Global Health and Radiation Medicine: Opportunities and Challenges in the Era of SDGs

16 November, 2015

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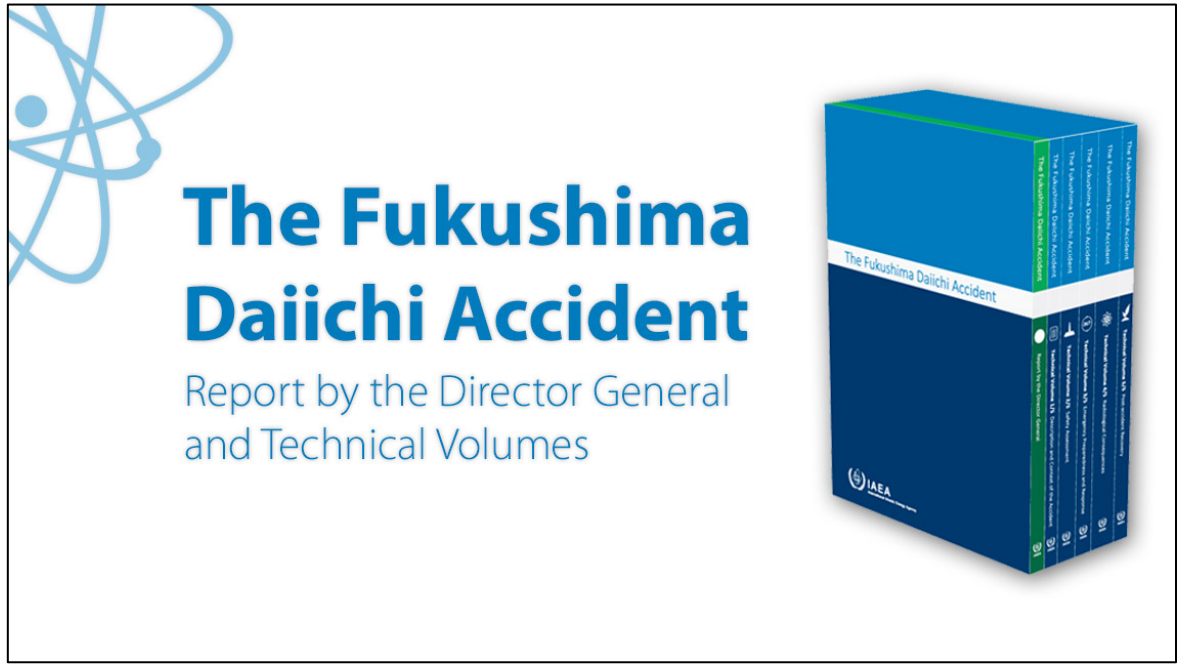
Outline

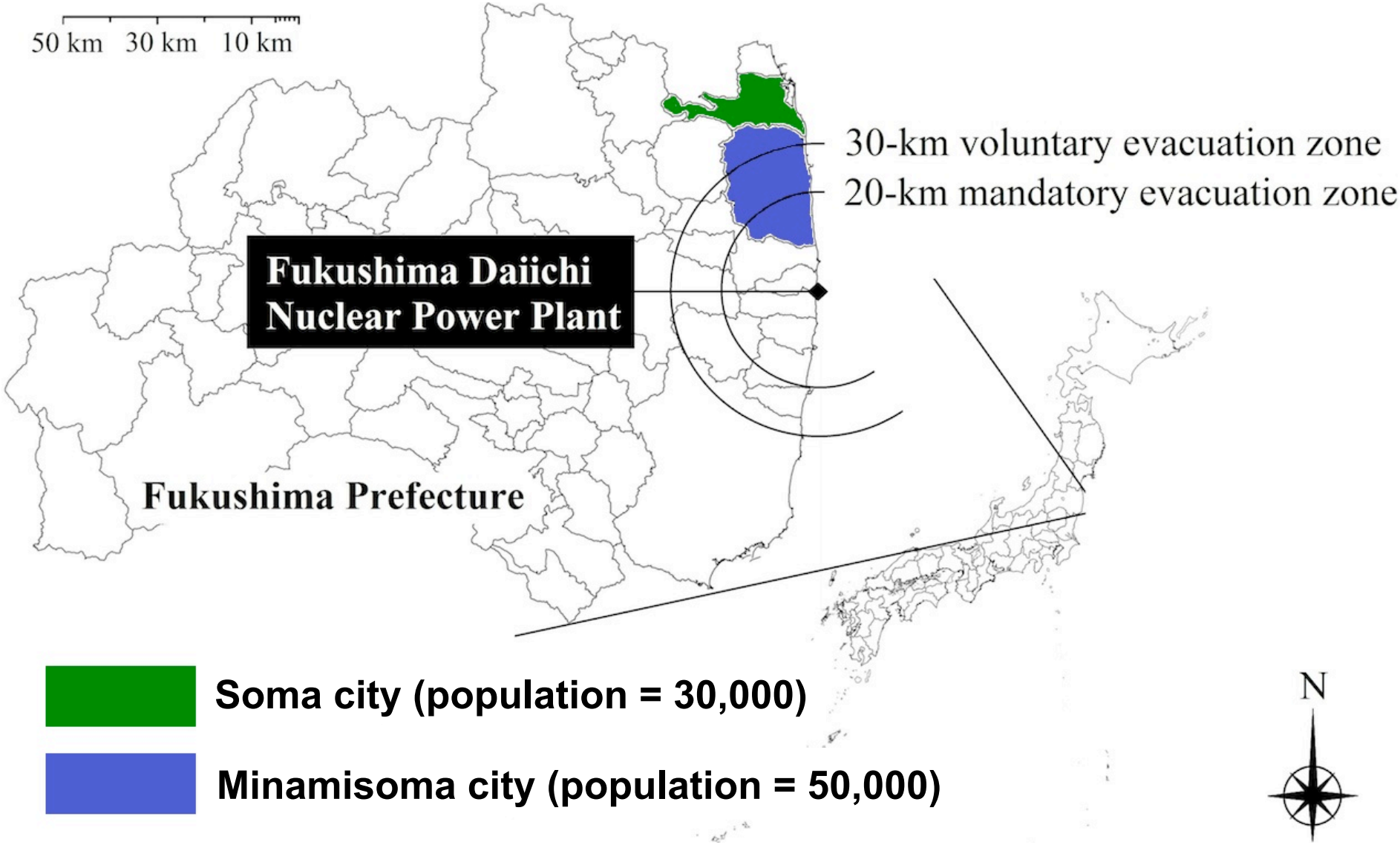
1. Our Work in Fukushima
2. Global Health Priorities
3. Paradigm Shift in Health Care
4. Opportunities for IAEA in the SDG era

