

Presentation on the earthquake and tsunami from the physician's perspective

JMAT's (Japan Medical Association Team) Activities after the Great Eastern Japan Earthquake and Nuclear Accident in Fukushima

Masami Ishii, MD

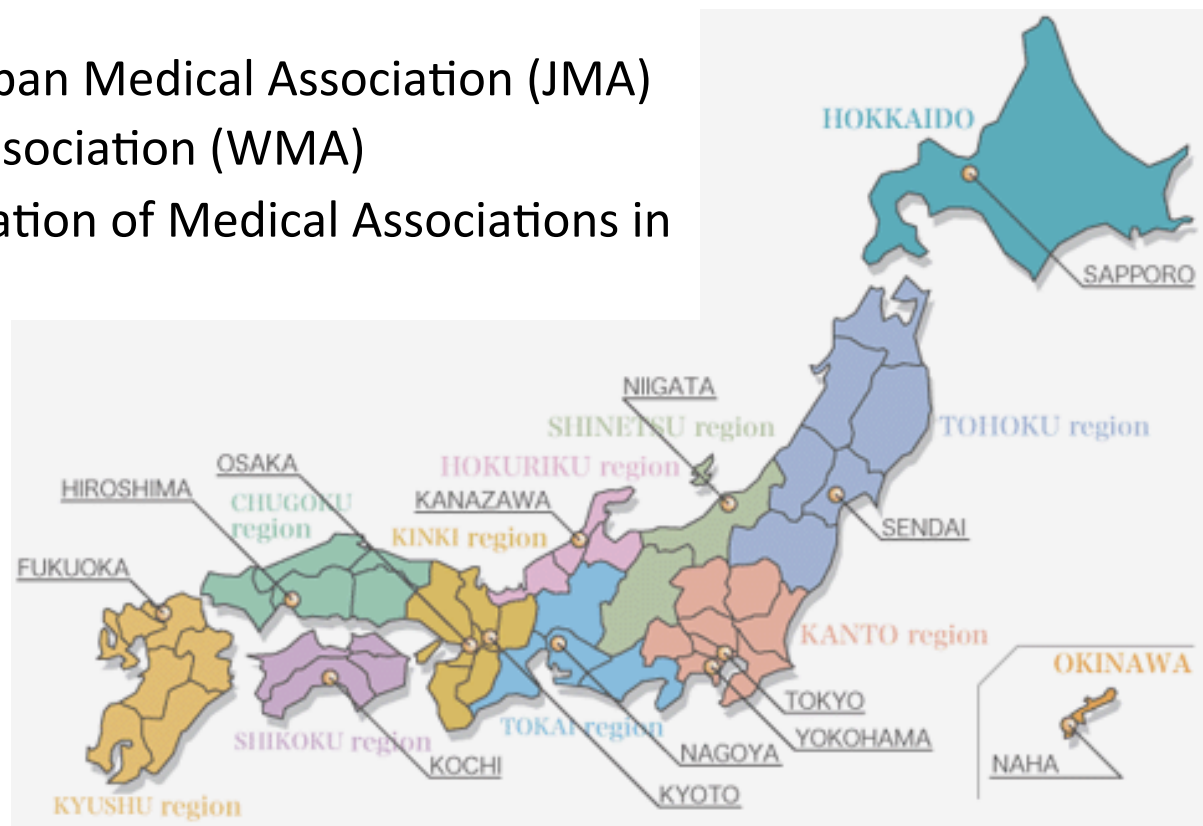
Executive Board Member, Japan Medical Association (JMA)

Vice-Chair, World Medical Association (WMA)

Secretary General, Confederation of Medical Associations in Asia and Oceania (CMAAO)

WMA General Assembly,
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Plenary Session of the Assembly
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Great Eastern Japan Earthquake

- Date and Time: 14:46 JST or 5:46 GMT. Fri., March 11, 2011
- Epicenter: Off the Sanriku coast in the Tohoku area
- Magnitude: 9.0
- Maximum Seismic Intensity: 7, in Kurihara City, Miyagi
- Type of Earthquake: Underwater earthquake
- Human Toll: 15,690 dead, 4,735 missing, 5,714 injured (as of Aug 11)
- Features:
 - Giant Tsunami hit an area stretching 500 km (310 mile) on the Pacific coast.
 - Serious accident occurred in reactors 1 to 4 at Fukushima Daiichi Nuclear Power Plant.
 - Afflicted areas experienced shortages in the supply of basic goods and food (due to bad weather including snow, severed roads and bridges, poor communication tools, fear of radiation....)



