiating the effect of ascertainment by use of a screening method from a genuine increase in thyroid cancer incidence due to radiation. This is particularly important where radiation doses to the thyroid gland can be demonstrated to be less than 100-500 mGy. The latest UNSCEAR report confirms that thyroid doses following Fukushima were below 100 mGy. Furthermore, in contrast to the data obtained from the Chernobyl accident, no increase in thyroid cancer has been observed in those aged below 5 at the time of the Fukushima accident. For these reasons, it has been concluded that the thyroid cancers identified in the TUE program are attributable to increased clinical ascertainment rather than radiation exposure (Slides 3, 4, and 5).


The studies conducted following both of these nuclear accidents have increased our understanding of the health risks of low dose radiation exposure. However, in future these risks should be better communicated to the public and policy makers and actions should be taken to balance these risks with others that ensue as a result of socio-economic and other factors that affect the health of the population (Slide 6).

Slide 1

Imperial College London

HEALTH EFFECTS – THE BASIC PRINCIPLES

- The magnitude of the health effect depends on dose – lower dose = smaller health effect
- Dose to an individual depends on many things – mainly
- At high doses (>1Sv) dose is **directly** related to effect (deterministic)
- At lower doses dose affects the **probability** of a health effect (stochastic)

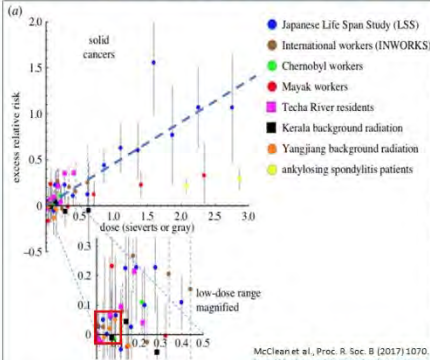


Biology

Slide 2

Imperial College London

RADIATION DOSE-RESPONSE RELATIONSHIP



Relationship between dose and increased risk is generally accepted to be a straight line.

However, at low doses, there is little effect and the magnitude of the effect varies in different studies. This uncertainty at low doses makes communication of risks difficult

McClure et al., Proc. R. Soc. B (2017) 1070
<http://dx.doi.org/10.1098/rspb.2017.1070>

Slide 3

Imperial College London

RADIOLOGICAL AND OTHER HEALTH CONSEQUENCES OF CHERNOBYL

Only health consequence to the **general population** from the physical exposure to radiation from Chernobyl has been thyroid cancer in children

Due to exposure to high thyroid doses (>100 mSv) of ¹³¹I in fallout

Most damaging health effect has been psychological stress due to fear of radiation exposure

Source: www.imsa.gov.uk/docs/reports/2008/13-80076_Report_2008_Annex_D.pdf

Slide 4

Imperial College London


FUKUSHIMA VERSUS CHERNOBYL

Median doses to thyroid were 100 fold less than in Chernobyl evacuees (estimated to be between 0.6-7.5 mSv*)

93% of residents (both evacuees and still resident) in Fukushima had estimated whole body doses (from Cs-137) of less than 2mSv in first 4 months post accident

WBC at later time points show the majority of people have no detectable levels of Cs-137.

No discernible health effects expected from radiation at these doses BUT 2000 deaths as a result of the evacuation (compared with approx. 20,000 from the tsunami)



* Ohba et al., Scientific Rep 2020 10:3629

Slide 5

Imperial College London

FUKUSHIMA – IS THERE REALLY AN INCREASE IN THYROID CANCER?

- Cancer statistics are usually reported on operate (symptomatic) cases
- Screening finds smaller lumps, earlier
- Using US will push the natural incidence curve to the left
- Pool of undetected thyroid cancer in an unscreened population estimated to be around 3 per 10,000 – some autopsy studies suggest higher
- Data from both Belarus and Russia show that there was an increase in those who were youngest at exposure showed higher rates of thyroid cancer – different from normal pattern of incidence
- Data from Fukushima TUE study shows higher rates in those who were older at exposure – consistent with normal pattern of incidence
- “Post Fukushima thyroid cancers” due to increased ascertainment due to screening – not radiation.

Slide 6

Imperial College London

CHERNOBYL AND FUKUSHIMA – WHAT HAVE WE LEARNED ABOUT THYROID CANCER?

- The incidence of thyroid cancer may be increased following exposure radioiodine in fallout
- The level of increase is related to the radiation dose
- Can reduce the dose and therefore the risk by taking simple actions
- Radiation induced thyroid cancer is the same as spontaneous thyroid cancer with respect to pathology, molecular pathology and clinical outcome
- Need to balance risk of thyroid cancer with risk of psychological stress of societal disruption and implementation of screening programmes

2-6 Keynote Lecture: Excerpt of the Q&A

Chair: SUZUKI Shinichi (FMU)

Speaker: Gerry THOMAS, PhD (Imperial College London)



Dr. Gerry Thomas was able to join us from her time zone after the keynote lecture for a live Q&A session. The following is an excerpt from that session.

○Thyroid Ultrasound Examination (TUE)

Suzuki: Regarding thyroid health monitoring after nuclear accidents, I understand that IARC (International Agency for Research on Cancer) recommendations acknowledge that different measures should be considered, depending on the country, region, or the choice of the residents. I think the TUE program conducted in Fukushima is more in line with the long-term monitoring of individuals described in Recommendation 2. What is your opinion?

Thomas: That is correct, and I think that in Fukushima, you are definitely now doing monitoring rather than screening, trying to help those who are concerned about their health.

Suzuki: We are conducting TUE in order to promote the health of each resident, and we are making efforts to provide information carefully, including in cases where surgery is necessary.

Thomas: It is really important to take into account the worries and concerns of local people. The conclusions of the IARC report had been brought about because the data from Fukushima were available. It became obvious that radiation doses people in Fukushima were exposed to were very low and would have little effects. But it is very difficult to explain this to the general public.

Suzuki: In Japan, the concept of active surveillance was incorporated into thyroid cancer treatment starting 20 years ago. With this clinical practice, along with Japanese guidelines on management of thyroid tumors, we would like to continue to provide highly accurate examinations and diagnoses so that residents only need to undergo examinations every two years, and even if disease is found, only limited surgery is performed.

Thomas: I think it is difficult to provide the same type of health care as you do now because the situation varies from country to country. Similar health monitoring is done with prostate cancer, which we call “watchful waiting.” But you are not just waiting but watching what happens to the thyroid.

Communicating this to the public is much more a challenge than in case of the actual medical necessities.

○Radiation exposure effects in Fukushima

Suzuki: As for the reasons why the effects of radiation exposure in Fukushima are thought to be low, are diet and appropriate evacuation related? Also, Japanese usually consume an iodine-rich diet. Is this also relevant?

Thomas: I think that the Japanese authorities have been successful in controlling food inspections. The thyroid gland absorbs iodine, and if the thyroid gland is filled with a lot of iodine on a regular basis, the amount of (radioactive) iodine to be taken up will be low, and if the thyroid gland is like a dry sponge, it will absorb a lot of (radioactive) iodine. I think this is the difference between Japan and Chernobyl.

Suzuki: Regarding oncogenes, the RET/PTC3 gene was found in many Chernobyl cases, but few in Fukushima. In your presentation today, you said that this oncogene is often found in young children and that the presence or absence of this gene alone cannot be identified as a factor in thyroid cancer caused by radiation exposure. We also think that the reason why BRAF is the most common cancer genotype found in Fukushima and RET/PTC3 is the least common is related to age at the time of cancer detection, etc. What do you think?

Thomas: That is correct. The occurrence of RET/PTC3 is not affected by radiation, but is related to age. I think that the reason why so many thyroid cancers were found is not because of radiation but because cancers are found at a young age in the ultrasound program.

Suzuki: Thyroid cancer of the solid variant (i.e., solid papillary carcinoma) was found in a very large number of children in Chernobyl, but this was extremely rare in Fukushima children, and PTC of the normal type was found in many cases. Do you think that age is also a factor in this?

Thomas: I think so. Solid variants are found in younger people, and normal type cancers are found in older people. There is no relation to radiation.

Session 2

Current status of and future perspectives on Thyroid Ultrasound Examination (TUE)

Proceedings of discussion



Chairs: YOKOYA Susumu (FMU)
KATANODA Kota (National Cancer Center)*

Discussants: SHIMURA Hiroki (FMU)
SOBUE Tomotaka (Osaka University)
IMAI Tsuneo (Higashinagoya National Hospital)*
SETOU Noriko (FMU)
SUZUKI Shinichi (FMU)
Gerry THOMAS (Imperial College London)*
* Remote participants



Dr. Yokoya Dr. Suzuki Satoru
(Assistant to chair)

Session 2, “Current Status of and Future Perspectives of Thyroid Ultrasound Examinations (TUE),” consisted of presentations and discussions by experts on 10 years of efforts in TUE, including assessment of radiation effects, issues of overdiagnosis, strategies for treatment of thyroid cancer, and support for examination participants.

The first presenter was Dr. Shimura Hiroki (FMU), who reported results from the first- to the third-round surveys and explained issues associated with the thyroid examination and our responses to address these issues. Dr. Katanoda (National Cancer Center) talked about how the TUE results have been evaluated as well as issues and considerations regarding such evaluations.

Next, Dr. Sobue Tomotaka (Osaka University) explained the theory of overdiagnosis and presented issues for the dissemination of correct knowledge. Dr. Imai Tsuneo (National Hospital Organization Higashinagoya National Hospital) then explained the Japanese clinical strategy for treating thyroid cancers with different risk levels, and pointed out that this strategy has been widely adopted overseas.

Dr. Setou Noriko (FMU) reported on the current status and issues related to support to participants in the secondary confirmatory examination of TUE.



Dr. Suzuki Shinichi

Finally, Dr. Gerry Thomas (Imperial College London), who specializes in molecular pathology, gave a keynote lecture in which she introduced the general theory of radiation effects and suggested that the high number of thyroid cancers found in Fukushima, in contrast to Chernobyl, was not due to radiation. After the lecture, there was a question-and-answer session chaired by Dr. Suzuki Shinichi (FMU).

After these presentations, the discussion began with a question-and-answer session among the speakers. First, Dr. Suzuki pointed out that the part of Dr. Katanoda's presentation stating that "46 cases were under surveillance" included surgical cases at other institutions. Dr. Katanoda responded that this was correct and that the number of cases was the maximum estimate.

There was also a discussion about IARC (International Agency for Research on Cancer) recommendations. Dr. Sobue commented that he thinks "Recommendation 2" (thyroid monitoring) does not apply to Fukushima as thyroid doses among children in Fukushima were lower than 100 mGy. In response, Dr. Shimura, who participated as an expert in the preparation of the IARC recommendations, explained that under Recommendation 2, the decision on whether or not to conduct a monitoring program is made according to the situation in each country and the choice of the local population, and that the TUE is proceeding based on this viewpoint



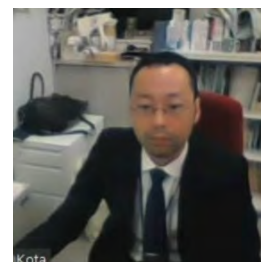
Dr. Sobue



Dr. Shimura

This was followed by a question-and-answer session based on questions from the audience. Dr. Shimura was asked whether it was inappropriate to equate the current situations in South Korea, Europe, and the United States, where thyroid cancer is actively diagnosed and treated, with Fukushima, where measures are being taken in a restrained manner. In response to this question, Dr. Shimura explained that in other countries, "borderline lesions" are more widely diagnosed as "cancer" and are treated aggressively, which is different from Japan.

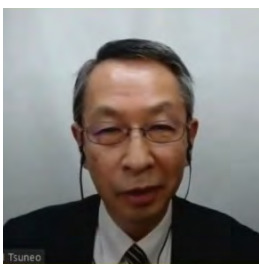
Dr. Katanoda was asked whether there are regional differences in the effects of radiation exposure in Fukushima as a result of thyroid examinations. In response, Dr. Katanoda answered that although it is a fact that there are regional differences in thyroid cancer detection rates, these apparent differences cannot be linked to regional differences in radiation dose because the years in which surveys were conducted and the number of cases that proceed to cytological examination vary from region to region. In response to a question about the concept of using cancer registries to compensate for cases not detected in TUE, Dr. Katanoda responded that since taking TUE has both advantages and disadvantages, it is necessary to ensure the voluntary nature of the examinations and to obtain the understanding and consent of



Dr. Katanoda

residents before proceeding. In this case, it is inevitable that the participation rate will decline, and the cancer registry will have to compensate for this.

Dr. Sobue was asked whether it would be necessary to use an index of improvement in quality of life (QOL), rather than mortality reduction, to judge the effectiveness of screening for cancers with a good prognosis, such as thyroid cancer. Dr. Sobue stated that at present it has not been properly demonstrated that QOL can be improved, so it is important to conduct research to accurately evaluate QOL and provide evidence.



Dr. Imai

Dr. Imai was asked about the effect of age on the treatment strategy for thyroid cancer. He explained that, unlike other cancers, thyroid cancer tends to be more malignant in older patients, i.e., it tends to require more extensive surgery, and that the younger the patient, the more that QOL is emphasized in his practice. In relation to this, Dr. Suzuki Shinichi added that in cases found in Fukushima, he followed the policy of avoiding total resection surgery as much as possible for patients under 45 years of age, and chose lobectomy for intermediate-risk patients. Dr. Suzuki added that he performs total resection in high-risk cases, even in children, but only 9% of cases are total resections, and he uses less invasive surgeries.

Dr. Setou was asked whether psychological support is available after the transition to treatment covered by universal healthcare following the secondary examination support, and what kind of support is provided to patients who are concerned about radiation effects. Dr. Setou replied that the same staff as those at the time of the secondary examination would continue to be in charge of support after the transition to treatment covered by universal health care, and that information would be provided through the introduction of consultation services and Q & A (website). She also responded that those who are still worried about radiation effects are first listened to carefully and then given information about radiation health effects by the support team, and in some cases, by the doctor in charge.



Dr. Setou



Dr. Thomas

Commenting on the discussion as a whole, Dr. Gerry Thomas said that although it is scientifically agreed that radiation has not caused an increase in thyroid cancer in Fukushima, there is no problem in conducting thyroid examinations if the local people can be reassured by continuing thyroid monitoring. The policy should be decided by local experts who work together with local residents and know what they want.

Dr. Katanoda, the co-chair of the discussion, stated that there are various issues related to thyroid examinations and that it is necessary to discuss how to implement the examinations, including how to communicate advantages and disadvantages. As there are people who feel anxiety even with low-dose radiation. Therefore, it is necessary to respond with scientific accuracy about effects of low dose radiation by using individual-level dose exposures and cancer registry data.

Finally, Dr. Yokoya, who chaired the session, gave the following summary of the discussion and closed this session.

In this symposium, various scientific findings on thyroid examinations obtained through 10 years of the health survey were widely shared both domestically and internationally. On the other hand, the entire discussion highlighted various issues that need to be recognized and further researched by experts, in order to reach more reliable conclusions, as well as the importance of promoting communication with Fukushima residents, based on local conditions, in order to share scientific findings. The ideal way to conduct thyroid examinations will be discussed by the Prefectural Oversight Committee for the Fukushima Health Management Survey, but Fukushima Medical University, the institution that conducts the examinations, must continue to make contributions for the benefit of the people of Fukushima Prefecture.

Part I Fukushima Health Management Survey at Present

Session 3

Pregnancy and Birth Survey and parenting support

Chair



YASUMURA Seiji
(FMU)

- 3-1 Keynote Lecture
A social capital perspective to health promotion
AIDA Jun (Tokyo Medical and Dental University)
- 3-2 Comprehensive Health Check as one of the detailed surveys of the Fukushima Health Management Survey
SAKAI Akira (FMU)
- 3-3 Mental health issues after Fukushima disaster: Current tasks for the future
MAEDA Masaharu (FMU)
- 3-4 Kawauchi Village's efforts to maintain its residents' physical and mental health after the earthquake
IGARI Keiko (Kawauchi Village Regional Comprehensive Support Center)
- 3-5 Rising to the challenge of creating a health & wellness town
FUJITA Yukihiro (Naraha Town Resident Welfare Division)
- 3-6 Current conditions and long-term challenges of evacuees to outside the prefecture
HARAGUCHI Yayoi (Ibaraki University)
- 3-7 Challenges in addressing the well-being of residents living in affected areas: some lessons and perspective
Thierry SCHNEIDER (CEPN: Nuclear Protection Evaluation Centre, France)

Discussion

Chair: OHIRA Tetsuya (FMU)
MAEDA Masaharu (FMU)

Discussants: Session 3 presenters, KATO Hiroshi from Session 4

3-1 *A social capital perspective to health promotion*



AIDA Jun, DDS, MPH, PhD

Professor, Department of Oral Health Promotion, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University

Professor, Division for Regional Community Development, Liaison Center for Innovative Dentistry, Graduate School of Dentistry, Tohoku University

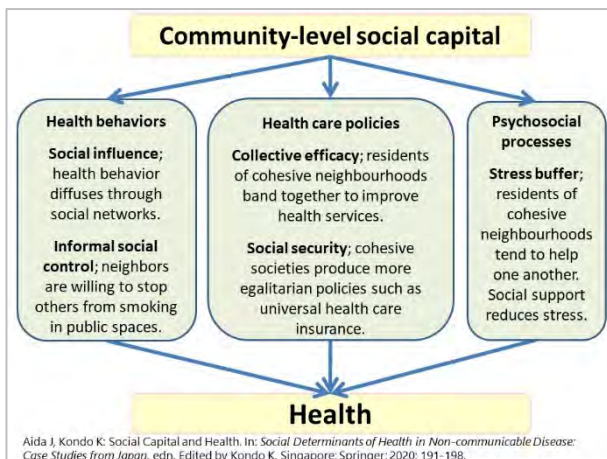
Due to the Great East Japan Earthquake, the Pacific coast of Tohoku, Hokkaido and Kanto regions suffered devastating damage from the tsunami. In addition to material factors such as seawalls, social capital—recognized in the health field as one of the social determinants of health—has been attracting attention as a factor to mitigate the damage from disasters. Social capital is a resource that comes from people's connections, and is thought to influence health through obtaining knowledge, information, and support from other people, e.g., being inspired to take actions such as exercising or quitting smoking because of the attention of others, and becoming a political force through cooperation among people (Slide 1). Aldrich (2012) mentioned social capital as one of the factors that affects the speed of recovery from disasters.

