The Sendai Framework for Disaster Risk Reduction 2015-2030 and its call for evidence based science

Professor Virginia Murray, Public Health England
Public Health Consultant in Global Disaster Risk Reduction,
Vice-chair of UNISDR Scientific and Technical Advisory Group
Co-Chair IRDR Disaster Data Loss Project (DATA) project
Member of the UN Sustainable Development Solutions Network
Visiting Professor, UNU International Institute of Global Health
Member of the WHO Collaborating Centre on Mass Gatherings and Global Health Security
Why 2015 mattered so much
Sendai Framework for Disaster Risk Reduction 2015-2030

1 Global Outcome
13 Guiding Principles
4 Priorities for Action at all levels
7 Global Targets

Reduce:
- Mortality:
  - Global population: 2020-2030 Average < 2005-2015 Average
- Affected people:
  - Global population: 2020-2030 Average < 2005-2015 Average
- Economic loss:
  - Global GDP: 2030 Ratio < 2015 Ratio
- Damage to critical infrastructure & disruption of basic services: 2030 Values < 2015 Values

Increase:
- Countries with national & local DRR strategies: 2020 Value > 2015 Value
- International cooperation to developing countries: 2030 Value > 2015 Value
- Availability and access to multi-hazard early warning, systems & disaster risk information and assessments: 2030 Values > 2015 Values
Sendai Framework for Disaster Risk Reduction 2015-2030

• Health resilience is strongly promoted throughout
Health resilience is strongly promoted throughout the Sendai Framework for Disaster Risk Reduction 2015-2030. The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.
Global and regional levels

25. To achieve this, it is important:

(a) To enhance the development and dissemination of science-based methodologies and tools to record and share disaster outcomes and relevant disaggregated data and statistics, as well as to strengthen disaster risk modelling, assessment, mapping, monitoring and multi-risk early warning systems;

(b) To promote the conduct of comprehensive surveys on multi-hazard disaster risks and the development of regional disaster risk assessments and maps, including climate change scenarios;

(c) To promote and enhance, through international cooperation, including technology transfer, access to and the sharing of use of non-sensitive data and information, as appropriate, communications and geospatial and space-based technologies and related services, maintain and strengthen in situ and remotely sensed earth and climate observations, and strengthen the utilization of media, including social media, traditional media, big data and mobile phone networks, to support national measures for successful disaster risk communication, as appropriate and in accordance with national laws,

(d) To promote common efforts in partnership with the scientific and technological community, academia and the private sector to establish, disseminate and share good practices internationally;

(e) To support the development of local, national, regional and global user-friendly systems and services for the exchange of information on good practices, cost-effective and easy-to-use strategies, reduction technologies and lessons learned on policies, plans and measures for disaster risk reduction;

(f) To develop effective regional and global campaigns as instruments for public awareness and education, building on the existing ones (for example, the "One million safe schools and hospitals" initiative, the "Making Cities Resilient: My city is getting ready" campaign, the United Nations Global Call to Action for Disaster Risk Reduction, the annual United Nations International Day for Disaster Reduction, to promote a culture of disaster prevention, resilience and responsible citizenship, generate understanding of disaster risk, support mutual learning and share experiences, and encourage public and private stakeholders to actively engage in such initiatives and to develop new ones at the local, national, regional and global levels;

(g) To enhance the scientific and technical work on disaster risk reduction and its mobilization through the coordination of existing networks and research institutions at all levels and in all regions, with the support of the United Nations Office for Disaster Risk Reduction and Technical Advisory Group, In order to strengthen the evidence-base in support of the implementation of the present Framework, promote scientific research on disaster risk patterns, causes and effects, disseminate risk information with the best use of geospatial information technology, provide guidance on methodologies and standards for risk assessments, disaster risk modeling and the use of data, identify research and technology gaps and set recommendations for research priority areas in disaster risk reduction, promote and support the availability and application of science and technology to decision-making, contribute to the update of the publication entitled "2009 UNISDR Terminology on Disaster Risk Reduction"; use post-disaster reviews as opportunities to enhance learning and public policy, and disseminate studies;

(h) To encourage the availability of copyrighted and patented materials, including through negotiated concessions, as appropriate;