TEPCO's (Tokyo Electric Power Company) Fukushima Daiichi and Daini Nuclear Power Plants

Fukushima Daiichi (Fukushima No.1)



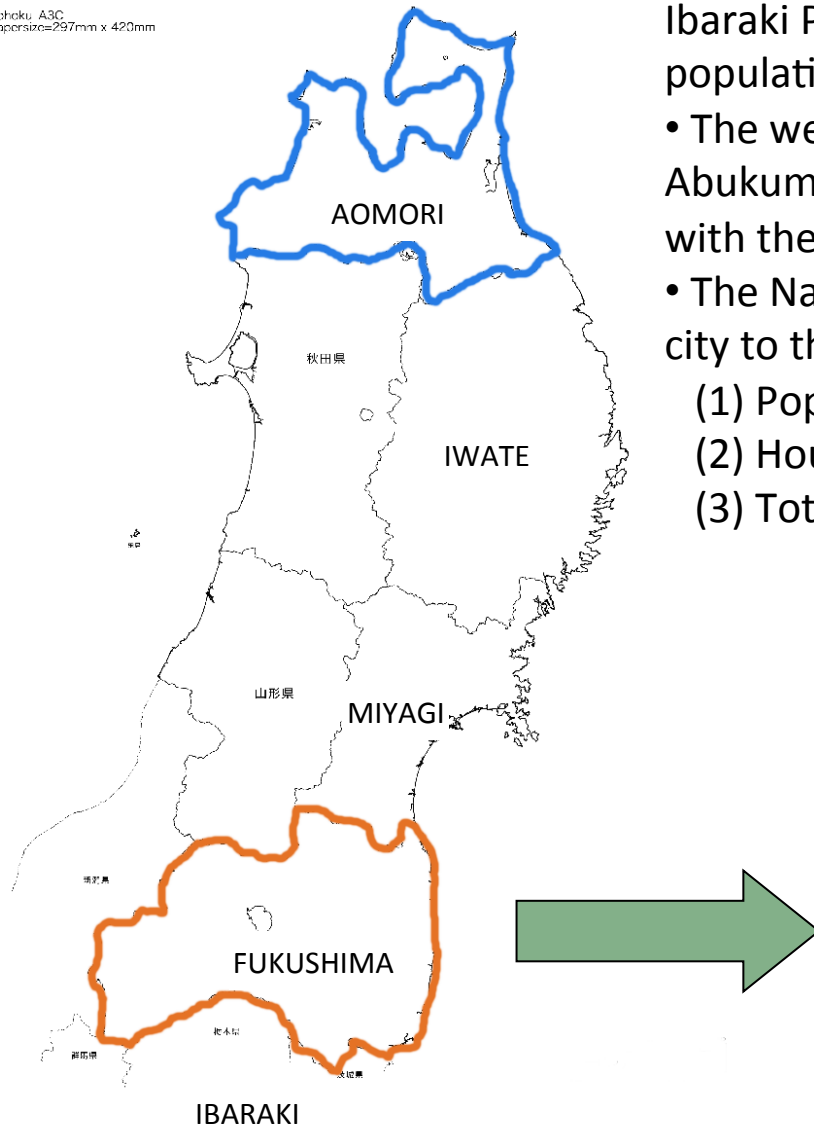
Fukushima Daini (Fukushima No. 2)