Social capital is thought to reduce damage from disasters and speed up recovery by influencing disaster drills and the establishment of community systems before a disaster, mutual aid by local residents immediately after a disaster, and post-disaster reconstruction by incorporating the opinions of various sectors and people, as well as the active participation of donors and volunteers. The Japan Gerontological Evaluation Study (JAGES) analysis of survey data from before and after the Great East Japan Earthquake in Iwanuma City, Miyagi Prefecture, shows that pre-disaster social capital abundance mitigates the impact of the disaster on mental

health and exerts a protective influence on post-disaster physical health (including arthritis and dental health) and cognitive functioning (Slides 2 and 3). Post-disaster connections have also been suggested to have a positive impact on health (Slide 4). Post-disaster exercise also exerted a protective influence on mental health. In addition, a large-scale study in Miyagi Prefecture showed that various activities by volunteers and the government in temporary housing for promoting interaction and social participation among people helped to protect health (Slide 5).

In addition, it is important to consider how to move people into temporary housing so as to maintain their pre-disaster ties (e.g., by taking into account the opinions of residents and placing people with close addresses in the neighborhood), and how to ensure that the management of evacuation centers and meetings on recovery are not dominated by men (Slide 6). With natural disasters occurring all over the world and major health hazards occurring every year, consideration of social capital is essential to mitigate consequent damage. Effective use of social capital is required for disaster prevention and mitigation.

Slide 1



Slide 2

Pre-disaster community ties cut post-traumatic stress disorder (PTSD) incidence by three quarters

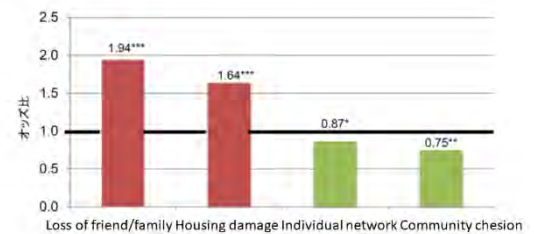
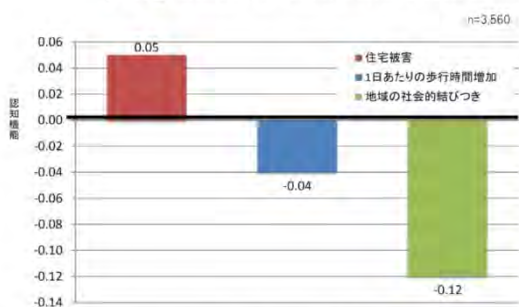


図1 震災被害および震災前の社会的結びつきと PTSD 発症リスクの関係

Hikichi H, Aida J, Tsuboya T, Kondo K, Kawachi I. Can Community Social Cohesion Prevent Posttraumatic Stress Disorder in the Aftermath of a Disaster? A Natural Experiment From the 2011 Tohoku Earthquake and Tsunami. *Am J Epidemiol* 2016;183(10):902-10.

Slide 3

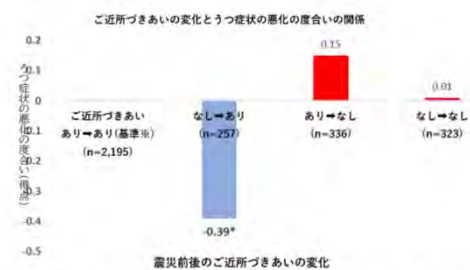
Community ties ease dementia progression after disasters



Hikichi H, Aida J, Matsuyama Y, Tsuboya T, Kondo K, Kawachi I: Community-level social capital and cognitive decline after a natural disaster: A natural experiment from the 2011 Great East Japan Earthquake and Tsunami. *Soc Sci Med* 2020; 257:111981.

Slide 4

Neighborhood relations after the earthquake suppressed the degree of worsening of depressive symptoms.

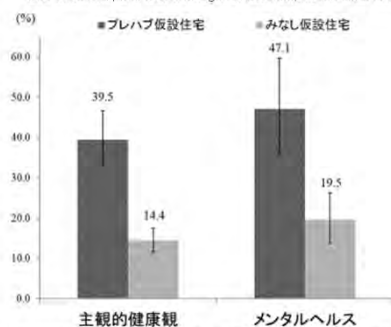


●「移動」、「性別」、「年齢」、「教育」、「社会参加」、「健康習慣」、「飲酒習慣」、「主観的健康状況」、「歩行習慣」の震災前後の変化、震災による「転居」および「身近な親族や友人との死別」の影響を調整しています。

Sasaki Y, Tsuji T, Koyama S, Tani Y, Saito T, Kondo K, Kawachi I, Aida J: Neighborhood Ties Reduced Depressive Symptoms in Older Disaster Survivors: Iwanuma Study, a Natural Experiment. *Int J Environ Res Public Health* 2020; 17(1).

Slide 5

Percentage of population contribution of social participation to health Prefabricated temporary housing provided many opportunities for social participation through events held by the government and volunteers, and this is thought to have helped maintain health.



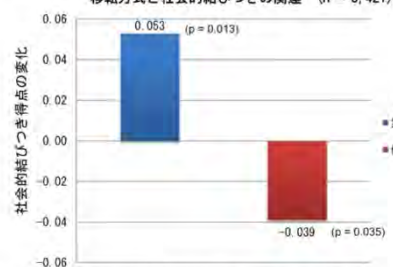
宮城県「応急仮設住宅等（プレハブ・民間賃貸住宅）入居者健康調査」より

Kusama T, Aida J, Sugiyama K, Matsuyama Y, Koyama S, Sato Y, Yamamoto T, Igarashi A, Tsuboya T, Osaka K: Does the Type of Temporary Housing Make a Difference in Social Participation and Health for Evacuees of the Great East Japan Earthquake and Tsunami? A Cross-Sectional Study. *J Epidemiol* 2019; 29(10):391-398.

Slide 6

Relocation method and human connections
Group relocation maintains connections

移転方式と社会的結びつきの関係 (n = 3,421)



※ 移転方式と震災前後の社会的結びつきの関係を示している。

※ 集団移転は社会的結びつきを 0.053 ポイント高めるのに対し、個別移転は 0.039 ポイント低下させることが示された。

Hikichi H, Sawada Y, Tsuboya T, et al. Residential relocation and change in social capital: A natural experiment from the 2011 Great East Japan Earthquake and Tsunami. *Sci Adv* 2017; 3(7):e1700426.

3-2 *Comprehensive Health Check as one of the detailed surveys of the Fukushima Health Management Survey*



SAKAI Akira, MD, PhD

Professor and Chair, Department of Radiation Life Sciences, Fukushima Medical University School of Medicine
Director, Office of the Comprehensive Health Check and Health Promotion, FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Fukushima Prefecture has been conducting the Comprehensive Health Check (CHC) since 2011 for residents of the 13 municipalities designated as the evacuation zone after the Great East Japan Earthquake and the Fukushima Daiichi Nuclear Power Plant accident. Their lifestyles, including dietary habits and exercise habits, have changed substantially (Slides 1 and 2). This report presents results of the CHC conducted from FY2011 to FY2018, during which participation has been declining, with the rate in FY2018 around 20%. Among participants, the number of those aged 65 and above has been increasing.

As a result of comparing health check data from before and after the earthquake, we observed an increase in obesity, hypertension, diabetes, and dyslipidemia (low HDL cholesterol) in the years 2011 to 2012 (after), compared with 2008 to 2010 (before, Slide 3). Moreover, comparisons of diabetes and dyslipidemia data one to two years after the disaster (FY2011-FY2012) with data three to four years after the disaster (FY2013-FY2014) showed a further increase, so follow-up is necessary.

Additionally, it was found that evacuation was a risk factor for obesity, hypertension, diabetes, low HDL cholesterolemia, metabolic syndrome (MetS), renal dysfunction, liver dysfunction (hepatobiliary enzyme abnormalities: HEA) and polycythemia (Slide 4). The lifestyle of evacuees correlates with the onset of polycythemia even at 4 years after the earthquake, regardless of being

overweight/obese, smoking tobacco, or having hypertension. On the other hand, evacuation was not a direct risk factor for atrial fibrillation. Liver dysfunction (HEA) showed a decreasing trend 3 to 4 years after the earthquake, and was found to improve with daily exercise and regular breakfast (Slide 5). In addition, while white blood cell counts, especially the lymphocyte count, is of great concern as an effect of radiation, no problematic trends have been observed in either total or differential white blood cell counts, even among residents from the evacuation zone. We are currently analyzing this data in detail.

Subsequently, we conducted an analysis linking the results of the Mental Health and Lifestyle Survey to the development of HEA, and found that the development of HEA was not significantly related to mental health assessments from the K6 (Kessler-6 Questionnaire) or PCL (PTSD Check List), and that age, sex, and post-disaster lifestyle factors such as drinking and exercise were related to HEA.

We compared data from municipalities covered by the CHC with those from other municipalities (Aizu Area) to see if these trends were changes specific to residents from the evacuation zone. Results show that the number of obese people did not decrease in the evacuation zone, and there was an increase in the number of those with diabetic propensity. On the other hand, the percentage of those with liver dysfunction decreased, and blood pressure and lipid levels improved as the number of people receiving treatment increased.

Approaching 10 years since the Great East Japan Earthquake, it is anticipated that lifestyle-related diseases may increase among residents of evacuation-designated areas. Therefore, it is necessary to continue the CHC in efforts to promote our residents' health (Slide 6).

Slide 1

Persons eligible for the Health Check

- Those who had resident registration in **designated areas*** between 11 March 2011 and 1 April 2012
(These residents remain eligible for the Health Check after moving from relevant municipalities.)
- Those who have resident registration in the government-designated evacuation zones as of 1 April of the year in which the Health Check is conducted.
- Those who were deemed to require the Health Check based on the Basic Survey results

*Designated areas: municipalities that were designated as evacuation zones in 2011

Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village, Iitate Village, Minamisoma City, Tamura City, Kawamata Town, and part of Date City (area containing specific evacuation-recommended spots)



Slide 2

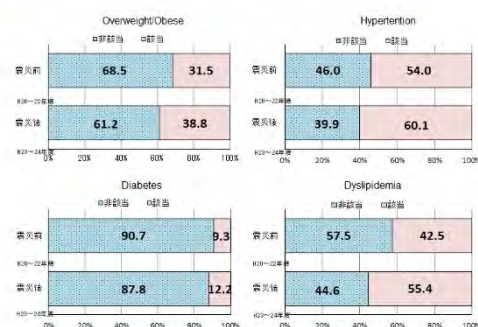
Examination Items

Age group (years)	Examination items
0-6 (Infant before entering school)	Height, weight, [Additional items on request] CBC (Number of red blood cells, hematocrit, hemoglobin, platelet count, number of white blood cells, differential white blood count.)
7-15 (From 1st to 9th grade)	Height, weight, blood pressure, CBC (Number of red blood cells, hematocrit, hemoglobin, platelet count, number of white blood cells, differential white blood count.) [Additional items on request] Blood biochemistry (AST, ALT, γ-GT, TG, HDL-C, LDL-C, HbA1c, plasma glucose, serum creatinine, uric acid)
16 and older	Height, weight, abdominal circumference or BMI, blood pressure CBC (Number of red blood cells, hematocrit, hemoglobin, platelet count, number of white blood cells, differential white blood count.) Urinary test (urine protein, urinary sugar, urine occult blood) Blood biochemistry (AST, ALT, γ-GT, TG, HDL-C, LDL-C, HbA1c, plasma glucose, serum creatinine, estimated glomerular filtration rate [eGFR], uric acid) * The underlined values are not routinely measured during regular health exams.



Slide 3

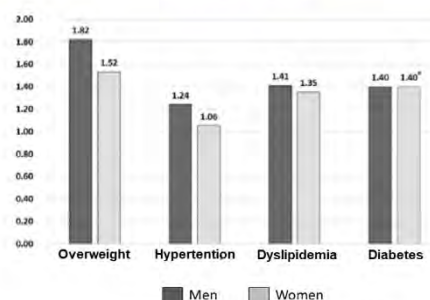
Trends in lifestyle-related diseases before and after the Great East Japan Earthquake: the Fukushima Health Management Survey



Ohira T. Journal of National Public Health 2018

Slide 4

Effects of evacuation on obesity, hypertension, dyslipidemia, and diabetes (Hazard Ratios (HR))



* HR was calculated using combined data of men and women for diabetes



Ohira T. Asia Pacific J Public Health 2017

Slide 5

HEA improved with daily exercise and daily breakfast intake

Association between improved HEA and changes in lifestyle factors among 18,070 participants through 2011-2012 to 2013-2014

	Non-drinkers		Light drinkers		Moderate/Heavy drinkers		All
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)
Daily physical activity (improved)	1.14 (1.11-1.18)	0.004	1.23 (1.02-1.50)	0.033	1.28 (1.00-1.63)	0.046	1.30 (1.15-1.48)
Sleeping (improved)	0.99 (0.75-1.29)	0.924	1.00 (0.80-1.24)	0.967	0.99 (0.76-1.30)	0.970	0.99 (0.86-1.15)
Diet before bed time (improved)	0.96 (0.69-1.34)	0.812	0.94 (0.74-1.20)	0.615	1.13 (0.88-1.46)	0.347	1.00 (0.86-1.17)
Snack after dinner (improved)	0.83 (0.56-1.23)	0.348	1.04 (0.77-1.39)	0.814	0.83 (0.53-1.31)	0.428	0.92 (0.75-1.14)
Breakfast skipping (improved)	1.37 (0.80-2.32)	0.249	1.53 (1.04-2.25)	0.032	1.38 (0.85-2.25)	0.187	1.43 (1.10-1.86)
Eating speed (improved)	0.94 (0.66-1.32)	0.709	0.90 (0.68-1.18)	0.445	1.17 (0.87-1.58)	0.311	0.99 (0.83-1.17)

Odds ratio: The odds are the value of p(1-p), where p is the probability that a certain event will occur, and the odds ratio is the comparison between the two groups.



Takahashi A. Sci Rep. 7: 710, 2017

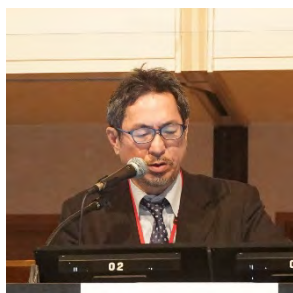
Slide 6

Summary

- Disease in which evacuation after the GEJE is considered to be a risk factor
 - Obesity
 - Hypertension
 - Diabetes
 - Dyslipidemia (Hypo-HDL cholesterolemia)
 - Chronic kidney disease
 - Liver dysfunction
 - Metabolic syndrome
 - Polycythemia
- Disease that increased after the GEJE
 - Atrial fibrillation
- Disease that increased after the GEJE and improved after 2013
 - Hepatobiliary enzyme abnormalities (Liver dysfunction) :
 - Daily exercise and breakfast intake are important



3-3 *Mental health issues after Fukushima disaster: Current tasks for the future*



MAEDA Masaharu, MD, PhD

Professor and Chair, Department of Disaster Psychiatry,
Fukushima Medical University School of Medicine
Director of the Department of Health Survey Personal
Support and Director of the Office of Mental Health and
Lifestyle Survey and Care, FMU Radiation Medical Science
Center for the Fukushima Health Management Survey

While Fukushima's reconstruction, including decontamination, has been progressing gradually and many evacuated municipal governments have finally returned to their original communities, there are still more than 30,000 people evacuated inside and outside of Fukushima. Such a massive and prolonged evacuation has resulted in various types of physical and/or psychological problems such as life-related issues and depression among the affected people.

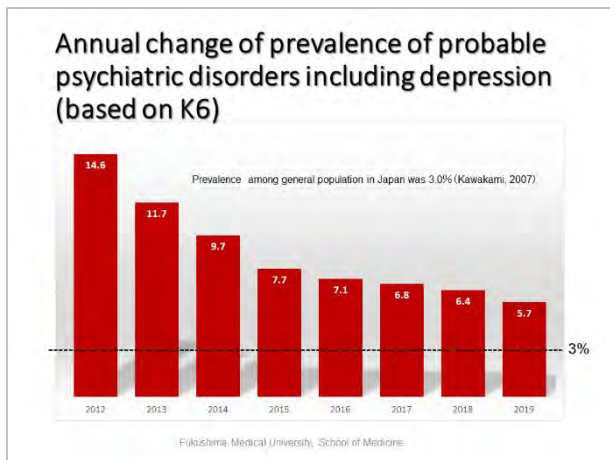
Fukushima Medical University has been conducting a longitudinal "Mental Health and Lifestyle Survey (MHLS)" for approximately 210,000 evacuees every year since 2012. This mail-based survey has two purposes: one is to monitor and identify different non-radiological health effects, including mental health problems; another is to provide telephone-based care for those who might have some health problems, based on MHLS results. These results show that many different outcomes, including depressive symptoms, behavioral problems among children, and risk perception towards radiation, remain almost unchanged in recent years, despite steep improvement during the first 4-5 years after the accident. For example, whereas the prevalence rates of the adult respondents at risk of depression decreased yearly during first 4-5 years after the accident, such a steep decrease was not found during recent years (Slide 1). In

addition, people staying outside Fukushima were more likely to be at risk of depression compared to those staying inside Fukushima (Slide 2). The MHLS data regarding behavioral and emotional problems among children also indicated a trend similar to that of adults, suggesting significant difficulties adapting to new school lives among children evacuated outside Fukushima (Slides 3 and 4).

