

FUKUSHIMA

Lives on the Line

**A Compendium of Reports from the 2011
Great East Japan Earthquake and Tsunami**

Fukushima Medical University



FUKUSHIMA

Lives on the Line

**A Compendium of Reports from the 2011
Great East Japan Earthquake and Tsunami**

Fukushima Medical University

Record Everything

Record everything.

Everything that happened, everything that you did, record it accurately and objectively.

It will be passed on to future generations.

Whether a failure or success, it will be valued.

The production and distribution of this book was supported by a grant from Bain Capital.



**One Year after
the Disaster
A Message from
Fukushima**

With the passage of a year, the Great East Japan Earthquake has caused the death or disappearance of over 20,000 people, over 1,000 of whom have died from reasons related to the disaster. Over 16,000 people in Fukushima are still forced to live as evacuees as a result of the nuclear accident, and 50,000 people have moved out of the prefecture. Because of the evacuation, deaths of the elderly in special care facilities are twice that of an average year, and deaths of those admitted to the facility within a 30 kilometer radius are three times that of the same period the previous year. The number of suicides has suddenly increased, as well as the number of elderly patients and patients with insomnia.

The state of medical treatment at the nuclear evacuation zones is itself a disaster. An increase of approximately 150 members in the school faculty has managed to avert the collapse of local medical infrastructure through the "Fukushima method," but now as physicians are continually leaving, we have reached a crisis. The calamity wrought by the nuclear disaster is truly a test of fire.

On-the-ground efforts of the Self-Defense Forces, police, firefighters, public officials, medical professionals, and others in the face of this unprecedented disaster were, in a word, spectacular; however, the lessons learned were also plenty. First, the inadequacies of our infrastructure to address complex disasters were brought to the fore. Second, the lack of education among citizens and medical professionals about radiation became clear. Third, our chain-of-command system turned to chaos. Sometimes we tend to think that taking the lead can make waves, but such tendencies to avoid making waves have done us an ill turn this time. Fourth, our quick response systems suffered from a lack of personnel. Fifth, the distinction between "peace of mind" and "safety" was not clear, and thus caused confusion. "Peace of mind" is an emotional and financial issue. "Safety" is an issue of science. We did not recognize the inevitable fact that a peaceful world with

its safety 100% guaranteed simply does not exist. Finally, our information sharing systems were in complete chaos.

As for lessons for future generations, first we must rebuild hospitals that can withstand disaster, the cost of which should be shared by all citizens. Second, it is time that we, as a nation, stopped and thought about the type of leaders we need to have. We need leaders who, in the face of events beyond all rationality, do not falter, stand their ground, and stick to their guns. Those at the top must give clear messages to their subordinates and related parties. Third, we must accelerate the creation of support systems for those who provide the support. Fourth, we must review our emergency systems of information dissemination and how we should be united as citizens. Finally, it is important to express gratitude to those providing support. This inspires them.

What adversely affected the evacuation zones and areas was anonymous name-calling and mudslinging. The criticisms that victims had toward support staff were particularly deplorable. Such anonymous slanders in times of emergency are irresponsible and cowardly. Emergencies require each of us to act in a way that reflects the resolve necessary to shoulder our responsibilities.

Our struggle with this nuclear disaster, which nobody has ever experienced, has just started. We must carry into the future this historic mission entrusted to our school. It must be carried out for the people of Fukushima, the people of Japan, and all of mankind. We are prepared for both the importance of the completion of this mission and its difficulty.

Finally, on behalf of my school, I must express deep gratitude to all those who have provided moral and material support over the past year, from within Japan and abroad.

Shin-ichi Kikuchi
President, Fukushima Medical University

One Year after the Disaster A Message from Fukushima	President, Fukushima Medical University	Shin-ichi Kikuchi	2
---	---	--------------------------	----------

Chapter I Fukushima Medical University Girds for Battle

The present compilation depicts victims' situations immediately after the earthquake, the treatment of evacuee patients, and the state of relief operations. This chapter also allows for the sharing of thoughts and feelings experienced at the time, including materials such as documentation of national and international aid, urgent guidance messages posted on Fukushima Medical University's special website, and the response within the university.