Location	Okuma-town, Futaba-town	Location	Naraha Town, Tomioka-Town
Area	Approx. 3.5 million m ²	Area	Approx. 1.5 million m ²
Construction Cost	E.g., Unit 1: USD 485mil. Unit 6: USD 2.2bil.	Construction Cost	E.g., Unit 1: USD 4.4 bil. Unit 4: USD 3.6. bil.
Power	Unit 1: 460 thousand kW Units 2-5: 784 thousand kW Unit 6: 1.1 mil. kW	Power	Units 1-4: 1.1 mil. kW
Reactor Type	Boiling water reactor	Reactor Type	Boiling water reactor
Operated since	E.g., Unit 1:1971, Unit 6: 1979	Operated since	E.g., Unit 1: 1982, Unit 4: 1987
# of Workers	Approx. 6,300	# of Workers	Approx. 3,100

Iwaki City, Fukushima

Tohoku_A3C
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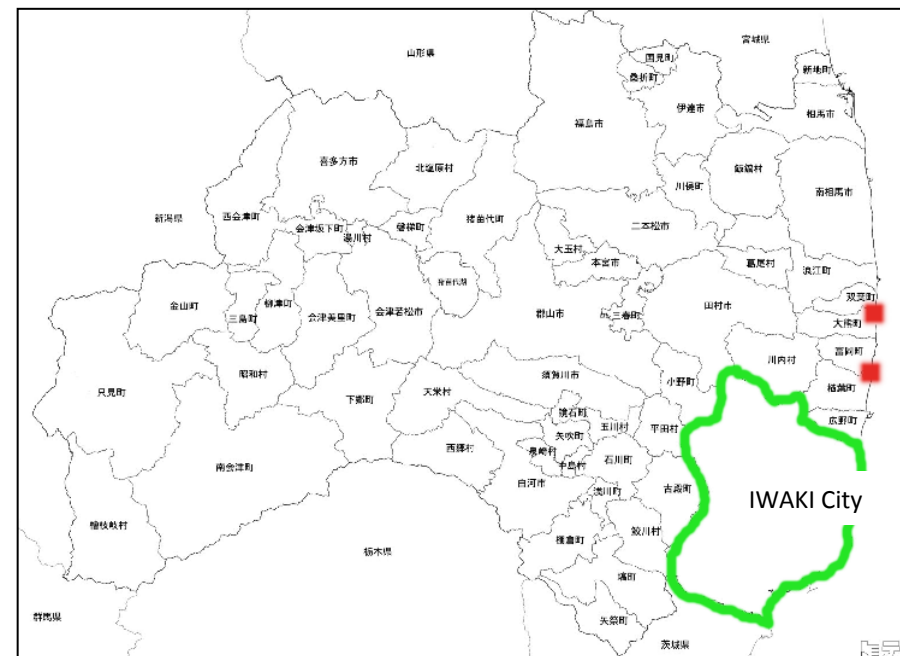


- Located at the southeastern end of Fukushima and close to Ibaraki Prefecture, the Iwaki City has the second largest population and a vast area in Tohoku Region.
- The western part is mountains and forests, goes through the Abukuma highlands (altitude 500-700 meters), and joins up with the central part.
- The Natsugawa river and Samegawa river flow through the city to the east and meet the Pacific Ocean.

(1) Population : 336,062

(2) Households : 127,504

(3) Total area : 1231.35Km²



JMA's Disaster Preparedness before 3.11

- **The 1st WMA Asian-Pacific Regional Conference (Tokyo, 2006)**
 - Main theme: Disaster preparedness and response, pandemic infectious disease, and the state of the profession.
 - The conference was featured in JMAJ 50(1), 2007 Special Edition.
- **Radiation Emergency Medicine Network**
 - Participated in the Radiation Emergency Medicine Network Council of the National Institute of Radiological Sciences (NIRS) and coordinated with radiological experts.
- **Committee on Emergency and Disaster Medicine**
 - Expanded the Committee in 2008 to develop countermeasures against disasters
 - Members include physician representatives from across the nation, experts in emergency and disaster medicine, concerned ministries, Self-Defense Forces, and NIRS.
 - The Committee proposed the JMAT Concept in March, 2010. Based on that, approx. 1,500 teams and nearly 6,000 experts participated in the JMAT's medical relief activities (as of Aug 11).