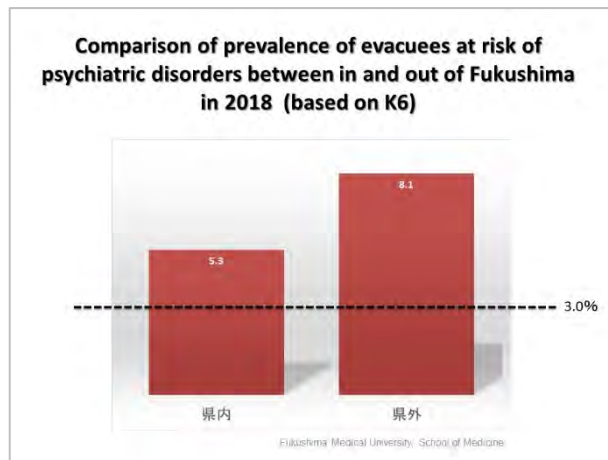
The MHLS asks questions about risk perception toward radiation exposure. Similar to the trends of mental health outcomes as described above, the proportions of respondents having worries about radiation effects remained large (nearly 40%) and unchanged during recent years (Slide 5). As anxiety about radiation effects, especially for genetic effects, can lead to discrimination and prejudice concerning pregnancy and birth and self-stigmatization, careful attention is needed.

Considering that over 110 suicide cases were officially certified as "disaster-related suicide," we should provide effective psychosocial intervention for evacuees at risk of life-related problems such as alcohol abuse as well as depression. Active telephone interventions (Slide 6), therefore, have been conducted for those identified at risk based on the results of MHLS, demonstrating significant usefulness for many evacuees. Further efforts to maintain and develop a mental health care system meeting the needs of affected people and communities should be required in the future.

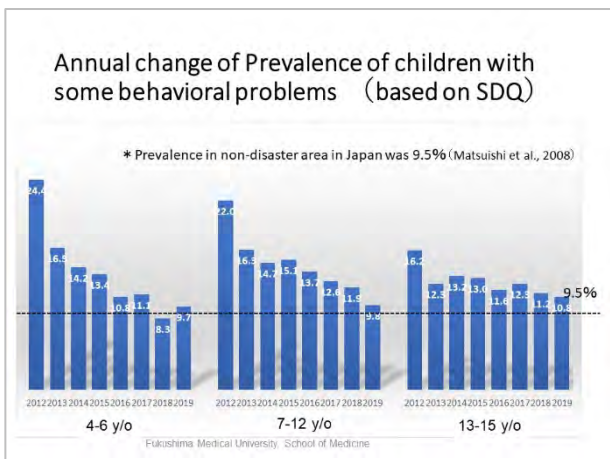
Slide 1



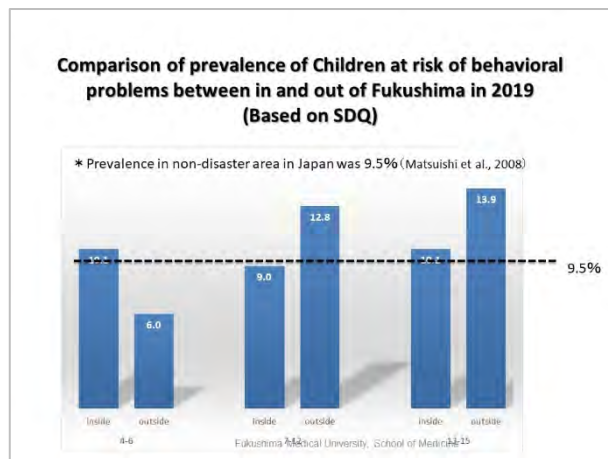
Slide 2



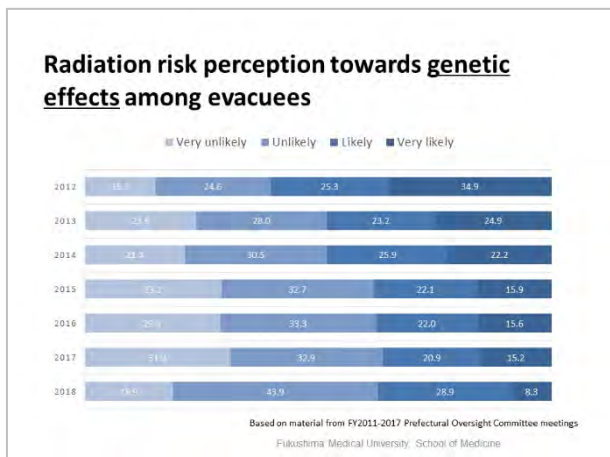
Slide 3



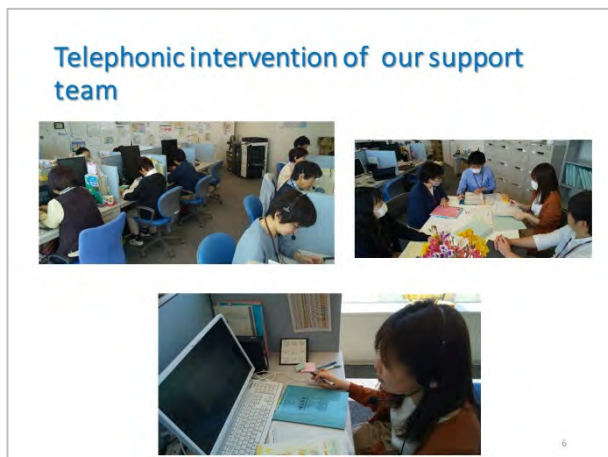
Slide 4



Slide 5



Slide 6



3-4 Efforts by Kawauchi Village to maintain its residents' physical and mental health after the earthquake



IGARI Keiko

Director, Kawauchi Village Community Comprehensive Care Center, Kawauchi Village Social Welfare Council

Due to the Fukushima Daiichi Nuclear Power Plant accident of March 2011, the entire village of Kawauchi was evacuated to Koriyama City, 60 km away, on March 16 (Slide 1).

As we had to start our lives in a totally new environment, we experienced many things that we would not have had to experience without the disaster, such as uncertainty, loss of purpose in life, decreased physical activity, and lifestyle-related diseases due to changes in living environment, strained family relationships, and stress.

One year after the evacuation, administrative functions were returned to the village, and the number of former residents returning to the village gradually increased. The period of time between evacuating and returning, as well as individual circumstances and feelings, are different from resident to resident, but little by little, people are beginning to regain their “normal lives.”

Public health activities at the evacuation centers were full of problems such as a cramped environment with no privacy, meals dominated by refined carbohydrates such as rice balls and pastries, uncertainty about the future, and loss of purpose in life. (Slides 2 and 3).

From the beginning of “Golden Week” (an extended holiday in Japan from late April to early May), the base of our activities was moved to the village temporary office, where we assessed the health status of temporary housing residents and provided psychological care.

After all administrative functions were returned to the village, we conducted health support pertaining to radiation projects at two

locations, one in the village and the other in Koriyama City, where many residents had evacuated, including, preventive care for older people in each district, reconstruction of district organizations, and coordination of services with other municipalities to which people had evacuated.

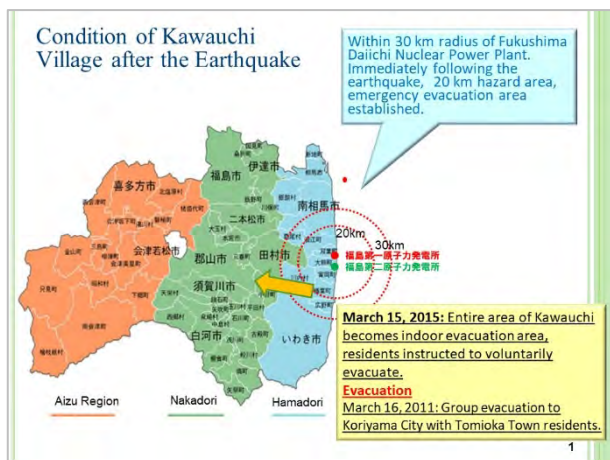
After returning to the village, activities were reviewed every fiscal year, taking into account the health status of residents. When a Fukushima nuclear disaster evacuation drill was held in Kawauchi Village, a flashback response manual was prepared and shared with the staff (Slide 4).

In FY2017, 80% of our residents came back to live in the village, but we are still struggling to cope with worsening lifestyle-related diseases, tenuous family relationships, and mental health issues (Slide 5).

I am grateful to family, friends, residents, and many supporters for the cooperation and understanding that has allowed me to continue these activities.

Through past activities, I felt the happiness of being able to resume a normal life, and found that if my heart is moved, my body will be energized. I would like to work together with residents one step at a time to create a spiritually rich village where people of all ages can have a role to play, a place to stay, and a purpose in life while maintaining ties with their families and communities (Slide 6).

Slide 1



Slide 2



Slide 3

1 Health Care at Evacuation Centers... Providing safety and security to evacuees

ISSUES FOR EVACUEES

- Poor Environment**
Close living quarters
Lack of privacy
- Food Issues**
Sugar-rich diet
Illness and age not taken into consideration
- Nursing Care Issues**
Nursing care services interrupted
Lack of assistive products
Decline of mental and physical functions
- Medical Treatment Issues**
Interrupted treatment/
Worsening symptoms
- Mental Issues**
Anxiety about the future
Loss of purpose in life

- Medical Support/Examination Support/Health Survey**
- Medical Consultation/Health Observation/Nursing Care
- Daily Life Care for those requiring nursing care/Coordination with service providers, etc.
- Health Education (infections/Economy Class Syndrome/Disuse Syndrome Prevention)
- Support/Coordination with Institutions
- Environmental Improvements
- Confirming residence and making contact, checking status of evacuees at other shelters

3

Slide 4

Post-Return Health Care FY2014 -Toward Independence-

Re-opening of traditional health services

Local support/protection services

Mental health care services

Different feelings came and went. It is refreshing to laugh again.

Preventative health care services

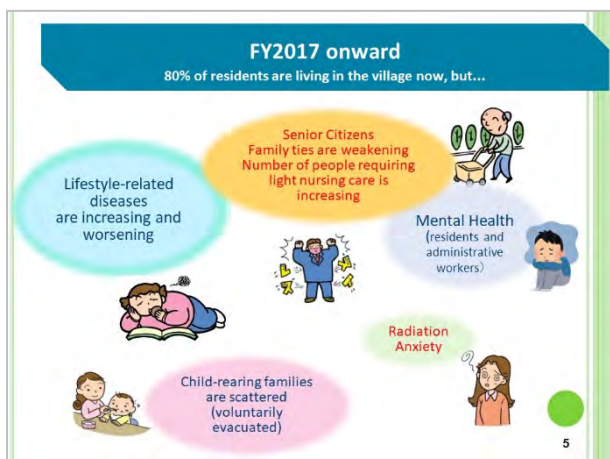
I want to do something but I don't have time/any idea how to do it. I want a chance to start!

Lifestyle-related disease prevention services

Radiation-related services

4

Slide 5



Slide 6

What I felt through experiencing the earthquake

- The joy of being able to lead a normal life
- The importance of relationships
- Advantages/disadvantages of disaster victims providing disaster victim support
- What is support? The experience of support from various angles
- Experiencing the energy you get from people who understand you, and give you a will to continue

6

3-5 *Rising to the challenge of creating a health & wellness town*



FUJITA Yukihiro

Senior Public Health Nurse, Section of Health and Hygiene,
Division of Resident Welfare, Naraha Town

My participation in this symposium was interrupted by a late-night request to respond to the February 13 earthquake, for which I returned to Naraha Town from Fukushima City to set up an evacuation center, and subsequently participated online.

Naraha Town is located in the middle of coastal Hamadori, Fukushima Prefecture, and 80% of the area of the town is within 20 km of the Fukushima Daiichi Nuclear Power Plant (Slide 1). Since the evacuation order was lifted in September 2015, residents have been gradually returning. Recently, the number of returned residents has exceeded 4,000 (60% of the total registered population).

Our group carried out many healthcare services, for example, maternal and children's health, infection control measures, dental health, general health promotion, and so on. These continued ad hoc during the disaster-related evacuation of our municipal government, after which we had to re-establish them as normal public services (Slide 2).


Reducing medical costs and extending healthy life expectancy have become serious tasks everywhere; our town is no exception. Some reports suggest a correlation between healthy life expectancy and medical expenses per person. Among all municipalities in Fukushima, our town ranks high in terms of medical expenses per person. To improve on this situation and create a "health & wellness town," we are trying various initiatives. One of the main initiatives is the "Let's attend health checks with a healthy body" project, to promote voluntary participation in regular

health checks and healthy living in-between (Slides 3 and 4). At the health check venues, not only health checks, but also physical fitness measurements, tooth brushing guidance, and health consultation services are provided to raise residents' awareness of voluntary health promotion under the slogans "Everyone plays a leading role" and "Be a guardian of your own health" (Slide 5).

However, the town is facing problems such as a declining population, an increase in lifestyle-related diseases, difficulties broadening participation in health promotion events, and a shortage of human resources in the town office. In spite of this situation, efforts to raise awareness toward "Health promotion, starting with the health check program," have begun to show results, and the number of participants in health checks has been on the rise in recent years (Slide 6). I would like to continue to promote the creation of a community where everyone plays a leading role, where each person is engaged in self-care, and where everyone can enjoy an emotionally enriched life by communicating with each other as health evangelists.

Slide 1

About Naraha Town ①



- Located in the central part of Fukushima's Hamadori Region.
- Fukushima Daini NPP is located in the north of town, and 80% of the town is included within 20km from the Fukushima Daiichi NPP.

✓ Population : 6,764 Households : 3,001
 ✓ Living in town : 4,031 (59.6%)

Slide 2

Initiatives to rebuild healthcare services①



- ✓ Support for "Keeping Relationships" and "Voluntary Actions"
- ✓ Scheme to shift to sustainable projects

Slide 3

Creating a health & wellness town①



- ✓ Health support program before health checkup
- ✓ Concept : Go to get a health checkup with a "wonderful body" !

Slide 4

Creating a health & wellness town②



- ✓ Turn a health checkup into an event for health promotion for the whole body!
- ✓ Conducted oral checkup, physical fitness test and general counselling.

Slide 5

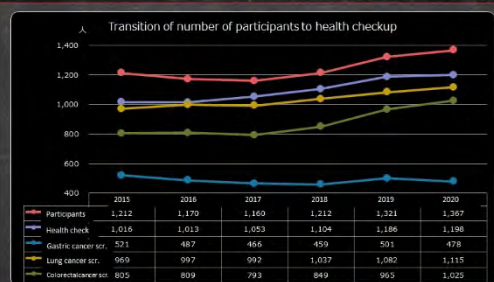
Creating a health & wellness town③



- ✓ Listen to residents' voice and think together.
- ✓ Everyone is the lead, not just somebody else!

Slide 6

To create a health & wellness town①



	2015	2016	2017	2018	2019	2020
Participants	1,212	1,170	1,160	1,212	1,321	1,367
Health check	1,016	1,013	1,053	1,104	1,186	1,198
Gastric cancer scr.	521	487	466	459	501	478
Lung cancer scr.	969	997	992	1,037	1,082	1,115
Colorectal cancer scr.	805	809	793	849	965	1,025

- ✓ Health consciousness starts with a "checkup"

3-6 *Current conditions and long-term challenges of evacuees outside the prefecture*



HARAGUCHI Yayoi, PhD

Professor, College of Humanities and Social Sciences, Ibaraki University

Focusing on wide-area evacuation (out-of-prefecture evacuation), which characterizes the Great East Japan Earthquake and Fukushima Daiichi Nuclear Power Plant accident, we—with the help of local support groups—conducted four questionnaire surveys of evacuees in Ibaraki Prefecture and analyzed the results (Slide 1). Many scholars have already reported that the current conditions of evacuees vary according to one's original place of residence and the region to which one has moved, in addition to individual and household conditions. Some of the issues are common to evacuees living in Fukushima Prefecture, while others are unique to evacuees outside the prefecture.

The number of evacuees in Ibaraki Prefecture has been hovering around 3,000, of whom 70–80% have not changed their residency registration from Fukushima to Ibaraki. Despite this, a 2018 questionnaire survey of wide-area evacuees found that more than 60% of respondents answered that they “plan to settle in Ibaraki Prefecture” or “have decided to settle in Ibaraki Prefecture and have secured a residence,” indicating that the foundation of their lives is actually being established in Ibaraki Prefecture. On the other hand, 23.8% of the respondents answered that they have not yet decided, which suggests that there are differences within the families about who might want to return to Fukushima (Slide 2).

The issues caused by prolonged evacuation outside the prefecture are diverse at the individual level, such as socioeconomic status, prolonged mental health issues, or inability to adapt to a new environment. The situation does not necessarily improve with progress reestablishing one's livelihood. In 2014, the most

common housing problem or concern was “housing is too small,” and since 2016, as restoration of livelihoods has progressed, “human relations with neighbors” has become more common (Slide 3). While many issues are common between evacuees living in Fukushima and those who evacuated outside the prefecture, the latter are characterized by conflicting feelings about returning home, anxiety about how to build relationships in the local community after securing housing, and a sense of alienation due to inadequate support (Slide 4).