(i) To enhance access to and support for innovation and technology, as well as in long-term, multi-hazard multi-sector driven research and development in the field of disaster risk management;
Priority 1 Understanding Disaster Risk

25 (g)  Enhance the scientific and technical work on disaster risk reduction and its mobilization through the coordination of existing networks and scientific research institutions at all levels and all regions with the support of the UNISDR Scientific and Technical Advisory Group in order to:
Priority 1 Understanding Disaster Risk

- strengthen the evidence-base in support of the implementation of this framework;
- promote scientific research of disaster risk patterns, causes and effects;
- promote and support the availability and application of science and technology to decision-making;
- use post-disaster reviews as opportunities to enhance learning and public policy.
UNISDR SCIENCE AND TECHNOLOGY CONFERENCE

Mobilising science to implement the Sendai Framework

27-29 JANUARY 2016 | GENEVA, SWITZERLAND
The Science and Technology Roadmap to Support the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030

29 February 2016

The Sendai Framework for Disaster Risk Reduction 2015-2030 was agreed at the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan in March 2015 and endorsed by the UN General Assembly in June 2015.

The goal of the Sendai Framework is to prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.

The expected outcome till 2030 is to achieve substantial reduction in disaster risk and losses in lives, livelihoods and health in the economic, physical, social, cultural and environmental aspects of persons, private sector, communities and countries. There are four priorities.
Key statements in the Roadmap includes

- **Synthesize, produce and disseminate scientific evidence** in a timely and accessible manner that responds to the knowledge needs of policy-makers and practitioners.

- **Provide scientific evidence** to enable decision-making of policy options for investment and development planning.
Reflections on a Science and Technology Agenda for 21st Century Disaster Risk Reduction


Amina Aïtsi-Selmi¹ · Virginia Murray¹,² · Chadia Wannous³ · Chloe Dickinson¹ · David Johnston⁴ · Akiyuki Kawasaki⁵ · Anne-Sophie Stevance⁶ · Tiffany Yeung⁷

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Abstract  The first international conference for the post-2015 United Nations landmark agreements (Sendai Framework for Disaster Risk Reduction 2015–2030, Sustainable Development Goals, and Paris Agreement on Climate Change) was held in January 2016 to discuss the role of science and technology in implementing the Sendai Framework for Disaster Risk Reduction 2015–2030. The conference focused on the contributions of science and technology to disaster risk reduction (DRR) science and technology. This article describes the evolution of the role of science and technology in the policy process building up to the Sendai Framework adoption that resulted in an unprecedented emphasis on science in the text agreed on by 187 United Nations member states in March 2015 and endorsed by the United Nations General Assembly in June 2015. Contributions to this text were made by a diverse group of experts and stakeholders from around the world.
Way forward includes

• Contribute concrete initiatives from the science and technology community and other stakeholders to support a comprehensive, multidisciplinary evidence-based approach to DRR policy options and interaction with decision makers at all levels

• A call for an evidence-based review of risk assessment and its implementation was made.
Promote the development and application of evidence-based practices through health science and technology and targeted operational research for all-hazards emergency and disaster risk management.

- Develop, or revise multi-sectoral policies, integrated plans and programmes for emergency and disaster risk reduction to include the health sector component, and manage health risks of emergencies and disasters with appropriate levels of resources to support implementation.

- Increase the participation of health sector representatives in multi-sectoral emergency and disaster risk management committees and platforms at all levels.
Disaster risk reduction cuts across the 2030 Sustainable Development Agenda.