JMA's Major Responses to the Earthquake

- **Dispatch of JMATs & JMATs II**
 - 1,544 teams sent from around the country to afflicted 4 prefectures (as of Sep 22)
 - Cooperation to postmortem examinations
- **Transport of Drugs**
 - Conducted with the help of US Military, Japan Self-Defense Force, Police, and the JPMA (Japan Pharmaceutical Manufacturers Association) on humanitarian basis
- **Survivors Health Support Liaison Council**
 - JMA, the Japan Dental Association and other related organizations coordinate with concerned ministries (Cabinet Office, Ministry of Health, Labour and Welfare, Ministry of Internal Affairs and Communications, Ministry of Education, Culture, Sports, Science & Technology, etc.)
 - Information sharing and response to medical needs in the afflicted areas
- **Negotiation with the government for Recovery**
 - Recovery of affected medical institutions (rebuild & repair, purchase of medical equipment): subsidies, public financing, preferential taxation
 - Employment maintenance: physicians, nurses, technicians, personnel for rehabilitation, administrative staff

JMAT (Japan Medical Association Team)

- Purpose
 - To provide medical treatment at evacuation sites & first-aid centers
 - To provide medical assistance at hospitals and clinics in the disaster-affected areas
 - Team composition (example)
 - Physician: 1; nurses: 2; coordination staff (driver): 1
 - Dispatching duration of the team
 - Approximately three to seven days
 - A standard JMAT training curriculum will be developed for participants.
- The curriculum will include basic knowledge about medical treatment for radiation exposure and CBRN (Chemical, Biological, Radiological, Nuclear) terrorism countermeasures in addition to general disasters.

Phases of JMAT's Activity

For about 1 month since March 15

Phase 1

JMATs were set up and dispatched by prefectural medical associations (to Iwate, Miyagi, Fukushima and Ibaraki prefectures).

After about a month (April 14) since the disaster

Phase 2

JMAT activities were reduced.
→ Ongoing support was given only to the specific areas (in Iwate, Miyagi and Fukushima).

At the same time, negotiation with the government for recovery started (supplementary budget, loan, preferential taxation).

The end of JMATs was discussed with the affected medical associations.

Phase 3

JMAT activities ended (July 15).
(Restoration of health system of the affected areas, takeover to the local MAs and continuation of JMATs in some areas).

Preparation for the anticipated disasters in the future.
(Evaluation and review of the current scheme, training, involvement in government's disaster prevention planning)

Number of persons registered in JMAT by occupation

- 1,571 JMATs & JMAT II were registered as of September 22.
 - 1,544 JMATs & JMAT II are in action including those whose dispatch has been settled.
 - 27 teams are on standby [JMATII].

Occupation	Total
Physician (JMA members account for almost 60%)	2,150
Nurse, Assistant nurse	1,681
Pharmacist	445
Coordination staff	1,084
Other	481
Total	5,841

(as of Aug 11, 2011)

*The numbers include teams preparing to be dispatched. The Other category includes physical therapists, occupational therapists, clinical laboratory technicians, clinical radiologists, social workers, psychiatric social workers, clinical psychologists, care managers, and nutritionists, etc.

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Transport of Drugs

March 17: Through JPMIA, pharmaceutical manufacturers across the nation donated **8.5-ton truckloads of drugs**. JMA decided to ask for cooperation of the **US military** to transport the drugs from Tokyo to Miyagi and Iwate.

March 18: The **US Embassy** contacted **Yokota Air Base**. **“Operation Tomodachi”** one of the first trial of its kind started.

March 19: The drugs were moved from Yokota to Hanamaki (Iwate) and Sendai (Miyagi) by transport aircraft. In a parallel operation, transport about **800 kilograms of drugs** procured by the Aichi Medical Association from Komaki Airport to Fukushima Airport by two **Mitsubishi Heavy Industries jet aircraft** was carried out.



With the help of Drs. Nagata, Kayden and Arie (Harvard Connection), the JMA gained the cooperation of US military through the US Embassy in Tokyo.