From the perspective of supporting evacuees, it is extremely important to go beyond “rebuilding their daily lives,” such as securing housing and employment, and to support “living their lives.” Currently, the Fukushima Prefecture Evacuees Support Division provides support, and the Fukushima Prefectural Board of Education dispatches teachers to watch over children (Slide 5). However, we must not forget the perspective of how and who should support evacuees in the most difficult—but hard to identify—situations, such as young people who have withdrawn from society and those who are suffering from repeated anxieties.

With the passage of 10 years since the disaster, issues such as socioeconomic status, employment, uncertainty about returning home, and mental health have continued to arise, and even though some cases are extremely difficult to solve, it is also difficult for supporters to conduct outreach activities to evacuees outside the prefecture. In addition, nuclear disasters are characterized by long-term, wide-area, and decentralized evacuation. Therefore, various types of support are needed, but it is difficult to grasp the actual situation due to the dispersed evacuation, and it is also difficult to provide appropriate support due to a vertically segmented administrative system, with different divisions conducting support projects in an uncoordinated manner. In order to organically link support services, it is important to embrace the prospect of a “wide-area evacuation support network.” We propose that if evacuees can connect with support organizations close to their homes, it will be possible to organically develop and jointly provide complementary support projects based on information collected through—and shared throughout—such a network (Slide 6).

Slide 1

Research Methodology

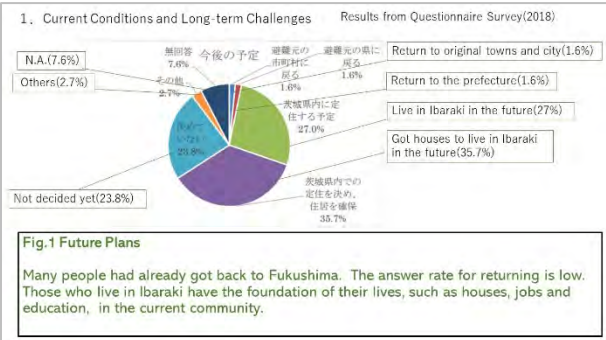
○Action Research

- Involved with Support Organization based in Ibaraki, outside of Fukushima, which is one of Support Bases for Rebuilding Life outside of Prefecture, set up by the Fukushima Pref.
- Informants: Evacuees/ Support Organization Staff/ Fukushima Reconstruction Support Staff/ Fukushima Pref. Officers/ Others...

○Questionnaire Survey

- for the Wide-area Evacuees living in Ibaraki Prefecture,
- Conducted in 2012, 2014, 2016 and 2018.
- The Fourth Questionnaire Survey(Oct.~Nov., 2018)
- Collection Rate : 14.9% (Sending #1243, Collection# 185)

Slide 2



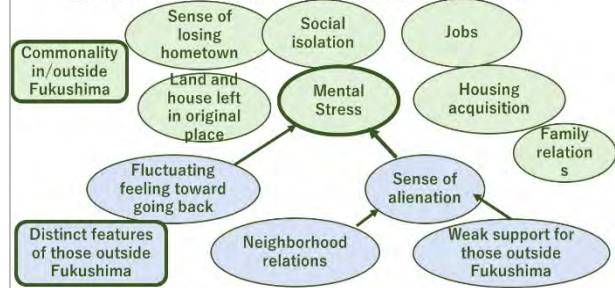
Slide 3

Fig 1 Problems on Housing:
People are bothered by Neighborhoods Relations after getting houses.



Slide 4

3. Commonality and Differences between evacuees in and outside of Fukushima



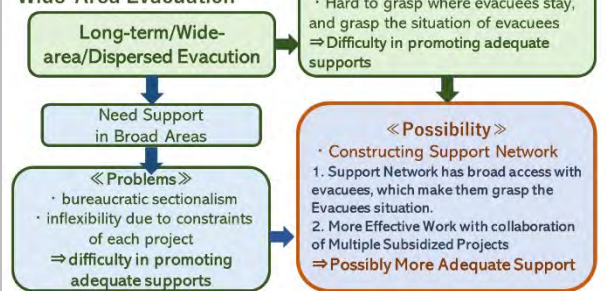
Slide 5

Support System in Kanto and Tohoku Areas with Subsidized Projects



Slide 6

Support Network for Wide-Area Evacuation



3-7 *Challenges in addressing the well-being of residents living in affected areas: some lessons and perspective*



Thierry SCHNEIDER, PhD

Director of CEPN (Nuclear Protection Evaluation Centre, France)

Chair of the Committee on Radiological Protection and Public Health (CRPPH – NEA/OECD)

Member of Committee 4 of the International Commission on Radiological Protection (ICRP)

President of NERIS (European Platform on Preparedness for Nuclear Response and Recovery)

Chernobyl and Fukushima accidents clearly emphasized the long-term disturbances of the daily life of residents living in affected areas. People are confronted with an altered context affecting all the facets of private and community life (Slide 1). Beyond the implementation of protective actions aiming at protecting people and the environment from radiation, there is a need to better address the well-being of the residents (Slide 2). Experience has shown that opening dialogue with residents and promoting participatory processes are crucial for improving their daily life. The emergence of a co-expertise process between residents and experts contributes to overcoming the difficulties encountered by residents. In this perspective, there is a key role for health professionals and local mediators as well as educational staff. Furthermore, for the success of the recovery process, engaging socio-economic resilience in the affected territories is essential to ensure a sustainable future for the local communities. Their well-being is clearly linked with the capacity of the community to build a vision for the future of the territory. In this context, respecting ethical values is fundamental to ensure that this socio-economic development contributes to the well-being and the protection of residents (Slides 3 and 4).

Several challenges have been identified for improving the organization and development of

health surveillance in post-accident situations. The first one is to consider it as part of a broader public health program aiming at improving well-being. It is also important to create links between the different facets of the program. In this perspective, a key challenge is to address health concerns and expectations of people affected by the accident. Engaging local stakeholders in a health surveillance program is essential for its sustainability and efficiency and relies on the development with the stakeholders of a joint assessment of their well-being (Slides 4 and 5).

The challenges also rely on promoting the development and dissemination of the radiological protection culture among local communities. To foster the dialogue and the link with affected people and local communities, it is useful to support the development of sustainable networks of experts/local facilitators/population with the promotion of spaces for dialogue. Another component concerns the development of education and training programs for experts and citizens to better address well-being issues (Slide 6).

In conclusion, it should be emphasized that the promotion of well-being is strongly linked with the rehabilitation of decent and sustainable living conditions. Health issues have to be considered in a broader perspective of public health relying on a 'long term vision of the territory' co-negotiated between all the actors concerned and addressing the various facets of life in the affected territories, preparing a sustainable future. For preparedness, the key challenge is to foster the resilience of individuals and their local community. This preparedness should rely on the adoption of an all-hazards approach where well-being is the primary objective and on the application of the United Nations Sendai Framework for Disaster Risk Reduction (2015, Sendai, Japan), aiming at improving resilience.

Slide 1

Long-term disturbances (1)

- People are lost, they no longer trust the authorities and experts, they gradually loose control of their daily life
- The return to the ante situation is not possible
- The socio-economic dynamic is confronted to an altered context with new constraints (demography, image, environment...)

From Y. Kuroda (SHAMISEN project)

Slide 2

Key lessons for addressing well-being (1)

Ethical considerations

- Main objective: restoring decent living and working conditions for affected populations (resilience and sustainable development)
- Beneficence/Non-Maleficence:
 - Provide good level of protection: *How to (and Who) assess the level of well-being?*
- Prudence: Organise the vigilance on the long-term consequences of the accident (including co-expertise processes)
- Justice: Consider vulnerable populations and ensure equitable distribution of means and resources (notably key issues on compensation)

Slide 3

Key lessons for addressing well-being (2)

Ethical considerations (cont.)

- Respect dignity and autonomy of citizens
 - Support citizen initiatives (co-expertise processes, self-help protective actions, local projects...)
 - Respect individual decisions
- Establish appropriate mechanisms to ensure legitimacy, transparency and fairness of the decision-making process and ensure stakeholder participation
- Recovering trust is a key challenge for the authorities and the experts in post-accident situation: transparency, honesty, empathy are crucial in this perspective

Slide 4

Key lessons for addressing well-being (3)

Considerations on the sustainability of the surveillance in the long term

- Most actions related to health surveillance need to be inscribed in time:
 - To build trust with population (and avoid feeling of abandonment)
 - To give scientific robustness & provide efficient results (e.g. epidemiology studies, health surveys)
- Importance to develop a new framework to cope with long term issues, in order to maintain vigilance
- Favour joint assessment with local populations

Slide 5

Some challenges for improving health surveillance (1)

- Health surveillance and monitoring to be considered as part of a broader public health programme aiming at improving well-being
 - Different specialists to be involved
 - But importance to create link between the different facets of the programme
- Key challenge to address health concern and expectations of people affected by the accident
- Engaging local stakeholders in health surveillance programme and developing a joint-assessment of the well-being while respecting their autonomy

Slide 6

Some challenges for improving health surveillance (2)

- Promoting the development and dissemination of the radiological protection culture
- Supporting the development of sustainable networks of experts / local facilitators / population with the promotion of spaces for dialogue
- Developing education and training programmes for experts and citizens to address well-being issues

Session 3

Physical and mental health care for evacuees and their recovery

Proceedings of discussion



Chairs: OHIRA Tetsuya (FMU)
MAEDA Masaharu (FMU)

Discussants: AIDA Jun (Tokyo Medical and Dental University)*
SAKAI Akira (FMU)
IGARI Keiko (Kawauchi Village Regional Comprehensive Support Center)
FUJITA Yukihiro (Naraha Town Resident Welfare Division)*
HARAGUCHI Yayoi (Ibaraki University)*
Thierry SCHNEIDER (CEPN: Nuclear Protection Evaluation Centre, France)*
KATO Hiroshi (Hyogo Institute for Traumatic Stress)*
* Remote participants

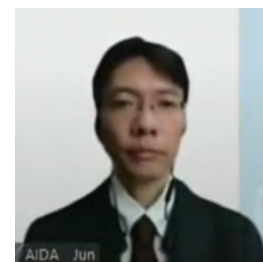


Dr. Maeda

Dr. Ohira

The subtheme of this international symposium was “What needs to be done to enhance the resilience of Fukushima’s people?” Maintaining and promoting the physical and mental health of the people of Fukushima Prefecture is an important issue not only for the Fukushima Health Management Survey (FHMS), but also for the reconstruction and revitalization of the entire prefecture. This session, chaired by Dr. Yasumura Seiji (FMU) and entitled “Physical and mental health care for evacuees and their recovery,” covered reports over the past 10 years, as well as presentations by municipal public health nurses actually involved in the health promotion of residents, Japanese researchers from outside Fukushima Prefecture, and experts from overseas, who discussed the current situation and prospects for maintaining and promoting the health of people in Fukushima Prefecture.

As a keynote speaker, Dr. Aida Jun (Tokyo Medical and Dental University) introduced the results of his research based on a project in Iwanuma City, Miyagi Prefecture. He pointed out that health promotion efforts utilizing “social capital,” in which connections among residents affect the maintenance and recovery of health, can also contribute to disaster recovery and disaster prevention/mitigation. Next, Dr. Sakai Akira and Dr. Maeda Masaharu (both FMU) reported on the outline, significance, and findings of the Fukushima Health Management Survey’s Comprehensive Health Check (CHC) and Mental Health and Lifestyle Survey (MHLS) over the past decade. Next, Ms. Igari Keiko (Kawauchi Village Regional Comprehensive Support Center) and Mr. Fujita Yukihiro (Naraha Town Resident Welfare Division) presented the results and challenges they have faced as community health nurses in their support activities for evacuees and returning residents. Dr. Haraguchi Yayoi (Ibaraki University) presented the current situation of support for evacuees who are living outside Fukushima Prefecture. She pointed out that outreach to these evacuees, and problem solving, became more difficult as years have passed, and proposed that wide-area evacuees should be supported by a network of providers. Dr. Thierry Schneider (CEPN, French Nuclear Protection Evaluation Centre), who participated remotely from France, introduced lessons learned and challenges faced through various activities in Fukushima, stating that it is important for all parties involved to jointly develop a long-term vision for the disaster-affected area in order to ensure the well-being of affected people.



Dr. Aida

In the discussion that followed, there was a lively debate on care for the physical and mental health of residents affected by the earthquake and nuclear power plant accident, mainly through questions and answers from the audience. Dr. Kato Hiroshi of the Hyogo Institute for Traumatic Stress, who spoke on psychological recovery and community reconstruction in the session that followed, also participated in the discussion and provided important comments. Many questions from the audience were related to results of the CHC, the effects of radiation, concerns and requests for political and administrative responses and initiatives, and issues related to the return of residents, indicating that administrative and community support is required for recovery from the nuclear disaster.



Dr. Sakai

There was a question on how the analysis results from the CHC and MHLS are fed back to the health check participants. Dr. Sakai explained that municipalities hold health check results-reporting meetings for their residents, where materials outlining overall trends among the residents are distributed. Dr. Maeda explained that both individual and overall results are sent to those who submitted the MHLS questionnaire, and that they also respond to questions by phone.



Mr. Fujita

Regarding the current status and issues of health promotion in the areas where residents are returning to their homes, Mr. Fujita said that one of the reasons why the per capita medical costs in Naraha Town remained high until recently was probably that residents could not see their family doctor in the evacuation area, and, therefore, had to visit multiple clinics and hospitals for each health issue. This suggests that family doctors play an important role in the recovery of affected areas. In response to a question about the effectiveness of expert support provided to local governments, Ms. Igari cited the example of collaboration between Nagasaki University and Kawauchi Village and expressed her impression that the presence of experts in the vicinity gave residents peace of mind upon returning to their village.

Toward the revitalization of affected communities, “self-help” has been emphasized by some, in contrast to recent research about “social capital” as an asset. Dr. Aida introduced results of a study that showed that residents living near community assembly venues have better health. Because a Japanese sense of personal responsibility is often applied to matters of health care, Dr. Aida is conducting research on community activities that create opportunities for people to interact with each other. Mr. Fujita shared information about an initiative in which communication plays an important role, such as providing information on health promotion to junior high school students, which in turn may advance health promotion among parents.



Ms. Igari

Questions around how the return of residents leads to the reduction of support measures, such as rent subsidies, were addressed by Dr. Maeda. The realization among returning residents that they face loss of such support creates anxiety. In addition, data show that the improvement of mental health has slowed down since people started to return to their homes.



Dr. Haraguchi

Regarding issues associated with evacuees returning to their homes, there was a question about what is the main reason why some evacuees still hesitate to return. Dr. Haraguchi pointed out that it is mostly older people who are hesitant to return, because they are worried about access to medical and nursing care. In relation to the nuclear power plant accident, Dr. Haraguchi said that there were probably more concerns about uncertainties surrounding the nuclear decommissioning process and interim storage policy than about radiation exposure itself. In response to a question about what kind of approach is necessary for reconstruction in Fukushima, where regional cooperation has been difficult for a long time, Dr. Aida said that it

would be necessary to disseminate correct information from experts, utilizing social media and word of mouth.

Dr. Schneider commented that perceptions of well-being among residents in the reconstruction area are becoming more diverse and complex, so a key for the future is that experts and community representatives work together to foster individual resilience and build sustainable social projects.



Dr. Schneider



Dr. Kato

Lastly, Dr. Kato Hiroshi expressed his admiration Fukushima’s efforts since the earthquake, such as the large-scale health survey being conducted in Fukushima, the creative activities that residents can easily participate in, and the continuous sincere support for Fukushima residents and evacuees who are outside the prefecture. He also stated his opinion that connections among people are highly important to support psychological recovery after a major disaster, thus concluding the discussion.

In the recent COVID-19 pandemic, human connections have tended to become fragmented. In such a situation, the question of how to maintain connections among people in a way that promotes the health of Fukushima residents has been an important theme today. From active discussions in this session, it was deemed necessary to continue to promote various initiatives for the reconstruction of Fukushima, and to share findings with a wider community.

Session 4

What needs to be done to enhance the resilience of Fukushima's people

4-1 Special Lecture I

Chair



MAEDA Masaharu
(FMU)

What is needed to promote psychological recovery and community reconstruction

KATO Hiroshi (Hyogo Institute for Traumatic Stress)

4-2 Special Lecture II

Chair

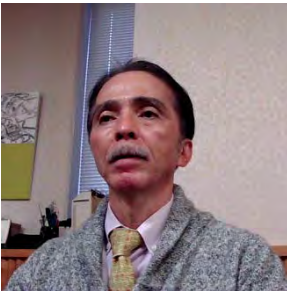


OHTO Hitoshi
(FMU)

A record of a decade of recovery in Soma City: A message for posterity

TACHIYA Hidekiyo (Mayor of Soma City)

4-1 What is needed to promote psychological recovery and community reconstruction



KATO Hiroshi
Director, Hyogo Institute for Traumatic Stress

Recovery from a disaster previously focused on “restoration to the pre-disaster state,” but “reconstruction and revitalization” became the goal after the 1995 Great Hanshin-Awaji Earthquake. Kaibara Toshitami, governor of Hyogo Prefecture at that time, used “creative reconstruction” to advocate for a region to be better than before the disaster. However, this notion was not welcomed by the national government, as symbolized by the words of a leading politician, “We will not tolerate *yakebutori* (making profit out of reconstruction support).” The phrase “build back better” emerged after the Great East Japan Earthquake, and was officially used in the 2015 United Nations World Conference on Disaster Reduction that convened in Sendai City, Miyagi Prefecture. “Build back better” is now widely accepted as a standard for post-disaster recovery (Slide 2).