There are 25 targets, directly and indirectly, related to disaster risk reduction in 10 of the 17 SDGs, firmly establishing the role of disaster risk reduction as a core development strategy.
The Global Platform for Disaster Risk Reduction

GLOBAL PLATFORM FOR DISASTER RISK REDUCTION

The world's foremost gathering on reducing disaster risk and building the resilience of communities and nations, the Global Platform for Disaster Reduction was first held in 2007. It takes place every two years, with the 2015 edition rolled into the Third UN World Conference on Disaster Risk Reduction. Its fifth session will be held in May 2017 in Mexico.
The 2011 triple disaster in Fukushima, Japan

1. Earthquake
   Magnitude 9.0

2. Tsunamis
   Height >15m
   Rose up to 41m
   Death toll >20,000

3. Nuclear accident
Table 1. Chronology of the major health impacts.

<table>
<thead>
<tr>
<th>Days from the disaster</th>
<th>Main healthcare issue</th>
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<tbody>
<tr>
<td>Within 24 hours</td>
<td>Few injuries&lt;sup&gt;4&lt;/sup&gt;</td>
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<tr>
<td>2-10 days</td>
<td>Hypothermia&lt;sup&gt;4,5&lt;/sup&gt; Endogenous diseases&lt;sup&gt;4&lt;/sup&gt; Burning&lt;sup&gt;4&lt;/sup&gt; ‘Tsunami-lung’&lt;sup&gt;5&lt;/sup&gt; Psychiatric shock&lt;sup&gt;4&lt;/sup&gt; Cardio-pulmonary arrest (CPA)&lt;sup&gt;6&lt;/sup&gt; Coronary syndrome&lt;sup&gt;6&lt;/sup&gt; Cerebro-vascular diseases&lt;sup&gt;7&lt;/sup&gt; ‘drug-refugees’&lt;sup&gt;25&lt;/sup&gt;</td>
</tr>
<tr>
<td>10-30 days</td>
<td>Respiratory diseases&lt;sup&gt;8,9,11&lt;/sup&gt; Gastritis&lt;sup&gt;8,9&lt;/sup&gt; Pressure ulcers&lt;sup&gt;39&lt;/sup&gt; Exacerbation of chronic conditions&lt;sup&gt;24&lt;/sup&gt; Allergic reactions to tsunami debris&lt;sup&gt;8&lt;/sup&gt;</td>
</tr>
<tr>
<td>&gt;30 days</td>
<td>Children with allergy&lt;sup&gt;13&lt;/sup&gt; Musculoskeletal disease&lt;sup&gt;2,17,38&lt;/sup&gt; Deep venous thrombosis (DVT) and pulmonary embolism&lt;sup&gt;15,16&lt;/sup&gt;</td>
</tr>
<tr>
<td>Throughout</td>
<td>Non-communicable diseases&lt;sup&gt;24&lt;/sup&gt; (hypertension, diabetes, chronic renal failure, cancer, etc.) Pregnancy hypertension&lt;sup&gt;4,8&lt;/sup&gt; Oxygen-dependent management&lt;sup&gt;11,42&lt;/sup&gt; Insomnia&lt;sup&gt;6&lt;/sup&gt; Skin-related disorders&lt;sup&gt;18&lt;/sup&gt;</td>
</tr>
<tr>
<td>Suspected</td>
<td>Mental health (depression, posttraumatic stress disorder (PTSD), and cognitive disorders)</td>
</tr>
</tbody>
</table>
Health Professionals

Education
- Individualised emergency plan
- Medication lists & stockpile

Patients
- Bring medication

Community emergency plan
- Insurance system

Policy makers

Evidence

Researchers
The Great East Japan Earthquake Disaster: Distribution of Hospital Damage in Miyagi Prefecture

Sae Ochi, MD, MPH, PhD; Atsuhiro Nakagawa, MD, PhD; James Lewis, MArch; Susan Hodgson, PhD; Virginia Murray, FFPH, FRCP, FFOM, FRCPath

Abstract
Introduction: In catastrophic events, a key to reducing health risks is to maintain functioning of local health facilities. However, little research has been conducted on what types and levels of care are the most likely to be affected by catastrophic events.

Problem: The Great East Japan Earthquake Disaster (GEJED) was one of a few “megadisasters” that have occurred in an industrialized society. This research aimed to develop an analytical framework for the holistic understanding of hospital damage due to the disaster.

Methods: Hospital damage data in Miyagi Prefecture at the time of the GEJED were collected retrospectively. Due to the low response rate of questionnaire-based surveillance (7.7%), publications of the national and local governments, medical associations, other nonprofit organizations, and home web pages of hospitals were used, as well as literature and news sources. The data included information on building damage, electricity and water supply, and functional status after the earthquake. Geographical data for hospitals, coastline, local boundaries, and the inundated areas, as well as population size and seismic intensity were collected from public databases. Logistic regression was conducted to identify the risk factors for hospitals ceasing inpatient and outpatient services. The impact was displayed on maps to show the geographical distribution of damage.