Early-Stage Support Actions for Emergency Radiation Exposure Care in the Areas Affected by Atomic Bombing	Vice President, Fukushima Medical University	Shun-ichi Yamashita	37
The Day of the Earthquake	Vice President, Fukushima Medical University Hospital	Koichi Omori	40
Two Weeks after the Earthquake	Vice President, Fukushima Medical University Hospital	Koichi Omori	52
Weeks Two-Four	Vice President, Fukushima Medical University Hospital	Koichi Omori	60
Fukushima is My Home	Department of Blood Transfusion and Transplantation Immunology, Fukushima Medical University	Kenneth E. Nollet	67

Chapter II Fukushima Medical University Record of Activities [Notes and Messages]

Faced with the large-scale disaster, the entire Fukushima Medical University united to overcome the crisis, with staff and students being pushed to their absolute limits.

Messages from Student Volunteers, Medical Interns, and Nursing School Students	Associate Professor Center for Medical Education and Career Development Deputy Director, Department of Clinical Education and Research	Koji Otani	72
Our Message, "Laboring on the Frontlines of Disaster Medical Care"			81
	Assistant Professor, Department of Cardiology and Hematology	Nobuo Sakamoto	82
	Lecturer, Department of Regenerative Surgery	Takao Tsuchiya	82
	Associate Professor, Department of Organ Regulatory Surgery	Toshihiko Fukushima	82
	Lecturer, Department of Cardiovascular Surgery	Shinya Takase	83
	Graduate Student, Department of Pediatrics	Yuusaku Abe	83
	Assistant, Department of Community and Family Medicine	Naomi Takazawa	84
	Lecturer, Department of Clinical Nursing	Maki Iitsuka	84
	Assistant Professor, Department of Public Health and Home Care Nursing	Naomi Fukushima	84
International Medical Support Medical teams from Jordan and Thailand			86
Experiencing the Great Disaster	Department of Otolaryngology, Fukushima Medical University	Yasuhiro Tada	89
Mudra of Supreme Wisdom	Department of Organ Regulatory Surgery, Medical University Physicians Association	Toshihiko Fukushima	91
Messages from Fukushima Family Physicians	Assistant Professor, Department of Community and Family Medicine Fukushima Medical University School of Medicine	Atsushi Ishii	92
Mailing Lists Useful for Emergency Readiness	Associate Professor, Fukushima Medical University	Tetsuju Sekiryu	98
Care during the Earthquake, Tsunami, and Nuclear Accident	Hospital Vice President and Director of Nursing	Yumiko Nakajima	100

**Activity Records of the Fukushima Medical
University Hospital**

Assistant Director, Nursing Department (Previously, Director of Outpatient Nursing)	Fumiko Meguro	102
Department of Surgery	Mihoko Yokoyama	104
West Ward, 4th Floor	Kayoko Watanabe	105
Head Nurse, Mind-Body Medicine Ward	Miyo Saito	107
Certified Nurse, Cancer Radiation Therapy	Noriko Uezawa	108
Director, Outpatient Nursing	Michiko Ootsuki	108
Oncology Nurse	Rumi Hosaka	110
Administrative Officer, Department of Nursing	Yasuko Suganuma	112
Critical Care Center	Megumi Satou	114

Chapter III Struggle Against Radioactivity

Risk communication specialists propose that the fear of ignorance, indifference and prejudice surpasses the fear of radioactivity, and emphasize the power of science in the fight against damage caused by misinformation. This chapter focuses on the fundamental approach adopted by medical professionals by using objective data to accurately solve problems.