When a major disaster strikes, large budgets are allocated for reconstruction. In the case of the Great East Japan Earthquake, 32 trillion yen has been spent so far, with a substantial amount poured into soft infrastructure, including livelihood support. This stands in contrast to the Great Hanshin-Awaji Earthquake response. However, in the long-term reconstruction process, there will inevitably be times when things do not go as expected. Professor Emeritus Shiozaki Yoshimitsu of Kobe University calls it a “reconstruction disaster” when reconstruction policies intended to help disaster victims, such as redevelopment, land rezoning, and construction of public disaster housing, do not benefit all residents, even to the extent that some residents find themselves facing greater difficulties. We must also face shadowy sides of recovery (Slide 3).

Disasters have a variety of psychological effects. People will suffer long-term trauma from fearful experiences, grief from bereavement and loss, and secondary stress from drastic changes in their lives.

The course of psychological recovery requires stabilization of life, maintenance of health, and recovery of roles. Recovery measures must be aimed at these (Slide 4). Reconstruction of communities and restoration of interpersonal connections will also be the basis for psychological recovery. For this purpose, various efforts have been made in the affected areas. In the case of the Great Hanshin-Awaji Earthquake, the word “*Fureai*” (social interaction) was used symbolically: “*Fureai* Centers” were built in temporary housing, and the tea parties held there were called “*Fureai* Cafes.” Under the catchphrase “*Fureai* Community Development,” activities to promote interaction among residents are still ongoing. In the Tohoku region, there are also some creative activities such as the *Hamatte Kerain*, *Kaddatte Kerain* (local dialect for “Join and Have a Chat”) movement in Rikuzentakata City, Iwate Prefecture (Slide 5) and the *Kenko-zukuri-tai* (health promotion team) in Minamisanriku Town, Miyagi Prefecture. Fukushima, which experienced the nuclear power plant accident, is facing a situation where it is difficult to rebuild and revitalize communities to which residents have not returned and there are still many evacuees living outside the prefecture. I will keep an eye on how Fukushima will overcome these difficulties in the future.

In our post-disaster psychological support activities, contrary to expectations, we did not encounter many complaints of trauma reactions, grief, or other direct effects of the disaster. Such complaints account for only a few percent of the chief complaints received by consultation agencies. This is due not only to the fact that many victims recover spontaneously over time, but also to coping behaviors that avoid recalling and verbalizing the disaster experience (Slide 6). Because of these factors, as time passes, the effects of secondary stress begin to stand out, so that traumatic reactions and grief become less conspicuous and receive less attention. My talk included an actual case that I encountered, in which avoidance symptoms were so strong that the person resumed normal social activities, with trauma and grief manifesting themselves a long time afterward (Slide 7). Finally, as for future issues in post-earthquake reconstruction, I suggest the need to think about how to deal with depopulation and aging, how to promote the participation of residents in the reconstruction process, how to maintain the support system, and how to establish a system that can provide specialized therapeutic intervention (Slide 8).

Slide 1

心理的回復とコミュニティの復興を 促進するために必要なこと

WHAT IS NEEDED TO PROMOTE PSYCHOLOGICAL RECOVERY AND
COMMUNITY RECONSTRUCTION

Hyogo Institute for Traumatic Stress
KATO Hiroshi, MD, PhD

Slide 2

Over "Creative Reconstruction"

- Coined by the Prefecture Governor as the reconstruction vision after the Great Hanshin-Awaji Earthquake.
- Response of the national government: Former Deputy Prime Minister Gotoda said at the 1st Committee for Reconstruction that "getting richer after a fire" is not acceptable.
- It was stipulated as the basic principle at the Reconstruction Design Council after the Great East Japan Earthquake.
- Sendai Disaster Preparedness Framework: Build Back Better
- Innovative initiatives started in various fields.

Slide 3

Light and shadow of reconstruction

- Reconstruction disaster: Reconstruction measures (redevelopment, rezoning, disaster public housing, etc.) have been afflicting the victims for a long time. (Kobe University Professor Emeritus SHIOZAKI Yoshimitsu)
- Shin-Nagata Station South Area Reconstruction Project
 - Kobe City acquired 24 hectares of land and built commercial facilities.
 - Expected business deficit is 32.6 billion yen. Many spaces are still unsold, and the deficit may increase further.
- Problem of having victims move out of the government-rented housing, which is long overdue.

Slide 4


What is necessary for psychological recovery?

- Reconstructing livelihoods
- Maintaining good health
- Rebuilding the community
- Recovering roles

Slide 5

Population approach Hama-Kada Movement (Rikuzentakada, Iwate Pref.)

- Individual support utilizing health survey was practiced by each institution from the beginning.
- Meetings were convened from an early stage for discussions (Future Map Meeting).
- Necessity of activities to raise health awareness and promote resident exchange.
- All residents were affected in some way and it was recognized that a campaign would be needed to maintain good health and rebuild their livelihoods.



Slide 6

Long-term effects of disaster trauma and grief

- Trauma and grief reactions barely show due to avoidance tendencies
 - About 10% in the survey
 - Only a few percent in the chief complaint classification at counseling agencies
 - Avoidance as a countermeasure
- Often recover naturally
- May prolong and manifest

Slide 7

This case shows...

- Over time, the traumatic reactions and grief of the disaster experience become of less concern because the effects of secondary stress are more likely to stand out.
- As seen in the case, it is important to recognize that strong avoidance symptoms preserve social functions for a long period of time, but it may become apparent with a triggering event.

Slide 8

In conclusion

Challenges in recovery process

- Response to depopulation and aging
- How to promote public participation
- What kind of roles can/should be recovered?
- What kind of ingenuity can be made to promote health?
- Maintenance or succession of support system
- Providing professional therapeutic intervention

4-2 *A record of a decade of recovery in Soma City: A message for posterity*



TACHIYA Hidekiyo, MD
Mayor of Soma City

Late at night on February 13, between symposium days, Soma City was hit by a massive earthquake with a seismic intensity of over 6 on the Japanese 1 to 7 scale. I feel that the lessons learned 10 years ago are still relevant, and would like to take this opportunity to look back on that time with gratitude for many supporters.

After the earthquake of March 11, 2011, firefighters who ran to evacuate residents of coastal areas in the midst of a major tsunami warning saved the lives of 90% of the 5,400 residents of Soma City who were affected by the tsunami (Slide 1). However, 10 firefighters were taken by the tsunami and never returned. For me, the past 10 years have been a decade of asking myself what I should do to honor their memory.

Disaster prevention must first focus on prevention of direct disaster deaths, then disaster-related deaths, and then suicides related to lost livelihoods (economic suicides) and deaths from loneliness. In Soma City, from immediately after the disaster, we wrote down all that needed to be done on a single sheet of paper and shared the information widely among staff. After that, the Self-Defense Forces rescued isolated people and various organizations provided medical support. During these activities, too, I made sure to share information on a daily basis. For psychological care, I collaborated with Fukushima Medical University, and for economic suicide prevention, I worked with the Bar Association and other organizations. The collaboration with the Japan Federation of Bar Associations (JFBA, offering legal consultation for citizens) has been extended to a collaboration agreement between the JFBA and the Japan Association of City Mayors. We also formed a team of clinical psychologists for psychological care for children and those living in temporary housing (Slide 2). There were 51 children who

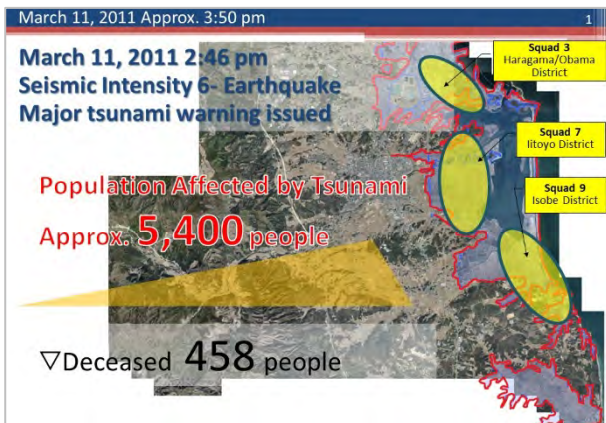
lost their parents, including 9 children of firefighters who were swept away by the tsunami. We, in Soma City, decided to bear a part of their parents' load and offer what they would have wanted for their children, which was to support their education so that they could live strongly, overcoming PTSD from their memories of the tsunami. Specifically, a decision was made at the city council for child support grants of 30,000 yen per month up to the age of 18 and scholarships for college education. We wanted to respond to the firefighters' love for their homeland and called for cooperation around the world (Slide 3). Surprisingly, donations came from all over Japan and abroad, and in just two years, the target amount was reached. Since then, we have received a lot of support and have been able to carry out activities such as a "Terakoya" education project and construction of the LVMH Children's Art Maison (Slide 4).

Another important issue for children is radiation protection. It is important to judge the necessity of evacuation based on evidence, so we measured air doses in Soma City immediately after the disaster, and fortunately, the doses decreased, and I persuaded the residents to stay in the city instead of evacuating. Since then, we have continued to measure radiation levels in schools and homes, and the results have reassured people about living in the city. It is important to know what is worrisome, and when to practice prudent avoidance (Slide 5).

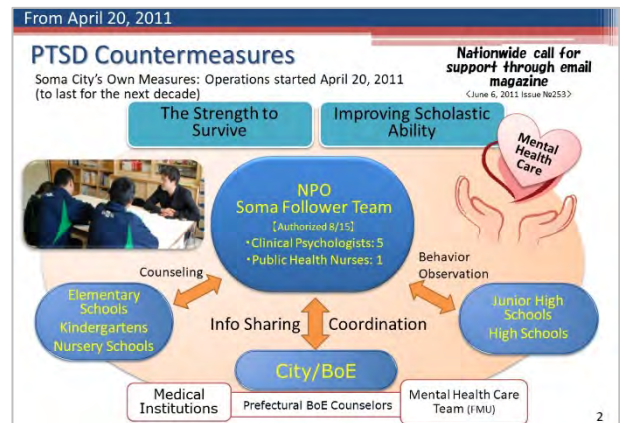
In this way, the past 10 years were spent for reconstruction, resulting in establishment of 410 units of public disaster housing to serve as the foundation of daily life, sports facilities and a children's community center to serve as a base for intergenerational exchange, a cenotaph and a memorial hall for the repose of those we lost (Slide 6), and the "Obama Children's Park" where children can play outdoors to their heart's content. We have also been working on various projects such as the opening of Hama-no-Eki Matsukawaura, a market for the reconstruction of Soma, which will serve as a base for regional development and dispel harmful rumors affecting our primary industries.

We are also responding to last night's earthquake with experiences gained over the past 10 years. Soma City itself has been growing up, right along with the children we are protecting.

Slide 1



Slide 2



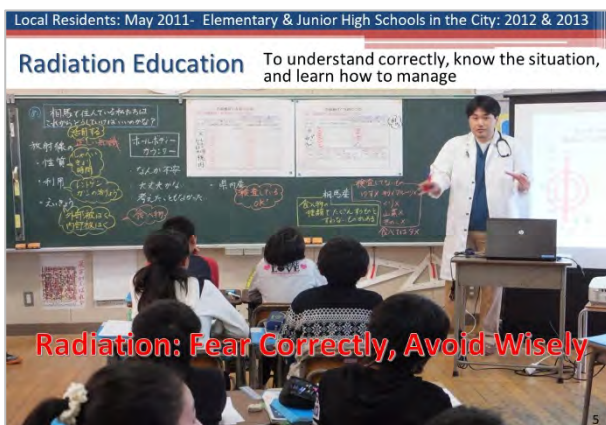
Slide 3



Slide 4



Slide 5



Slide 6



Session 5

Collaboration with International Organizations

Chair



KAMIYA Kenji
(FMU)

5-1 Special Lecture

**An overview of UNSCEAR's work on the levels and effects
of radiation exposure due to the Fukushima Accident
since the UNSCEAR 2013 Report**

Gillian HIRTH (UNSCEAR)

5-2 A framework for management of mental health and psychosocial
consequences of radiation emergencies

Zhanat CARR (WHO)

5-3 Lessons learned from the Chernobyl and Fukushima nuclear accidents

Jacques LOCAHRD (ICRP)

5-4 Results of the IAEA-FMU joint projects and their practical application

May ABDEL-WAHAB (IAEA)

5-5 Activities of Fukushima Medical University in support of our prefecture
and the world

SAITO Kiyoshi (FMU Vice President)

5-6 Presentations by FMU students

(1) Experience in Belarus and our future prospects

ISHIWATA Kei & NAGAO Ryota

(2) Looking ahead to the future—from Fukushima Medical University

KINOSHITA Luna

Discussion

Chair: KAMIYA Kenji (FMU)
Kenneth NOLLET (FMU)

Discussants: Session 5 presenters

5-1 *An overview of UNSCEAR's work on the levels and effects of radiation exposure due to the Fukushima accident since the UNSCEAR 2013 Report*



Gillian HIRTH, PhD

Australian Representative to the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and the current Chair of UNSCEAR for the 66th and 67th sessions

Deputy Chief Executive Officer and Head, Radiation Health Services Branch of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) conducted its first assessment of the levels and effects of radiation exposure of the public, workers, and non-human biota that resulted from the Fukushima accident and published it as the UNSCEAR 2013 Report. In the 2013 Report, the Committee reported that it expected cancer rates to remain stable, that is to say that no discernible increases in cancer rates due to radiation exposure were expected. There was a theoretical and small increased risk of thyroid cancer among children most exposed in 2011, but this was not expected to be discernible. No impact on birth and hereditary effects was expected—the doses were too low, and no discernible increase in cancer rates among workers was expected, and there was a transient and geographically localized impact on wildlife (Slide 1).

After the publication of the 2013 Report, the Committee established an expert group of specialists to systematically track and review new scientific information across several thematic areas, and to closely follow the scientific research and developments relevant to understanding the radiation exposures and effects of the accident. This follow-up process resulted in three white papers published in 2015, 2016, and 2017, to identify potential new information that could challenge the assumptions of the 2013 Report, materially affect its conclusions, or address research needs identified in it. No major

challenges to the conclusions of the 2013 Report were identified (Slide 2). In its White Papers, the Committee also addressed the important issue of whether there would be an observed increase in thyroid cancer among young people in Fukushima Prefecture. The Committee noted that the evidence at present is that reports of an observed increase in thyroid cancer were not due to radiation exposure, but rather to the screening effect that can be observed when intensive and highly sensitive screening detects small thyroid cancers in the general population that are already present, but not normally detected.

In 2018, the Committee approved a plan to update its 2013 Report with the intent to publish a new report summarizing the Committee's knowledge and understanding of the radiological consequences of the accident and to update its estimates of doses to the public, taking account of new information up to the end of 2019 (Slide 3). In preparing this new report, there were many datasets that could be utilized to understand the levels and effects of radiation releases from the accident, and in particular the measurements and data from Naraha Town and Minamisoma City were very important for the purposes of external exposure model validation. UNSCEAR acknowledges the efforts of many Japanese scientists and the government to enable the use of valuable information in the preparation of the 2020 Report, Annex B (Slide 4).

This UNSCEAR 2020 Report was approved in November 2020 following the Committee's 67th session with a plan for publication in March 2021. The Committee noted that there was significantly more information available by the end of 2019. This included detailed information on the distribution of radionuclides in the environment, particularly concentrations of released radionuclides in the air as a function of time and their physico-chemical forms, measurements in people, a range of Japanese-specific information that was not available for the 2013 Report, and more detailed information on the range of evacuation scenarios (Slide 5). All this new information enabled earlier estimates of public radiation doses to be improved and uncertainties to be reduced and better understood.

The Committee also noted many other important issues that are not part of its mandate

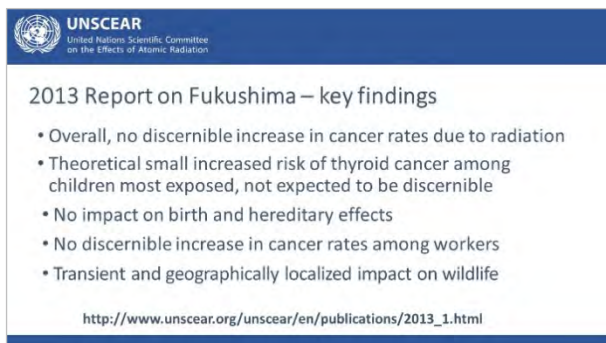
and the one most important aspect is the psychosocial impacts of the accident. The Committee is aware of these impacts and continues to raise them appropriately with relevant international organizations. It remains the Committee's mandate within future efforts to make contributions about the impact of exposure to radiation. The Committee also notes the

importance of measurement data, especially in the early stages of an accident, measurement of radiation in people and the environment, that is taken as soon as possible during and after an accident – in order to make as realistic as possible dose estimates. Finally, the importance of understanding baseline cancer rates, in particular for thyroid cancer in children, should be noted.

¹ http://www.unscear.org/docs/publications/2013/UNSCEAR_2013_Annex-A-CORR.pdf

² <http://www.unscear.org/unscear/en/publications>.