Results: Data for 143 out of 147 hospitals in Miyagi Prefecture (97%) were obtained. Building damage was significantly associated with closure of both inpatient and outpatient services. In logistic regression, hospital location and type were significantly associated with damage impact.
The Great East Japan Earthquake Disaster: Distribution of Hospital Damage in Miyagi Prefecture

Sae Ochi, MD, MPH
Susan Hodgson, Phil

1. MRC-HPA Centre for Environmental Health, Imperial College London, United Kingdom
2. Seisa University, Kanagawa
3. Department of Neurosurgery, Medicine and Critical Care, University Hospital, Miyagi
5. Extreme Events and Health, Public Health England, Loughborough, United Kingdom

Correspondence:
Sae Ochi, MD, MPH, PhD
MRC-HPA Centre for Environment and Health
Imperial College London
Norfolk Place
London W6 8RF
United Kingdom

Identify the risk factors for hospitals ceasing inpatient and outpatient services. The impact was displayed on maps to show the geographical distribution of damage.

Results: Data for 143 out of 147 hospitals in Miyagi Prefecture (97%) were obtained. Building damage was significantly associated with closure of both inpatient and outpatient services.
Seismic intensity, inundated area, and hospitals
Hospital damage by care types

A: Primary-care
B: Secondary-care
C: Tertiary care

Operational status
- Maintained
- Closed
- No data

Population
- 100,000-
- 50,000-100,000
- 10,000-50,000
- <10,000

Inundated area

Legend:
- Inundated area
Hospital damage by care types

A: Primary-care  B: Secondary-care  C: Tertiary care
Hospital damage by the proportion of psychiatric care beds

Fig 2. The % change in the number of hospital staff members working in the Soso district during the 18 months after the triple disaster.
Lessons from the evacuation zone

Over 80,000 people in Fukushima prefecture were forced to evacuate their homes following the nuclear accident.

- <20km: Mandatory evacuation zone (no-entry zone)
- 20-30km: Voluntary evacuation zone (Indoor evacuation)

**Mandatory evacuation**
- Widespread social disruption
  - Breakdown of communities
  - Social stigma attached to being from Fukushima

**Indoor evacuation:**
- All who could evacuate left
- No food supply within 50km
- Medical supply e.g. oxygen was in shortage
- The most vulnerable were left without food (e.g. hospital patients, seniors living alone)
Evacuation issues

• A study of 1215 elderly residents of care facilities followed up until 2013
  • those evacuated at the time of the disaster had a 3.37 times higher risk of mortality (95% confidence interval: 1.66–6.81)
  • compared with those not evacuated

“I did death investigation for a month after the disaster…several elderly people apparently died from starvation or dehydration at home..”--a medical doctor
Impact of mass-evacuation and long-term displacement to temporary housing

Causes of immobility include:
- Loss of jobs (farmers, fishermen)
- Small space for exercise
- Noise issue
- Increased car dependency
- Deterioration of mental status

<table>
<thead>
<tr>
<th>Soma City, 2012</th>
<th>Temporary housing</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity (%)</td>
<td>43%</td>
<td>32%</td>
</tr>
<tr>
<td>Hypertension (%)</td>
<td>28%</td>
<td>16%</td>
</tr>
<tr>
<td>Diabetes (%)</td>
<td>11%</td>
<td>7%</td>
</tr>
<tr>
<td>Standing instability*</td>
<td>69%</td>
<td>33%</td>
</tr>
</tbody>
</table>

* Those who cannot stand with one leg for 15 seconds
Increasing awareness and knowledge on health risks

• The most effective way to prevent indirect health impact after a disaster is to improve basic health status \textit{before disaster}.