Record of Radiation Monitoring Activities by the Faculty of Life Sciences and Social Medicine	Professor and Chair, Department of Neuroanatomy and Embryology, Fukushima Medical University	Hiroyuki Yaginuma	118
Lessons from Fukushima: What We Can Learn about Psychiatric Care from the Radiation Exposure Incident	Professor and Chair, Department of Neuropsychiatry, Fukushima Medical University	Shin-ichi Niwa	121
Responses to Radioactive Contamination and the Evacuation Order after the Great East Japan Earthquake	Professor and Chair, Department of Pulmonary Medicine Director of Fukushima Medical University	Mitsuru Munakata	126
Great East Japan Earthquake and Tsunami and Ensuing Radiation Exposure Issues	Department of Orthopaedic Surgery, Center for Medical Education and Career Development, Fukushima Medical University School of Medicine	Koji Otani	
	Department of Orthopaedic Surgery, Fukushima Medical University School of Medicine	Shin-ichi Konno	
	Department of Orthopaedic Surgery, Fukushima Medical University School of Medicine	Hiroaki Shishido	133
Fukushima Medical University's Emergency Medical Care for Radiation Victims	Fukushima Medical University	Fumio Shishido	
	Fukushima Medical University	Choichiro Tase	
	Fukushima Medical University	Hisashi Sato	
	Fukushima Medical University	Makoto Miyazaki	
	Fukushima Medical University	Arifumi Hasegawa	
	Fukushima Medical University	Akira Ohtsuru	141
The Results of Thyroid Examinations, Our Goals, and Future Prospects	Department of Organ Regulatory Surgery, Fukushima Medical University Fukushima Disaster Medicine Coordinating Chief Physician Clinical Department (in charge of thyroid examinations), Radiation Medical Science Center for the Fukushima Health Management Survey	Shin-ichi Suzuki	146

Special Interview

In keeping with the concept "Fukushima: Hope in the midst of adversity", the interviews highlight the importance of "accurately conveying records to future generations." Through a variety of examples, the interviews illustrate FMU's determination to win the battle for protecting the health of Fukushima's people through the "strength of Fukushima itself," fifty or even a hundred years from now.

Tragedy to Triumph	President and Chairman of the Board of Trustees Fukushima Medical University	Shin-ichi Kikuchi	152
---------------------------	---	--------------------------	------------

Chapter IV Patient Relief Activity Records [Essays and Research Publications]

This chapter analyzes the necessity to record all medical treatment during patient relief efforts at the time of the disaster and convey this information to future generations. The events have developed new historical objectives of protecting the health of citizens from nuclear accidents and sharing the knowledge gained by our university with the world.

Reflecting on the Great East Japan Earthquake A message From Fukushima Medical University	President and Chairman of the Board of Trustees, Fukushima Medical University, Department of Orthopaedic Surgery	Shin-ichi Kikuchi	162
Special Report from Fukushima on the Great East Japan Earthquake: Hope in the Midst of Adversity, Part 2	Professor and Chair, Organ Regulatory Surgery Department, Fukushima Medical University	Seiichi Takenoshita	
The Role of Transmitting Information in Disaster Medicine	In the Same Department	Shotaro Fujita	
	In the Same Department	Yasuhide Kofunato	
	In the Same Department	Toshihiko Fukushima	171
Impacts of the 3/11 Disaster in Fukushima on Asthma Control	Department of Pulmonary Medicine, Fukushima Medical University	Atsuro Fukuhara	
	Department of Pulmonary Medicine, Fukushima Medical University	Suguru Sato	
	Department of Pulmonary Medicine, Fukushima Medical University	Manabu Uematsu	
	Department of Pulmonary Medicine, Fukushima Medical University	Kenichi Misa	
	Department of Pulmonary Medicine, Fukushima Medical University	Takefumi Nikaido	
	Department of Pulmonary Medicine, Fukushima Medical University	Yayoi Inokoshi	
	Department of Pulmonary Medicine, Fukushima Medical University	Naoko Fukuhara	
	Department of Pulmonary Medicine, Fukushima Medical University	Xintao Wang	
	Department of Pulmonary Medicine, Fukushima Medical University	Kenya Kanazawa	
	Department of Pulmonary Medicine, Fukushima Medical University	Yoshinori Tanino	
	Associate Professor, Clinical Oncology Center, Fukushima Medical University Hospital	Takashi Ishida	
	Professor and Chair, Department of Pulmonary Medicine, Fukushima Medical University Hospital	Mitsuru Munakata	176
Lessons From Chernobyl	Nagasaki University Graduate School of Biomedical Science, Nagasaki, Japan	Noboru Takamura	
	Vice President, Fukushima Medical University, Fukushima, Japan	Shun-ichi Yamashita	178
Lessons from Fukushima: Psychiatric Care after Radiation Exposure	Fukushima Medical University, Department of Neuropsychiatry	Akira Wada	
	Fukushima Medical University, Department of Neuropsychiatry	Yasuto Kunii	
	Fukushima Medical University, Department of Neuropsychiatry	Jynya Matsumoto	
	Fukushima Medical University, Department of Neuropsychiatry	Shuntaro Itagaki	
	Fukushima Medical University, Department of Neuropsychiatry	Itaru Miura	
	Fukushima Medical University, Department of Neuropsychiatry	Hirobumi Mashiko	
	Fukushima Medical University, Department of Neuropsychiatry	Hirooki Yabe	
	Fukushima Medical University, Department of Neuropsychiatry	Shin-ichi Niwa	182
Fukushima Daiichi Nuclear Power Plant Accident and Emergency Medical Response at Fukushima Medical University Hospital	Department of Emergency and Critical Care Medicine, Fukushima Medical University School of Medicine	Arifumi Hasegawa	
	Department of Emergency and Critical Care Medicine, Fukushima Medical University School of Medicine	Makoto Miyazaki	
	Department of Emergency and Critical Care Medicine, Fukushima Medical University School of Medicine	Choichiro Tase	
	Takashi Nagai Memorial International Hibakusha Medical Center, Nagasaki University Hospital	Atsushi Kumagai	
	Takashi Nagai Memorial International Hibakusha Medical Center, Nagasaki University Hospital	Akira Ohtsuru	188