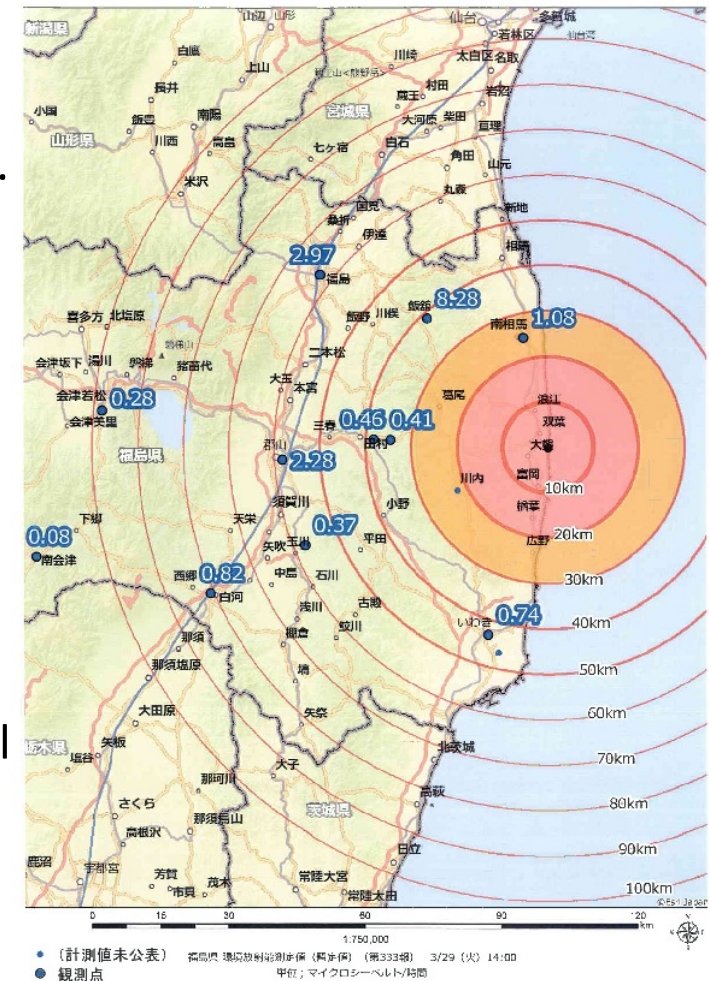


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JMA's Major Responses to the Nuclear Accident


- A map of radioactivity readings in Fukushima
 - Actual readings were shown with onion diagrams.
 - The map was referred when dispatching medical teams to Fukushima.
- Petition to the MEXT (Ministry of Education, Culture, Sports, Science & Technology)
 - On April 19, the MEXT tentatively set the level of 20 milli-sievert per year (mSv/y) as a radiation safety standard for infants and children. This is the tentative standard to be used for school grounds and buildings in Fukushima.
 - On May 23, JMA submitted a petition to the Minister for actions to minimize radiation exposure. After that, the MEXT withdrew the radiation safety standard.



Crisis Management & Lessons Learned from the Great Eastern Japan Earthquake

Nuclear power plants had multiple safety measures.

- Fuel pellets and cladding tubes of fuel rods to seal fuels.
- Pressure vessels, containment vessels, and buildings
- Control rods to control the number of neutron fission
- Emergency Core Cooling System (ECCS)
- Back-up power Supply



Destroyed by core melt-through and hydrogen explosions

Disabled by the earthquake & tsunami

• • **Deep-rooted myth of the safety of nuclear power plants**

Lessons Learned: Accurate and Prompt Provision of Information

- When nuclear facilities are stricken by disaster, it is essential to measure and detect the presence of radioactive contamination, and transmit information to local residents.
- Physicians who were affected together with the rest of the community should be particularly given accurate and prompt information from local government and others because they are trusted by local residents, and can provide explanations to them and contribute to their sense of reassurance.



I would like to offer my deepest condolences to all the victims and express my heartfelt gratitude for all the outpourings of good will and tremendous support which the disaster areas have been receiving.

Japan Medical Association