Slide 1

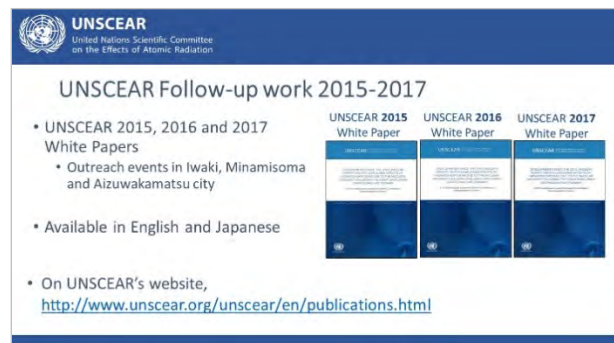


2013 Report on Fukushima – key findings

- Overall, no discernible increase in cancer rates due to radiation
- Theoretical small increased risk of thyroid cancer among children most exposed, not expected to be discernible
- No impact on birth and hereditary effects
- No discernible increase in cancer rates among workers
- Transient and geographically localized impact on wildlife

http://www.unscear.org/unscear/en/publications/2013_1.html

Slide 2



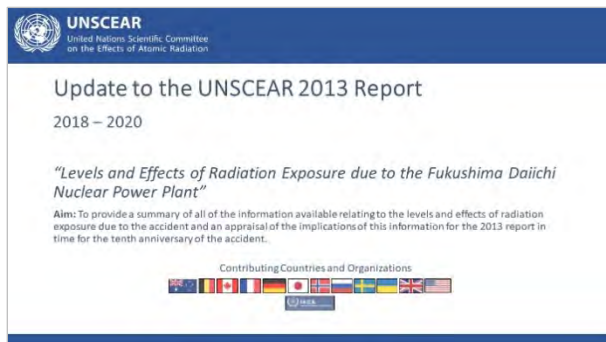
UNSCEAR Follow-up work 2015-2017

- UNSCEAR 2015, 2016 and 2017 White Papers
 - Outreach events in Iwaki, Minamisoma and Aizuwakamatsu city
- Available in English and Japanese

UNSCEAR 2015 White Paper	UNSCEAR 2016 White Paper	UNSCEAR 2017 White Paper
UNSCEAR 2015 White Paper	UNSCEAR 2016 White Paper	UNSCEAR 2017 White Paper

• On UNSCEAR's website, <http://www.unscear.org/unscear/en/publications.html>

Slide 3



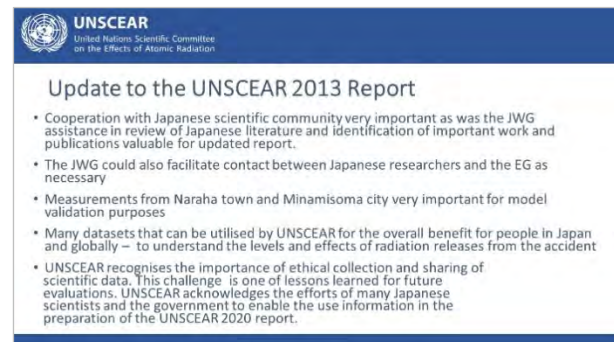
Update to the UNSCEAR 2013 Report
2018 – 2020

“Levels and Effects of Radiation Exposure due to the Fukushima Daiichi Nuclear Power Plant”

Aim: To provide a summary of all of the information available relating to the levels and effects of radiation exposure due to the accident and an appraisal of the implications of this information for the 2013 report in time for the tenth anniversary of the accident.

Contributing Countries and Organizations

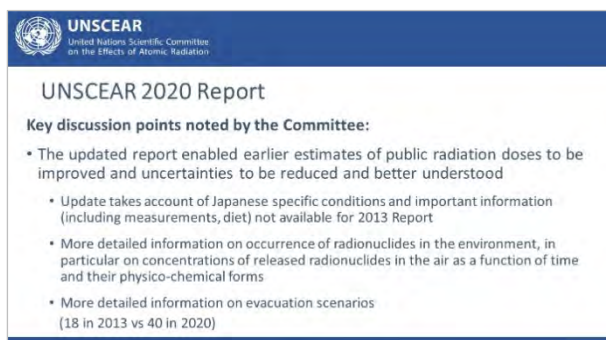
Slide 4



Update to the UNSCEAR 2013 Report

- Cooperation with Japanese scientific community very important as was the JWG assistance in review of Japanese literature and identification of important work and publications valuable for updated report.
- The JWG could also facilitate contact between Japanese researchers and the EG as necessary
- Measurements from Naraha town and Minamisoma city very important for model validation purposes
- Many datasets that can be utilised by UNSCEAR for the overall benefit for people in Japan and globally – to understand the levels and effects of radiation releases from the accident
- UNSCEAR recognises the importance of ethical collection and sharing of scientific data. This challenge is one of lessons learned for future evaluations. UNSCEAR acknowledges the efforts of many Japanese scientists and the government to enable the use information in the preparation of the UNSCEAR 2020 report.

Slide 5

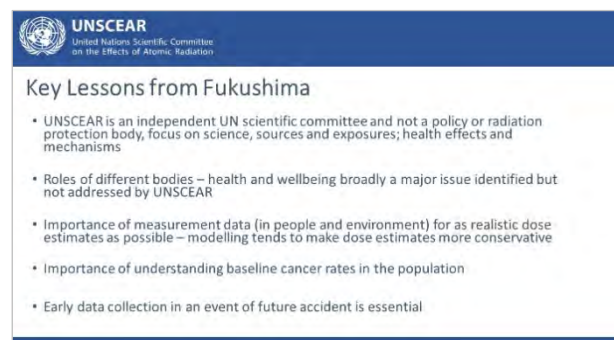


UNSCEAR 2020 Report

Key discussion points noted by the Committee:

- The updated report enabled earlier estimates of public radiation doses to be improved and uncertainties to be reduced and better understood
 - Update takes account of Japanese specific conditions and important information (including measurements, diet) not available for 2013 Report
- More detailed information on occurrence of radionuclides in the environment, in particular on concentrations of released radionuclides in the air as a function of time and their physico-chemical forms
- More detailed information on evacuation scenarios (18 in 2013 vs 40 in 2020)

Slide 6



Key Lessons from Fukushima

- UNSCEAR is an independent UN scientific committee and not a policy or radiation protection body, focus on science, sources and exposures; health effects and mechanisms
- Roles of different bodies – health and wellbeing broadly a major issue identified but not addressed by UNSCEAR
- Importance of measurement data (in people and environment) for as realistic dose estimates as possible – modelling tends to make dose estimates more conservative
- Importance of understanding baseline cancer rates in the population
- Early data collection in an event of future accident is essential

5-2 *A framework for management of mental health and psychosocial consequences of radiation emergencies*



Zhanat CARR, MD, MSc, PhD
Scientist, Radiation and Health Unit, Department of
Environment, Climate Change and Health, World Health
Organization (WHO), Geneva, Switzerland

Almost all people affected by emergencies will experience psychological distress and this is common to both radiological disasters and non-radiological ones. In a disaster-affected population, the prevalence of common mental disorders such as depression and anxiety can double or more in crisis situations (disasters, conflicts, etc.) (Slides 2 and 3).


Existing international radiation safety standards acknowledge the need to make provisions and address psychosocial impacts of radiological and nuclear (RN) emergencies but do not offer practical guidance on how exactly these aspects should be addressed in practical terms (Slide 4). WHO has been asserting the importance of preparing Mental Health and Psychosocial Support (MHPSS) to numerous international organizations. In 2018, Working Party on Nuclear Emergency Matters (WPNEM) of the NEA/OECD and WHO agreed to develop a joint project addressing psychosocial impacts of radiological and nuclear emergencies, and the WHO framework for MHPSS in RN emergencies was launched in November 2020 as the first undertaking to apply an integrated multidisciplinary approach and bring together two areas—radiation emergency preparedness and response and mental health in emergencies and disasters.* This approach, based on “5C” principles of Coordination, Communication, Community engagement, Capacity building and Core ethical values, is expected to further enrich,

improve, and strengthen the existing system of preparedness and response to RN emergencies (Slide 5). WHO framework emphasizes these key messages (Slide 6):

- Radiation emergencies have unique mental health impacts. Mental health and psychosocial consequences may outweigh the direct health impact of nuclear emergencies.
- A public health approach with an emphasis on MHPSS interventions is essential.
- Cross-sector coordination between radiation protection and MHPSS actors, community engagement, targeted risk communication and applying core-ethics principles are crucial.
- Practical tools need to be developed to promote the integration of MHPSS and RN protection actions.
- Research is needed to further understand mental health vulnerability to radiation emergencies and strengthen the evidence base for appropriate MHPSS actions.

*(<https://www.youtube.com/watch?v=2NDuRkJ4c-0>)

Slide 1



A FRAMEWORK FOR MANAGEMENT OF MENTAL HEALTH AND PSYCHOSOCIAL CONSEQUENCES OF RADIATION EMERGENCIES

Dr Zhanat CARR
Radiation and Health Unit



Dr Fahmy Hanna
Mental Health in Emergencies

World Health Organization
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Slide 2

Mental Health and Psycho-social Effects of Emergencies and Disasters



- Almost all people affected by emergencies will experience psychological distress, which for most people will improve over time.
- The prevalence of common mental disorders such as depression and anxiety can double or more in crisis situation (disasters, conflicts, etc).
- One person in five affected by conflict or disaster is estimated to have depression, anxiety, post-traumatic stress disorder, and other conditions
- Despite their tragic nature and adverse effects on mental health, emergencies have shown to be opportunities to build or improve existing mental health systems for all people in need.

Slide 3

Mental Health and Psychosocial Effects of Nuclear Disasters

- The psycho-social impact was reported to be largest and outweighed direct radiological health consequences of the accident (WHO, 2006).
- Lack of transparency in communication to affected populations, lack of community's engagement in the decision making, the hardship of relocation and resettlement, impact of the long-term medical monitoring programmes, contributed to the overall mental health impact of the Chernobyl accident.
- Numerous reports documented psychological consequences in the population affected by Fukushima Daiichi nuclear accident, indicating a high level of anxiety, PTSD, chronic stress and increased rates of suicide.
- Social stigma may affect relocated people, discrimination and bullying at schools were reported. It may also explain a low response rate to invitations for a medical screening, which in itself can be an additional stress factor for children and their parents.

Slide 4

International System of Radiation Safety Standards and Guides of radiation emergency preparedness and response




Existing international radiation safety standards (GSR Part 7, GSG-11) acknowledge the need to make provisions and address psycho-social impact of RN emergencies but do not offer practical guidance on how exactly these aspects should be addressed in practical terms.

Slide 5

MHPSS Framework Structure

1. Introduction
2. Mental and psycho-social consequences of radiological and nuclear emergencies
3. Cross-cutting issues throughout the emergency cycle – 5Cs:
 - Coordination
 - Communication
 - Capacity building
 - Community engagement
 - Core ethical principles
4. Integration of MHPSS aspects in radiological and nuclear emergency preparedness, response, and recovery
 - Preparedness
 - Response
 - Recovery
5. Challenges in implementation
6. Research needs
7. Conclusions


References, Glossary



Slide 6

MHPSS Framework Key Messages

- 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.



5-3 *Lessons learned from the Chernobyl and Fukushima nuclear accidents*



Jacques LOCHARD, MAS

Vice-Chair, International Commission on Radiological Protection

Professor, Department of Health Risk Control, Atomic Bomb Disease Institute, Nagasaki University

Visiting Professor, Hiroshima University

Beyond the technical response to a nuclear accident, authorities and experts must face three major obstacles: the lack of basic knowledge and experience about radiological risk among the affected people, their high level of concern, anxiety, fear but also anger, and their widespread mistrust of authorities and experts. In such a context, the implementation of radiological protection and the rehabilitation of decent living conditions for people who choose to reside in the affected areas face a complex reality, which poses numerous challenges for all local and national stakeholders.

Both the Chernobyl and Fukushima nuclear accidents have revealed that to overcome this complexity, cooperation between experts and stakeholders in the so-called 'co-expertise process' makes it possible to gradually involve the affected people in the recovery process and empower them to cope with the situation. The co-expertise process applied in post-nuclear accident recovery emerged in Belarus at the end of the 1990s in the context of the ETHOS Project and the CORE Programme, and it was refined through the experience of several communities in Fukushima, among them Kawauchi, Suetsugi and Yamakiya to cite the most exemplary (Slide 1).

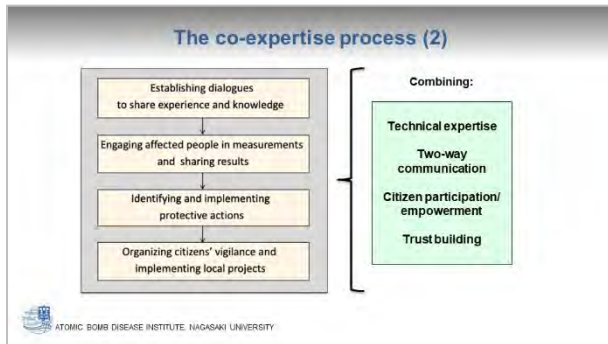
The implementation of the co-expertise process requires reliance on dialogue to understand the concerns of people (Slide 2) and also on the implementation of an inclusive radiation monitoring system to allow them to understand when, where, and how they are

exposed to take informed decisions to protect themselves and their loved ones (Slide 3). To be sustainable, this process must be at the service of improving the living conditions and accompany the implementation of local projects complementing those of the authorities (Slide 4).

Experience has demonstrated that involving affected people in the characterization of the radiological situation they are confronting is a very effective way to empower them about the radiation risk. It is also a necessary condition for them to regain trust. Moreover, to be effective, the process calls for experts to work closely *with* the people rather than *for* them, in an accountable, transparent, and fair way.

Finally, Chernobyl and Fukushima taught us that the process of co-expertise which arose from the sincere interaction between attentive experts and affected people with legitimate concerns and questions is a powerful lever to promote the resilience of the affected people and their personal fulfilment. Such experience has also shown that this is a demanding process for all stakeholders, which takes a long time to be implemented and needs to be supported by local and national authorities.

Slide 1



Slide 2

The key role of dialogue between experts and the affected people

- It brings together **various skills and sensibilities** and helps to identify the **real concerns and expectations** of people
- It abolishes the duality between the experts and the laymen, i.e. **those who know** and **those who do not know**
- It is a space to share freely and openly **experiences** and for everyone to listen to different **view points** and **opinions** on the situation and put her/himself in **the shoes of others**
- The use of **common language** and **narrative** facilitates the sharing of each person's **intimate experience**, the revelation of the **richness of sense of the situation**, and also allows each one to revisit their values and aspirations and affirm their **identity**

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Slide 3

The key role of radiation measurements by the affected people

- They make **visible** the presence of radioactivity in the direct environment of people
- They allow everyone to understand **where, when and how they are** exposed and to take control of the situation
- They are the **gateway to dialogue** with experts and the means to progressively **regain confidence** in the information disseminated by the authorities
- They facilitate **neighbourhood exchanges** and contribute to restoring the **quality of the living together** in communities
- They are the foundation of the **practical radiological protection culture** to exercise the necessary **vigilance** to live in a territory affected by radioactivity

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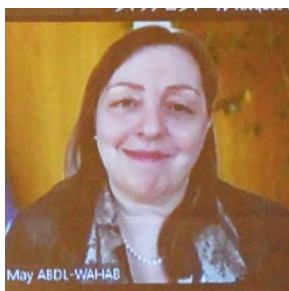
Slide 4

The key role of local projects implemented by the affected people

- They are a means for those involved to find again the meaning of **personal fulfillment** stopped after the accident and to look again positively at the **future**
- They promote **cooperation** between affected people, competent authorities, public and private organizations and experts which is essential for the **restoration of trust**
- They need to be supported by **appropriate mechanisms** to ensure the **legitimacy, transparency and fairness** of the decision-making processes related to their implementation

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5-4 *Results of the IAEA-FMU joint projects and their practical applications*



May ABDEL-WAHAB, MD, PhD
Director, Division of Human Health (NAHU), International Atomic Energy Agency (IAEA), Vienna, Austria

In a few days, it will be 10 years from the Fukushima Daiichi Nuclear Power Plant accident. This is an opportunity to look back at the remarkable and commendable effort by the Japanese and international health community in addressing the accident and to draw on lessons learned. This effort will ultimately lead to enhancement of the readiness and response measures of health professionals and their ability to better support individuals and communities after such an accident.

An efficient way to improve communication and promote mutual understanding between society, patients, and doctors is via education and interpersonal skills training. It is also relevant to keep in mind that many factors can influence communication behaviors. For example, while male and female physicians do not differ in how much biomedical information they provide to their patients, some gender-specific differences in doctor-patient communication behaviors may still exist.

The International Atomic Energy Agency (IAEA), through its Division of Human Health and in collaboration with Fukushima Medical University, among others, has carried out several educational and research projects in radiation, health, and society along with respective Science, Technology, and Society (STS) curriculum development.

Since attitudes and beliefs of the population—stakeholders, patients, and doctors—influence communication behaviors, the quality of verbal and nonverbal communication between physicians and patients is critical during discussions about radiation concerns. Thus, optimizing the communication behaviors while considering these factors can lead to improved doctor-patient relationships, outreach, and patient outcomes.

Through these projects, it has been possible to address risk assessment and disaster communication topics to allow for a more effective exchange between physicians and the general public while minimizing the risk of misinformation. Building on past achievements, as well as reviewing and monitoring data, allows us to learn from the past and achieve better awareness in the future.

Specific practical applications were implemented, and impact was achieved via many international conferences, IAEA joint meetings, STS and medical physics training events and workshops, with a number of publications and additional papers currently under preparation, such as the Guidance Book for Medical Doctors.

These activities and resulting awareness led FMU to consider including STS principles into its medical curriculum. Together we formed a core group of experts from Japan and internationally. The expertise of Japanese and international leaders in communication, STS, radiation monitoring, and best practices in radiation risk communication opened the door for mentoring young researchers and supporting a new generation of medical professionals.