An American Hibakusha in Fukushima	Department of Blood Transfusion and Transplantation Immunology, Fukushima Medical University, Fukushima, Japan	Kenneth E. Nollet	191
Words to the World	Department of Blood Transfusion and Transplantation Immunology, Fukushima Medical University, Fukushima, Japan	Kenneth E. Nollet	195
Nollet Q&A with Mayo and ABC	Department of Blood Transfusion and Transplantation Immunology, Fukushima Medical University, Fukushima, Japan	Kenneth E. Nollet	210
Practicing World-Class Family Medicine in Fukushima	Professor and Chair, Department of Community and Family Medicine, Fukushima Medical University	Ryuki Kassai	214
Struggling to Recover from the Great Disaster	Professor and Chair, Department of Community and Family Medicine, Fukushima Medical University	Ryuki Kassai	217
The First Seven Days of the Disaster	Professor and Chair, Department of Community and Family Medicine, Fukushima Medical University	Ryuki Kassai	219
The Second Seven Days of the Disaster	Professor and Chair, Department of Community and Family Medicine, Fukushima Medical University	Ryuki Kassai	221
Fukushima One Month On	Professor and Chair, Department of Community and Family Medicine, Fukushima Medical University	Ryuki Kassai	223
Beyond the Day after Tomorrow: Community Health in Japan	Professor and Chair, Department of Community and Family Medicine, Fukushima Medical University	Ryuki Kassai	225
The First Anniversary of the Japanese Tsunami	Clinical Associate, Salaried GP and Deputy Editor InnovAIT	Patrick Hutt	227
Disaster in Japan: A New Medical Gaze	Professor and Chair, Department of Community and Family Medicine, Fukushima Medical University	Ryuki Kassai	230
Radiation Measurements at the Campus of Fukushima Medical University	Department of Natural Sciences (Physics), School of Medicine, Fukushima Medical University	Tsuneo Kobayashi	234
Fukushima Symposium: A Brief Note	Dean, Graduate School of Medicine, Fukushima Medical University School of Medicine	Ikuo Wada	
	Dean, School of Medicine, Fukushima Medical University School of Medicine, Fukushima, Japan, Vice-president, The Fukushima Society of Medical Science	Hitoshi Ohto	234
Reports from Disaster-Affected Areas	Department of Cardiology, Fukushima Medical University Hospital	Kazunobu Ishikawa	235
Effects of the Nuclear Accident on the Community: Unique Aspects of the Fukushima Disaster	Center for Medical Education and Career Development, Fukushima Medical University	Kazunobu Ishikawa	
Research: Depopulation with Rapid Aging in Minamisoma City after the Fukushima Daiichi Nuclear Power Plant Accident	Department of Cardiology, Fukushima Medical University Hospital	Kazunobu Ishikawa	
	Center for Medical Education and Career Development, Fukushima Medical University	Yukio Kanazawa	
	Department of Gastrointestinal Medicine, Minamisoma Municipal General Hospital	Shigeto Morimoto	
	Department of Genital Medicine, Kanazawa Medical University	Takashi Takahashi	240
	Laboratory of Infections Diseases, Graduate School of Infection Control Sciences, Kitasato University	Yumiko Nakajima	
The University Hospital Closest to the Fukushima Daiichi Nuclear Power Plant	Vice president and Director of Nursing Fukushima Medical University Hospital	Noriko Uezawa	
The Struggle of a Hub Hospital in Treating the Victims of Radiation Exposure	Certified Nurse of Cancer Radiotherapy	Noriko Uezawa	
	Nurse, Department of Radiology, Nagasaki University	Kanami Hashiguchi	243
	Second-Year Student (Masters Course) in the Certified Nurse Specialist Program in Radiotherapy, Graduate School of Biomedical Sciences, School of Health Sciences, Nagasaki University		