\textbf{Fukushima prefecture is now..}

Providing medical outreach targeting
Temporary housing residents
Decontamination workers
Making exercise centres & parks
Improve health condition among evacuees
May make society healthier

*復興庁データhttp://www.reconstruction.go.jp/topics/20120821_shinsaikanrenshihoukoku.pdf*
Public health after a nuclear disaster: beyond radiation risks
Claire Leppold, Tetsuya Tanimoto & Masaharu Tsubokura

In the five years since Japan’s triple disaster there has been a growth in media coverage and public interest in disaster recovery. An earthquake in March 2011 triggered a tsunami that hit the Fukushima Daiichi nuclear power plant, leading to loss of the plant’s core cooling capacities, followed by hydrogen explosions and subsequent radiation leakage. The nuclear accident is often discussed, both within Japan and abroad, from a perspective of radiation leakage – as would be expected in the aftermath of such an accident. Yet this has led to confusion about the importance of radiation risks, due to conflicting reports and a lack of awareness of ongoing problems that are unrelated to radiation. These misunderstandings deserve attention. This paper provides a brief review on post-disaster health in Fukushima prefecture, highlighting areas in need of many members of the public, and even health professionals, continue to be confused by inconsistent results. This is unfortunate, in more ways than one. Controversy over radiation risk not only increases the difficulty in creating an appropriate public health response, but also diverts attention away from other post-disaster health problems that are unrelated to radiation, resulting in issues that are neglected in disaster awareness and response.

Over 80,000 people in Fukushima prefecture were forced to evacuate their homes following the nuclear accident. The event brought many changes to the affected region, including widespread social disruption through the breakdown of communities (due to the evacuation and the separation of families) and social stigma attached to being from Fukushima (largely due to incorrect assumptions among children and adults). It appears that the increasing burden of noncommunicable diseases and mental health problems may outweigh the burden of disease caused directly by radiation.

The multifaceted nature of the impact of nuclear disasters is exemplified in the issues faced by elderly residents of Fukushima. A study of 1215 elderly residents of care facilities followed up until 2013 found that those evacuated at the time of the disaster had a 3.37 times higher risk of mortality (95% confidence interval: 1.66–6.81) compared with those not evacuated; this suggests that the evacuation may have been more dangerous than the disaster itself for this population. This unexpected result illustrates the complexity of estimating disaster risks for elderly people, a challenge that has continued into the current recovery period. For
Public health after a nuclear disaster: beyond radiation risks
Claire Leppold, Tetsuya Tanimoto & Masaharu Tsubokura

- No deaths or acute health effects related to radiation exposure were reported in the general public immediately after the disaster.
Public health after a nuclear disaster: beyond radiation risks
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In the disaster recovery process following Fukushima 2011, confusion and mixed messages in public health research findings and related messages to understand impacts adds complications - in October 2015, the results of two studies concerning the children of Fukushima were reported within two days of each other:
- one found no detectable internal radiation contamination
- while the other found an increased risk of thyroid cancer.
Public health after a nuclear disaster: beyond radiation risks
Claire Leppold, Tetsuya Tanimoto & Masaharu Tsubokura

In this essay, we discuss the lessons learned from the Fukushima Daiichi nuclear disaster in 2011 and how they can inform current and future disaster recovery efforts. The lessons can be summarized into four key points:

1. No deaths or acute health effects related to radiation exposure were reported in the general public immediately after the disaster.
2. Confusion of public health research findings and related messages to understand impacts adds complications - in October 2015, the results of two studies concerning the children of Fukushima were reported within two days of each other:
   - one found no detectable internal radiation contamination
   - while the other found an increased risk of thyroid cancer.
3. A comprehensive perspective on Fukushima is needed, to continue the process of local disaster recovery and to improve preparation for any future nuclear disasters.

This post-disaster recovery framework, highlighting areas in need of improvement, will help guide ongoing efforts into the current recovery period.
Evidence Aid and Typhoon Haiyan in the Philippines

ADMIN * NOVEMBER 13, 2013 * UNCATEGORIZED
The Sendai Framework for Disaster Risk Reduction 2015-2030 and its call for evidence based science

- UN Landmark agreements – Sendai in particular – call for evidence based science to inform policy and practice

- They ensure coherence and alignment of national, regional and global disaster risk reduction and emergency and disaster risk management for health
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