Our joint work succeeded in the prominent increase of women and student participation throughout the course of our conference series, meetings, and training events. Furthermore, we acknowledge the development and capacity building at FMU, our partner institution, in risk communication, innovative dialogue and discourse, and the STS approaches for teaching and training.

Information regarding the projects, achievements, and potential future activities were provided in the presentation.

The final technical meeting of the project had been planned for May 2021 in Hiroshima, in conjunction with our partner universities in Nagasaki and Fukushima. The Guidance Book for Medical Doctors is now completed and under review by the IAEA publication committee.

In conclusion, we will continue, with the same commitment and enthusiasm, to encourage global collaboration along with the exchange of information and lessons learned, thus benefiting Japan and the world community.

Slide 1

Communication & Science and Technology Studies (STS)

Communication strategy

- Contextualize information
- Deflect distractions to allow focus on critical tasks
- Provide a single source of information and standard communication protocols
- Offload the need to retrieve, retain, and record information
- Weed out extraneous information

The interdisciplinary field of STS deals with how science (and technology) is made, communicated, and acted upon in social, political, and cultural contexts

NPP accident (TEPCO 2011) revealed

- Crisis of Expertise
- Over-Diagnosis
- Public Health Crisis

Slide 2

Background

STS Projects Overview
Filling the need and mobilizing new knowledge in radiation disaster medicine

Key vectors

- Early vectors
- Early vectors
- Early vectors
- Recovery phase
- Recovery phase
- Local emergency preparation

Slide 3

STS Projects

Participants Origin

[% participants from 2013 to 2017]

Prefecture Origins of Japanese Participants

- Tokyo - 10.4%
- Fukushima - 40.3%
- Nagasaki - 11.9%
- Hiroshima - 16.4%
- Hokkaido - 1.5%
- Kanagawa - 1.5%
- Tochigi - 1.5%
- Hyogo - 1.5%
- Fukuoka - 3.0%
- Kyoto - 1.5%
- Satama - 3.0%
- Chiba - 4.5%
- Aomori - 1.5%
- Ibaraki - 1.5%

Slide 4

STS Projects

Reaction Averages

to rated questions by position held [% No. participants]

Meeting	Position	The quality of the scientific content	How well has your knowledge of the topic improved?	How relevant were the meeting topics to your work?
Nagasaki 2016 November	Associate Professor (5)	88%	92%	78%
	Full Professor (12)	87%	88%	92%
	Medical Doctor (2)	90%	90%	100%
	Student (7)	94%	90%	97%
Fukushima 2016 January	Associate Professor (2)	90%	90%	90%
	Full Professor (5)	90%	90%	75%
	Medical Doctor (2)	97%	89%	67%
	Student (7)	99%	90%	96%
Singapore 2016 April	Associate Professor (3)	83%	67%	92%
	Full Professor (6)	88%	83%	96%
	Medical Doctor (4)	88%	88%	94%
	Student (3)	88%	79%	83%
Fukushima 2016 May	Associate Professor (4)	75%	75%	75%
	Associate Professor (6)	75%	60%	60%
	Full Professor (6)	75%	83%	83%
	Medical Doctor (4)	72%	58%	91%
Virtual 2016 September	Assistant Professor (7)	73%	63%	63%
	Associate Professor (2)	80%	84%	88%
	Full Professor (6)	81%	71%	70%
	Other (1)	100%	100%	100%

Slide 5

New Medical Curricula

FMU, Hiroshima University and Nagasaki University

Radiation disaster medicine for medical students at the Fukushima Medical University, together with a science, technology, and society module comprising various topics, such as public risk communication, psychosocial consequences of radiation anxiety, and decision making for radiation disaster.

Phoenix Leader PhD degree at the Hiroshima University, which aims to develop future leaders who can address the associated scientific, environmental, and social issues.

Joint Graduate School of Master's degree in the Division of Disaster and Radiation Medical Sciences at the Nagasaki University and Fukushima Medical University.

Slide 6

Conclusion

- Providing forum for researchers, sociologists, students and patients
- Physicians in radiation medicine educate and inform the public;
- IAEA STS projects had an impact on teaching and may be expanded to include a wider audience;
- Diverse scientific leaders are needed with a wide set of skills;
- Know-How from Fukushima benefits Japan, Asia and beyond.

5-5 *Activities of Fukushima Medical University in support of our prefecture and the world*



SAITO Kiyoshi, MD, PhD

Vice President, Fukushima Medical University
Director, Fukushima Global Medical Science Center
Director, Futaba Emergency and General Medicine Support Center
Professor and Chair, Department of Neurosurgery, FMU School of Medicine

To introduce activities undertaken by the Fukushima Global Medical Science Center (FGMSC) at Fukushima Medical University (FMU), I will focus on efforts toward international collaboration.

FGMSC is responsible for aiding the rebirth and revitalization of local communities from a medical standpoint, and for disseminating that recovery to the world. FGMSC is composed of 5 individual centers, including the Radiation Medical Science Center for the Fukushima Health Management Survey, as well as 2 additional divisions, including the Education and Human Resource Development Division. FGMSC is built on three key objectives: health promotion, the provision of advanced medical care, and the promotion of research and industrial recovery (Slide 1).

At the Radiation Medical Science Center, the Health Management Survey helps to monitor the current health of Fukushima's residents, while aiming to maintain and promote their future health. In addition, the Center holds international symposiums, and cooperates with international researchers, government organizations, and academic societies, to share the results of their work with local, national, and international communities, and to advance radiation protection (Slide 2).

The Education and Human Resource Development Division is responsible for providing education in radiation health risk science and disaster and radiation medical sciences to undergraduate and graduate students

at FMU and other universities in Japan and abroad, as well as to medical personnel. It also collaborates with national organizations such as the Nuclear Regulation Authority, National Institutes for Quantum and Radiological Science and Technology, the Radiation Effects Research Foundation, Hiroshima University, and Nagasaki University. Internationally, it cooperates with organizations such as the IAEA, WHO, and ICRP, among others, and promotes collaboration with countries such as South Korea, Russia, France, and other European nations (Slide 3).

With strong ties to Hiroshima University and Nagasaki University through the Network-type Joint Usage/Research Center for Radiation Disaster Medical Science, we are devoted to building a solid scientific foundation to contribute to recovery following the Fukushima Daiichi Nuclear Power Plant accident, and to disseminating the results of these efforts to the world (Slide 4).

Our Center has an ongoing collaboration with the IAEA (since 2012 in the field of human health, and since 2018 through joint work on the project, "Living at the Site of a Previous Nuclear Accident—The Role of Science Technology and Society (STS): Rationale and Communication". Consultancy and technical meetings have been held both in Fukushima and at IAEA's headquarters in Vienna (Slide 5).

Fukushima Medical University was appointed as a WHO Collaboration Center for Radiation Disaster Preparedness, Response and Recovery in 2018. Activities include strengthening each individual country's capacity to respond to radiation emergencies, post-accident recovery, and long-term follow-up for those affected by nuclear emergencies; and education, training, and disseminating information on radiation preparedness and response. FMU is also a member of WHO-REMPAN, an international network of organizations established by WHO after the Chernobyl accident to respond to nuclear disasters and radiation accidents (Slide 6).


The Fukushima Global Medical Science Center will continue its activities to convey to the world and to future generations the lessons learned from the compound disaster of our earthquake and nuclear accident, and will continue its contributions to the people of Fukushima and the world.

Slide 1

Supporting Fukushima's recovery through medical services

Fukushima Global Medical Science Center

Supporting the revitalization of Fukushima from medical and health perspectives as we aim for a brighter future to share with the world



1. Health promotion
Radiation Medical Science Center for the Fukushima Health Management Survey
Health Promotion Center
Medical Support for the Futaba Area
2. Provision of advanced medical care
Advanced Clinical Division
Thyroid and Endocrine Center
3. Promotion of research and industrial recovery
Medical-Industrial Translational Research Center
Advanced Clinical Research Center

Education and Human Resource Development Division

Slide 2

FMU Activities

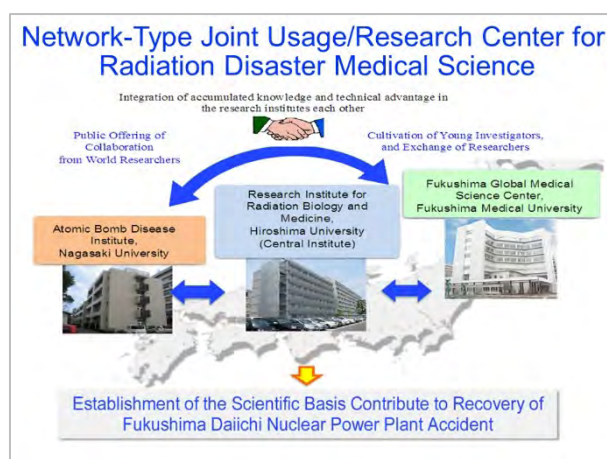
- **Radiation Medical Science Center for the Fukushima Health Management Survey**
 - Promote the health of Fukushima residents
 - Monitor their physical and mental health
 - Improve their future health:
 - disease prevention
 - early diagnosis
 - early treatment
 - Share survey results with the local, national, and global communities for radiation protection:
 - international symposia
 - international expert meetings
 - with UNSCEAR, WHO, ICRP, IAEA, ...

Slide 3

FMU Activities

- **Education and Human Resource Development Division**
 - Education on: radiation health risk science disaster and radiation medical science
 - for undergraduates: medical, nursing, other universities, foreign students
 - for graduate students
 - for others: medical staff, public health nurses, radiation counselors
- **National collaboration**
 - Nuclear Regulation Authority (NRA)
 - National Institutes for Quantum and Radiological Science and Technology (QST)
 - Radiation Effects Research Foundation (RERF)
 - Hiroshima University (HU), Nagasaki University (NU)
- **International collaboration**
 - IAEA, WHO, ICRP
 - KIRAMS, NRCERM, CEPN, EU, USA, ...

Slide 4



Slide 5

IAEA

- Cooperation in the area of human health 2012/12~
- Project (NA 9/39) 2018/6~
 - Living at the Site of a Previous Nuclear Accident – The Role of Science Technology and Society (STS): Rationale and Communication
 - ✓ 2019/1/16~17 Consultancy Meeting, Fukushima
 - ✓ 2019/5/28~30 Technical Meeting, Fukushima
 - Communication on Low-Dose Radiation
 - the Role of Science, Technology and Society -
 - ✓ 2019/12/11~12 Consultancy Meeting, Vienna
 - Communication of Low-Dose Radiation -The Way Forward-
 - ✓ 2020/10/21~22 Consultancy Meeting, Fukushima (web)
 - Low-Dose Radiation for Patients and Populations

Slide 6

WHO

- WHO Collaboration Center (JPN-96) 2018/5~
 - for Radiation Disaster Preparedness, Response, and Recovery
 - Activity 1
 - Strengthening countries' capacities to respond to radiation emergencies
 - Activity 2
 - Post-accident recovery and long-term follow-up of persons affected by nuclear emergencies
 - Activity 3
 - Education, training, and dissemination of information on radiation disaster preparedness and response
 - Member of WHO-REMPAN
 - (Radiation Emergency Medical Preparedness and Assistance Network)

5-6(1) *Experience in Belarus and our future prospects*



ISHIWATA Kei
Fukushima Medical University
School of Medicine



NAGAO Ryota
Fukushima Medical University
School of Medicine

We studied at Belarus State Medical University (BSMU) and Gomel State Medical University (GSMU) in 2019. These international exchanges were based on inter-university agreements with FMU and both universities. Belarus is a country that was devastated by the Chernobyl nuclear power plant accident. In Belarus, we mainly learned two things (Slide 1).

In the Department of Radiation Medicine and Ecology of BSMU, the Institute of Radiobiology of NAS of Belarus, and the Republican Scientific and Practical Center for Radiation Medicine and Human Ecology, we studied the characteristics of radionuclides, recent redistribution of radionuclides, the impact of the Chernobyl NPP accident as indicated by classification of areas according to radioactive contamination, the Groups of Primary Registration (registry of affected people), and related topics. In the Polesie State Radioecological Reserve—a no-go (evacuation) area within 30 km of the Chernobyl NPP—we witnessed the reduction of external exposure by shielding (Slide 2). Some local junior high students gave us a demonstration of the inspection of radioactive materials in foods. We were surprised by the fact that although the measured values were below a predetermined threshold, radionuclides were still detected. But we understood that their criteria are more stringent than those in the USA or EU (Slide 3).

Also, we attended lectures about public health and military medicine at both universities and studied medical systems and problems of Belarus. In exchange, we presented two themes to students of BSMU and GSMU. One theme was the Fukushima Daiichi nuclear power plant accident

and disaster-related deaths; the other was Japan's medical education system. What we learned in Belarus made us think more carefully about Fukushima and Japan.

From 2013, FMU decided to establish academic relationships with BSMU and GSMU. However, BSMU and GSMU haven't sent international students to FMU so far. In the future, we would like to implement bilateral student exchange (Slide 4). There are three purposes. First of all, we think FMU students should interact more with students from other universities. Second, we want Belarusian students to learn how Fukushima is recovering from the Great East Japan Earthquake. Third, we think it's a good experience for Belarusian students to see firsthand some differences between the medical systems and cultures of Japan and Belarus (Slide 5).

Yet, three complications cannot be ignored: COVID-19, curricular differences, and financial challenges. To begin with, as for COVID-19, it has been significantly difficult to anticipate how this pandemic will be resolved. For example, FMU has decided not to send international students to Belarus in 2021. Second, the coordination of different curriculums is also difficult. In our opinion, a field trip to the areas around the Fukushima Daiichi NPP would be helpful. Third, there are financial problems. For a Belarusian student to travel to Japan and stay in Fukushima for 8 weeks, the total cost would be around five thousand dollars. We must think about funding sources (Slide 6).

In conclusion, our goal is the development of this international relationship. It is true that we struggle with the current pandemic. However, when we can manage COVID-19, we would like to revitalize the exchange of students and teachers between Japan and Belarus.

Slide 1

What we wanted to learn in Belarus

- The impact of the Chernobyl nuclear power plant accident and the response to it in Belarus.
- Medical systems and problems of Belarus.

Slide 2

Ambient dose rate



Slide 3

Comparison of Regulation Values for Foods

The baseline of each country for radioactive cesium in foods (Bq/kg)

	Japan	EU	US
Milk	50	1,000	
Infant food	50	400	All foods 1,200
General foods	100	1,250	

Ministry of the Environment "BOOKLET to provide Basic Information Reading Health Effects of Radiation (1st Edition)"
Chapter 4 Concept of Radiation Protection, p166

Slide 4



Slide 5

Purpose

1. Student exchange
2. Learning from Great East Japan Earthquake
3. The difference between Japan and Belarus

Slide 6

Target

Further international relationships



5-6(2) Looking to the future—from Fukushima Medical University



KINOSHITA Luna
Fukushima Medical University
School of Medicine

In the curriculum of Fukushima Medical University School of Medicine, there are classes to learn about Fukushima and radiation. In the first year of Fukushima Studies, local culture is woven into disaster education through experiences such as making *kokeshi* dolls and tasting traditional dishes. Tutorial sessions allow us to investigate and learn about the lifestyle-related diseases of people in Fukushima, and radiation risk recognition in the event of a nuclear disaster and its response. In our third year, we also learned specialized contents about radiation health science and medicine such as the effect of radiation on genes (Slide 1).

After learning such things, I discussed with classmates what else we, as students at Fukushima Medical University, could do. We saw a need to advance health promotion because Fukushima Prefecture has a high rate of lifestyle-related diseases. Therefore, we established the POMk (Popularization of Medical knowledge) Project, a student organization that provides hands-on learning about health for elementary and junior high school students (Slide 2).

As the number of young people in Japan decreases, the proportion of them who donate blood warrants urgent attention. To explore factors influencing young people's motivation to donate blood, mentors in FMU's MD-PhD program helped me access and analyze Japanese Red Cross Blood Service data. From a database covering 10 high schools in Fukushima prefecture (N=4506), we analyzed factors associated with motivation as assessed by the perception of "doing good for others" using chi-square tests and binomial logistic regression. We found that students who

donated blood more often tended to cite "doing good for others" as important (Slide 3). The probability of regarding this perception as important was significantly higher among females, those with better subjective health (Slide 4), and those knowing their own blood type and blood donation eligibility criteria (Slide 5). Hence, health promotion activities that improve subjective perceptions of one's health may reinforce students' awareness of blood donation as "doing good for others" and, in turn, promote frequent donation. Our results also support greater outreach to male students and improving students' knowledge related to blood donation (Slide 6).

Such experiences depend on the help of teachers giving extracurricular guidance. From various academic experiences both at home and abroad, I thought it was important to understand diverse cultures and values, drawing on life in Fukushima Prefecture and activities overseas. Based on my own experience, I would like to continue to disseminate accurate information from Fukushima to the world.