Chapter V Conveying to Posterity

We are now faced with the task of conveying to future generations the knowledge gained in the face of these unprecedented disasters, the voices of those with no platform from which to speak, and our desire for recovery.

Statement of Instructions			
When the 2011 Great East Japan Earthquake Struck	President, Fukushima Medical University	Shin-ichi Kikuchi	248
Fukushima Medical University: Managing Risks, and Prospects for Recovery after the Great East Japan Earthquake and the Accident at a Nuclear Power Plant	Recovery Headquarters Committee Member Vice President, Fukushima Medical University Hospital Professor and Chair, Department of Cardiovascular Surgery, Fukushima Medical University	Hitoshi Yokoyama	250

Fukushima Health Management Survey Working toward Recovery and Revival	Vice President, Fukushima Medical University	Shun-ichi Yamashita	257
Fukushima Health Management Survey		Health Survey Division	261
Living Happily in Fukushima	Department of Emergency and Critical Care Medicine Radiation Decontamination Team Fukushima Medical University School of Medicine	Arifumi Hasegawa	270
Special Report from Fukushima on the Great East Japan Earthquake: Hope in the Midst of Adversity, Part 3 Existing and Future Initiatives after the Great East Japan Earthquake	Vice President, Fukushima Medical University, Professor and Chair, Department of Organ Regulatory Surgery	Seichi Takenoshita	
	Lecturer, Department of Organ Regulatory Surgery	Izumi Nakamura	274
Fukushima: Hope in the Midst of Adversity Bearing a Historic Mission and Global Responsibility	President and Chair, Fukushima Medical University	Shin-ichi Kikuchi	
	Vice President, Fukushima Medical University	Shun-ichi Yamashita	
	Vice President, Fukushima Medical University	Kenji Kamiya	280

Supplementary Materials

Brief Report on the Damage from the 2011 Great East Japan Earthquake (Report No. 832)	286
Earthquake Disaster Document March 11, 2011–March 31, 2012	288
Campus Map	301

Condition of Victims and Hospital Facilities on the Day of the Great East Japan Earthquake	Hospital Administration Department	80
Overview of Patient Admission/Transfer in Hospitals within Evacuation Zones	Hospital Administration Department	85
Overview of Faculty Affected by the Disaster	General Affairs Department	115
Overview of Student Victim Status	Student Affairs Division	116
Overview of Fukushima Medical University's Post-Disaster Wide-Ranging Medical Relief Efforts	Planning and Financial Affairs Division	120
Overview of Resources and Support Received from Other Universities	Planning and Financial Affairs Division	140
Establishment of a Partnership with Hiroshima University and Nagasaki University for Medical Care Countermeasures for the Fukushima Nuclear Accident Kickoff Meeting: Overview of Conference on Research by Institutions on the Effects of Radioactivity	Planning and Financial Affairs Division	151
Overview of Support Activities by Hiroshima University	Planning and Financial Affairs Division	160
Overview of Post-quake Medical Examination System and Results	Hospital Administration Department	213
Overview of Support Activities by Nagasaki University	Planning and Financial Affairs Division	246
Status of Facilities and Equipment	General Affairs Department	279

This book is a compilation of the essays, notes, and photos collected during the one-year period following the Great East Japan Earthquake to create a record of the activities undertaken by Fukushima Medical University and to share them with the world.