Slide 1

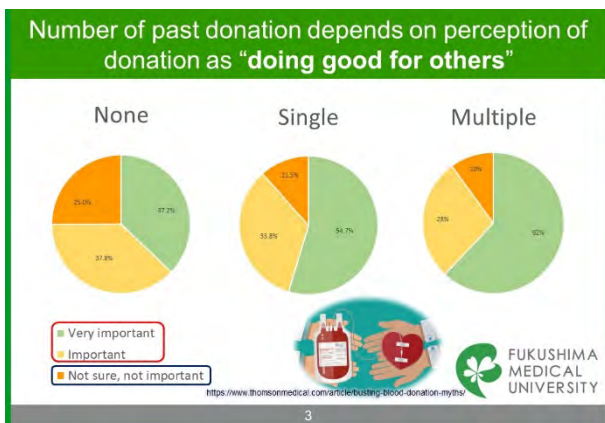
Fukushima Medical University's curricular	
Year in school	Contents related to Fukushima and radiation
First (2017)	Fukushima Studies • Fukushima Health Management Survey • Fukushima folk tales, food and traditional crafts
Second (2018)	Tutorial • Lifestyle-related diseases of people living in Fukushima
Third (2019)	Radiation Health Science and Medicine Radiation Disaster Medicine Community Training Tutorial • Radiation risk awareness and response in the event of a nuclear disaster

Slide 2

Popularization of Medical knowledge (POMk) Project

Health care students as teachers

Slide 3



Slide 4

Comparison of variables between who thinks "doing good for others" is important

Variables	Doing good for others N(%)		Univariate P Value	Multivariate		
	Important	Not important		*AOR	(95% CI)	P Value
Year in high school						
First	75.2%	24.8%	0.01	1.088	(0.896, 1.321)	0.397
Second	78.6%	21.4%		1.171	(0.961, 1.427)	0.117
Third	74.0%	26.0%		Reference		
Gender						
Males	70.3%	29.7%	<0.01	Reference		
Females	83.4%	16.6%		1.953	(1.566, 2.194)	<0.01
Subjective health						
Excellent	79.1%	20.9%	<0.01	2.433	(1.464, 4.043)	<0.01
Good	76.5%	23.5%		1.93	(1.178, 3.163)	<0.01
Fair	67.7%	32.3%		1.288	(0.753, 2.204)	0.355
Poor	59.7%	40.3%		Reference		

*AOR: Adjusted Odds Ratio
"In addition to all items listed in the table, the school was entered into multivariate analysis as an adjusting variable."

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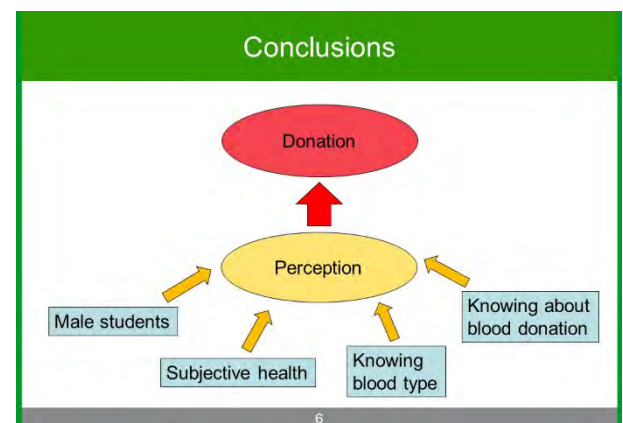
Slide 5

Comparison of variables between who thinks “doing good for others” is important

Variables	Doing good for others N(%)		Univariate P Value	Multivariate		
	Important	Not important		AOR	(95% CI)	P Value
Knowing ABO blood type						
Yes	76.6%	23.4%	<0.01	1.694	(1.191, 2.410)	<0.01
No	66.7%	33.3%		Reference		
Knowing Rh blood type						
Yes	83.0%	17.0%	<0.01	1.216	(0.927, 1.595)	0.158
No	75.2%	24.8%		Reference		
Close friends/family members/neighbors ever received blood transfusion						
Yes	82.7%	17.3%	0.018	1.321	(0.911, 1.917)	0.142
No	75.7%	24.3%		Reference		
Knowing eligibility criteria of blood donation						
Yes	83.0%	17.0%	<0.01	1.633	(1.381, 1.931)	<0.01
No	70.7%	29.3%		Reference		

5

Slide 6



Session 5

Collaboration with international organizations

Proceedings of discussion



Chairs: KAMIYA Kenji (FMU)
Kenneth NOLLET (FMU)

Discussants: Gillian HIRTH (UNSCEAR)*
Zhanat CARR (WHO)*
Jacques LOCHARD (ICRP)*
May ABDEL-WAHAB (IAEA)*
SAITO Kiyoshi (FMU)
ISHIWATA Kei (FMU)
NAGAO Ryota (FMU)
KINOSHITA Luna (FMU)

* Remote participants

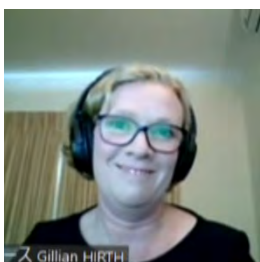


Dr. Kamiya

Dr. Nollet

Fukushima Medical University has been collaborating with various organizations since immediately after the March 2011 nuclear power plant accident in order to recover from the unprecedented complex disaster. In particular, in the field of radiation effects assessment and protection, it was necessary to proceed with appropriate cooperation and understanding within an international framework, and we received a great deal of support from international organizations such as UNSCEAR, IAEA, WHO, and ICRP. With regard to radiation education in Japan after the nuclear power plant accident, FMU has been playing a leading role with the support of various international organizations.

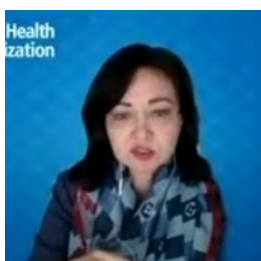
In this session, entitled “Collaboration with international organizations” under the theme of “Fukushima Health Management Survey at perspectives,” four experts from international organizations gave lectures on their activities in cooperation with FMU in various fields, including radiation protection, radiation education, and mental health, as well as lessons learned from the nuclear accident. For details, please refer to the summary of each lecture. Next, Dr. Saito Kiyoshi of FMU introduced the university’s various international activities that contribute to the world and to Fukushima, after which three medical students presented their experiences of studying abroad and some perspectives about student life. In the discussion that followed, experts from international organizations participated live from overseas, and the following encouraging messages for Fukushima were given at the beginning of the session. We would like to express our deep appreciation to all the international organizations.



Dr. Hirth

Dr. Hirth (UNSCEAR): When I last visited Iwaki City and Minamisoma City five years ago, residents were still very concerned about radiation exposure and the possibility of thyroid cancer in children. This time, I found that the residents' concerns about radiation exposure have decreased and that reconstruction has made great progress over the past 10 years. The fact that people in Fukushima are able to gather information about radiation and have a proper understanding of radiation doses and radiation levels in the environment can play an important role in strengthening the community, and this kind of radiation education enhances the decision-making and trust recovery of the residents. UNSCEAR has

learned a lot from Fukushima since the 2011 disaster, especially on community education and communication to minimize anxiety and fear among residents. This is an important initiative and I look forward to continued discussions.



Dr. Carr

Dr. Carr (WHO): In the aftermath of the nuclear accident in Fukushima, global cooperation played an important role in dealing with the situation. In addition, it was also important in strengthening emergency preparedness worldwide. WHO is now leading the fight against the spread of infectious diseases and vaccine supply, and battling misinformation. In Fukushima, clear information and dialogue with the community played an important role in recovery. The WHO has designated 2021 as the International Year of Health and Care Workers to thank them for their unwavering commitment and dedication. Once again, praises to local, national, and international communities for their concerted efforts to

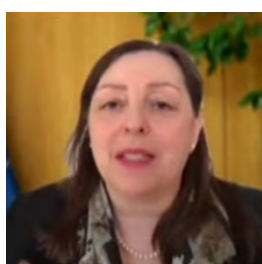
overcome the consequences of the disaster over the past decade. We look forward to continuing our cooperation with the Japanese people.



Prof. Lochard

Prof. Lochard (ICRP): Fukushima has so far made great progress toward recovery thanks to the contributions of the authorities, scientists, experts, and the affected people. However, we know from the experience of Chernobyl that the road to recovery is a long one that will take generations. In the process of reconstruction, dialogues to share experiences and express concerns and expectations can help improve the protection of people, restore trust and dignity, and enhance the quality of decision-making. It is important for affected people, supported by experts, to participate in local projects to improve their living and working conditions. This will lead to personal fulfillment, which is vital to be able to have

positive outlooks about the future. I would like to thank the people of Fukushima for their efforts and for sharing their experiences with the world for the future.



Dr. Abdel-Wahab

Dr. Abdel-Wahab (IAEA): Every time I come to Fukushima, I am amazed at the progress and the resilience of the people. This is due to the hard work of the scientists at Fukushima Medical University, the authorities, and especially the people of Fukushima. Despite our differences, we are eager to work with Fukushima Medical University to benefit the people of Fukushima. This will require the involvement of the affected people of Fukushima. IAEA's Division of Human Health has been working to improve the quality of radiation medicine and STS (Science, Technology and Society). We believe that our collaboration with Fukushima Medical University and the people of Fukushima will benefit not only

Fukushima but also the people of the world. I would like to express my gratitude for our excellent

cooperation and achievements over the past 10 years, and we appreciate making us part of the work to “build back better together.”

Dr. Kamiya then introduced questions from the audience and held a Q&A session. Dr. Hirth, Chair of UNSCEAR, was asked what UNSCEAR emphasizes in terms of trust in science, and she replied that experts from member states take great pains to review scientific research conducted around the world, and that experts bring all the information to the committee process and prepare reports in an independent group. She explained that various international organizations set rules for radiation protection using such solid information, and this has earned the trust of people in Fukushima and around the world.

Dr. Carr of the WHO was asked how the psychological effects and responses would be different between the nuclear accident and other disasters. She replied that the existing responses would apply to the nuclear accident as the human psychological response to any danger would not change. She also said that radiation is associated with anxiety about life due to the historical background of the atomic bombings, but this can be overcome by explaining about low dose exposure.

Dr. Lochard of the ICRP was asked how experts and the government should be involved when residents are divided into groups within a community. Dr. Lochard said that it is important for all groups to share information, experiences, and even different values, so that everyone can recognize the current situation and share key points from a positive perspective. To this end, the role of the experts is to visit each group and set up a dialogue, and to listen to and respect all voices without exception.

Dr. Abdel-Wahab of the IAEA was asked about the relevance of STS to radiation protection and nuclear disasters. Dr. Abdel-Wahab mentioned that in Fukushima, when experts explained about radiation doses immediately after the accident, people were confused because they just told them the dose without explaining the background and the relationship. She explained that STS, which IAEA is currently working on with Fukushima Medical University, is a method to develop human resources who can explain science in a social context and build bridges for people to understand.

Next, questions were asked to the medical students of Fukushima Medical University about what more should be done in medical education to enable medical professionals to cope with global health issues and what senior faculty should do for students and for internationalization of the university. Mr. Ishiwata Kei said that if students have the opportunity to participate in conferences like this symposium, they will gain various insights. Mr. Nagao Ryota said that he hopes that the senior faculty support students and junior faculty in the right direction, using their knowledge and experience. Ms. Kinoshita Luna commented that FMU offers the opportunity for a variety of activities and she hopes that a wider range of students would be given such opportunity. Dr. Saito Kiyoshi commented that it would be a job



Mr. Ishiwata



Mr. Nagao



Ms. Kinoshita

for the senior faculty to create an environment where internationalization is taken for granted at Fukushima Medical University.

As a summary of this session and the two-day symposium, Dr. Kamiya proposed three keywords for the Fukushima Health Management Survey to continue to enhance the resilience of Fukushima: the first is “science” (evidence based on scientific grounds), or the accumulation of scientific knowledge; the second is “collaboration,” which means that it is important to connect people from all over the world; the third is “human resources and education,” i.e., fostering those people who will contribute to the foundation for reconstruction. (See the summary below for the details.)



Dr. Saito

Dr. Kamiya concluded the session with a pledge that the Radiation Medical Science Center for the Fukushima Health Management Survey will continue to watch over the health of Fukushima’s people through the implementation of these keywords, and thanked the experts from international organizations who participated from overseas.



Dr. Kamiya

I would like to briefly summarize this session and this year’s symposium, which was conducted over two days. The title of this year’s symposium was “Build Back Better, Together: 10 years and beyond with the Fukushima Health Management Survey” and the important subtitle was, “What needs to be done to enhance the resilience of Fukushima’s people.” I think the symposium asked the question, “What can we do for the resilience of Fukushima in the future?”

I would like to propose three key words: one is “science.” The Fukushima Health Management Survey is indeed an activity based on science. It is very important to accumulate facts based on science in order to protect the health of the people of the prefecture. Furthermore, there are still harmful rumors. I believe that it is the scientific knowledge and the facts accumulated through science that can counteract this. The survey will continue to accumulate facts to strengthen the resilience of the people of Fukushima Prefecture.

The second keyword is “collaboration,” which is also the keyword of Session 5. Needless to say, collaboration is essential for reconstruction, and what we cannot achieve by ourselves, we can do greatly by collaborating with many people throughout the world. As Professor Ohira explained well in Session 3, “connecting with people” is very important, and I believe that connecting and collaborating with people will be a great power to strengthen resilience.

The final key that I believe to be the basis of reconstruction is people, empowered by education. Mayor Tachiya’s special lecture was very inspiring. He said that nurturing people is the most important factor for the future reconstruction of Fukushima. We belong to a university and our main duty is to educate students, but we would like to renew our recognition of the importance of nurturing people for reconstruction. Today, we had students come and talk to us about their dreams.

We will continue to do our best for the reconstruction of Fukushima, and continue to monitor the health of the people of Fukushima through the Fukushima Health Management Survey.

Closing remarks



SAITO Kiyoshi, MD, PhD
Vice President, Fukushima Medical University

Last night, Fukushima Prefecture experienced another earthquake, which brought back memories of 10 years ago. I also felt tremors of the quake during this symposium. It is reported that these were aftershocks of the Great East Japan Earthquake. It is as though we are being told not to forget what happened one decade ago. A few people were evacuated, or experienced damage due to yesterday's earthquake, and some people's lifelines were interrupted, so I sincerely hope that everyone affected can swiftly return to their normal lives.

This year's Symposium is the third International Symposium on the Fukushima Health Management Survey, but it is truly unfortunate that we could not welcome everyone to attend in person due to COVID-19.

However, we were able to host online presentations and discussions from around Japan and the world, with a substantial online audience, making our 2-day program a success. To all of the presenters, as well as everyone else who made these two days possible, I would like to extend my deepest gratitude. Thank you.

As Dr. Kamiya Kenji summarized earlier, the theme of this year's symposium, "What needs to be done to enhance the resilience of Fukushima's people," focused on presenting the findings of the Pregnancy and Birth Survey, the Thyroid Ultrasound Examination, and topics related to the physical and mental health of evacuees.

We also had presentations by Dr. Kato Hiroshi, Mayor Tachiya of Soma City, members of international organizations, and students from FMU. They all did a wonderful job of summarizing the knowledge accumulated and efforts made over the past 10 years, as well as remaining issues and paths we can take going forward. I would like to thank everyone for making this a meaningful symposium.

Fukushima Medical University will continue to share knowledge gained through the Fukushima Health Management Survey with residents of Fukushima in the hopes that it will lead to improving their health, and we will also continue to share this knowledge with the world. Thank you very much for your continued support and cooperation over these two days.

Navigator Notes

Question Quest



Kenneth E. NOLLET, MD, PhD

Professor, Department of Blood Transfusion and Transplantation Immunology, Fukushima Medical University School of Medicine, and FMU Radiation Medical Science Center for the Fukushima Health Management Survey

Mindful that the Fukushima Health Management Survey is a long-term project, it may be tempting to dismiss our annual symposium as a needlessly repetitive event. Survey results seem to change only slightly from one year to the next, even to the point where some people might argue that the Survey itself could be brought to an end. So, why organize a symposium every year?

Working in the public's interest includes being accountable to the public we serve. So, even with constraints imposed by the coronavirus pandemic, the 2021 Fukushima Medical University Symposium on the Fukushima Health Management Survey was a public event, covered by media representatives who were physically present, and general participants who were virtually present. This has been a challenging year for news reporters, journalists, and other documentarians around the world, so to them we offer sincere gratitude for making time, and taking appropriate hygiene precautions, to be at the symposium venue in person.

With regular coverage of the Thyroid Ultrasound Examination (TUE) program, we also emphasize different other surveys from year to year. The Pregnancy and Birth Survey was selected for special attention this time, as the Japanese people, and their government, confront complex issues related to social and economic costs related to having children.

Physical and mental health for evacuees was also a featured topic this year. Many who survived the immediate disaster lost family members, friends, livelihoods, and property. Living in exile surely compounded the grief of survivors. As for their physical needs, pre-packaged food was a lifesaver in evacuation centers, but is less than ideal for long-term health. Still, many who moved to newly constructed temporary housing could not, or did not, seek better, fresher nutrition. Often, alcohol consumption increased where gainful or avocational activities were lacking.

It is noteworthy that the coronavirus pandemic has provoked similar psychosocial consequences around the world. Japan, a "super-aging society" unique among developed countries, actually had fewer deaths overall in 2020 than in any of the past 11 years, but witnessed an upward trend of people taking their own lives. Interventions devised in response to our earthquake, tsunami, and nuclear crisis might well be adopted, and adapted, to pandemic response.

Addressing these issues, the symposium included not only subject matter experts in health care and radiation science, but also, community representatives and students. Common to many events and programs commemorating the tenth anniversary of the Great East Japan Earthquake is the sentiment that experience and knowledge must be preserved within communities and handed down to future generations. Engaging community leaders and students now is an important part of this process for the future.

General participants joined the symposium from all over the world, and submitted many more questions than we could answer in the allotted time. These questions were shared and discussed at an executive committee meeting that convened shortly after the symposium. Consistent with being accountable to the public we serve, yet-to-be-answered questions will drive our efforts in the coming year, and guide our planning for topics and speakers at the next symposium.

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