Our work in Fukushima

1. Internal radiation exposure
2. External radiation exposure
3. Evacuation and health risks

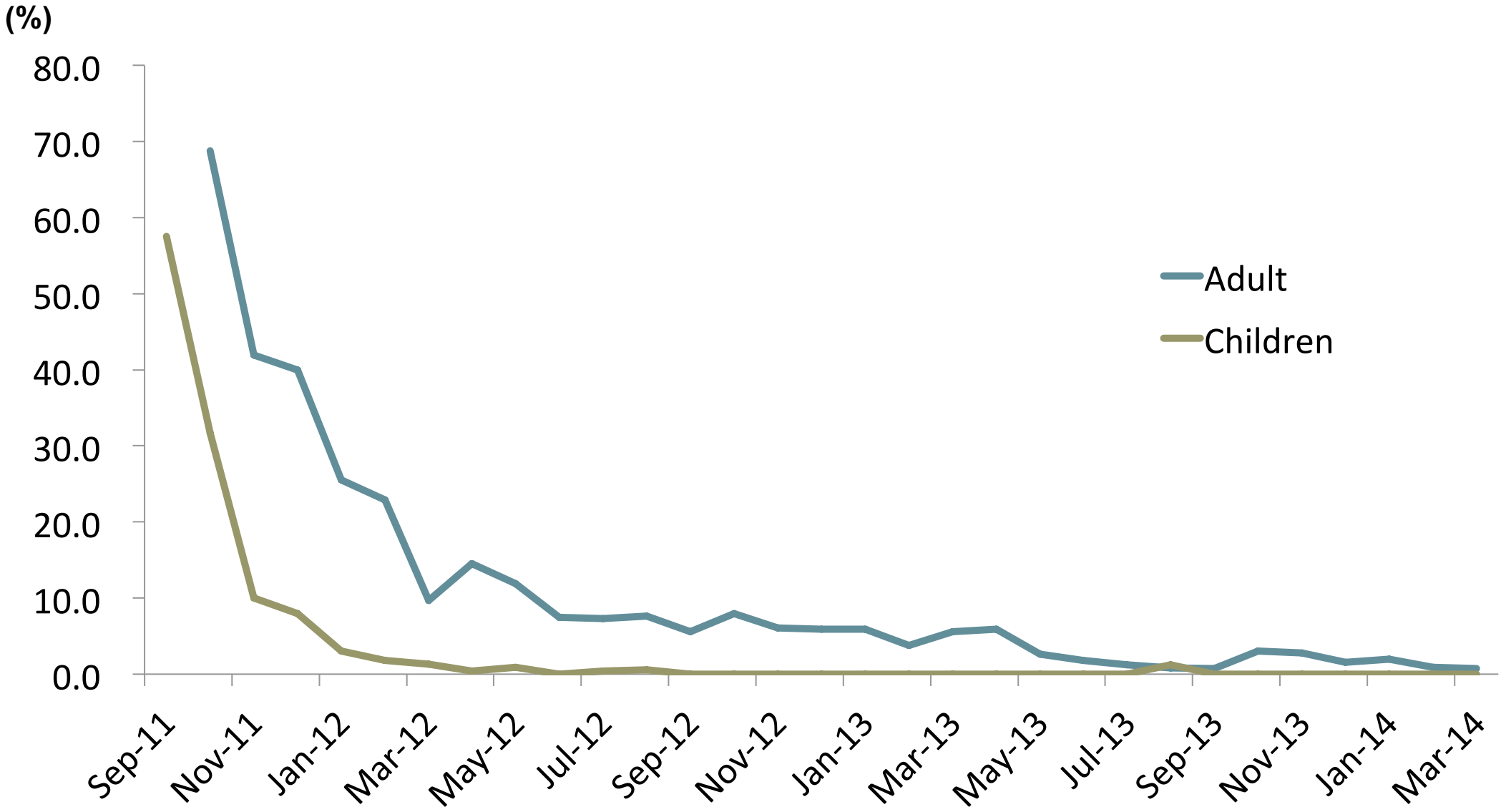


Fukushima Dai-ichi nuclear power plant accident (11th March, 2011)

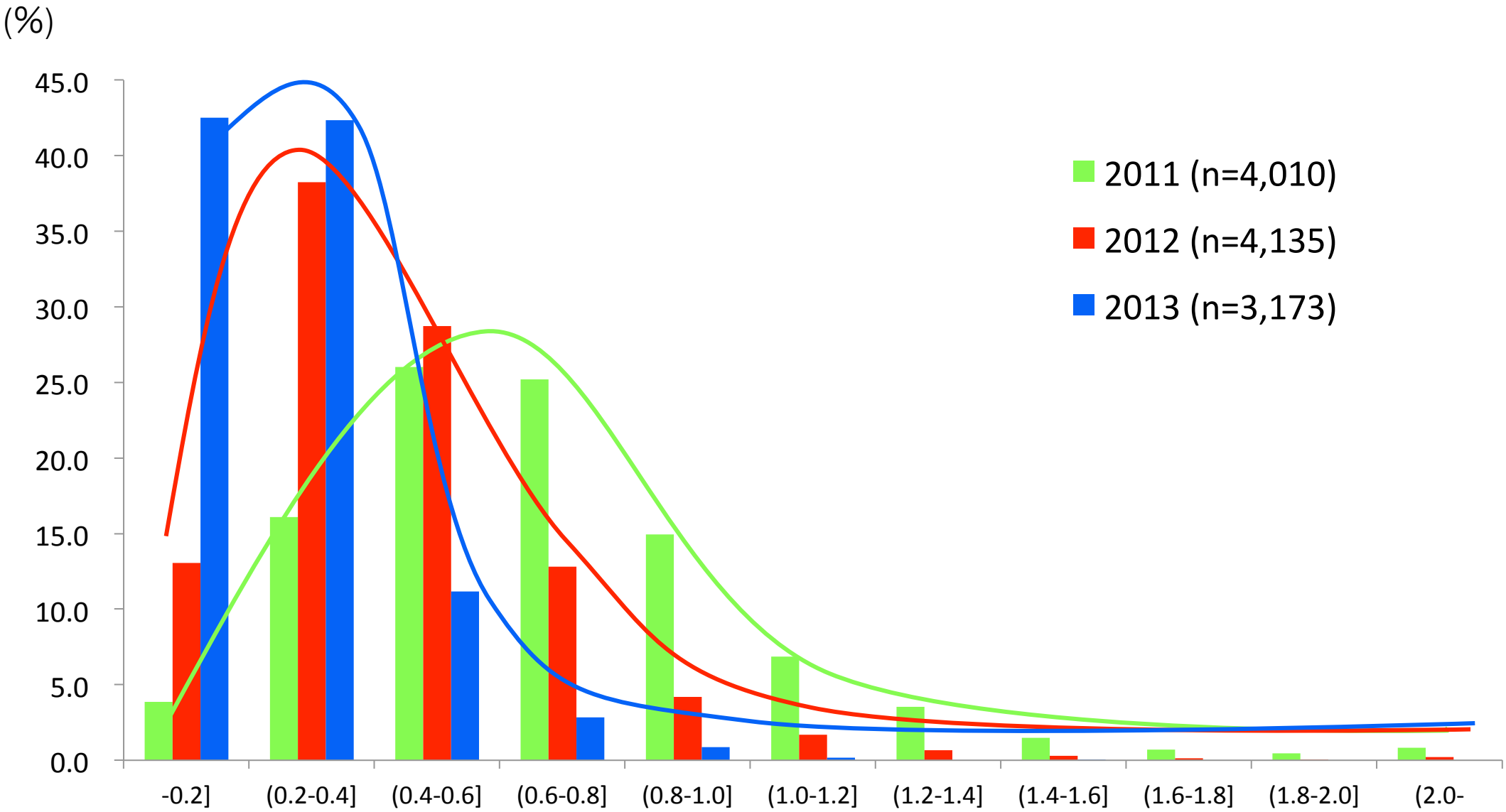


(1) Internal exposure: whole body counter machine (FASTSCAN Model 2251, Canberra Inc., United States)

(1) Internal exposure: monthly cesium detection rates (detection limit: 250 bq/body)



(2) External exposure: dose distribution in Soma City

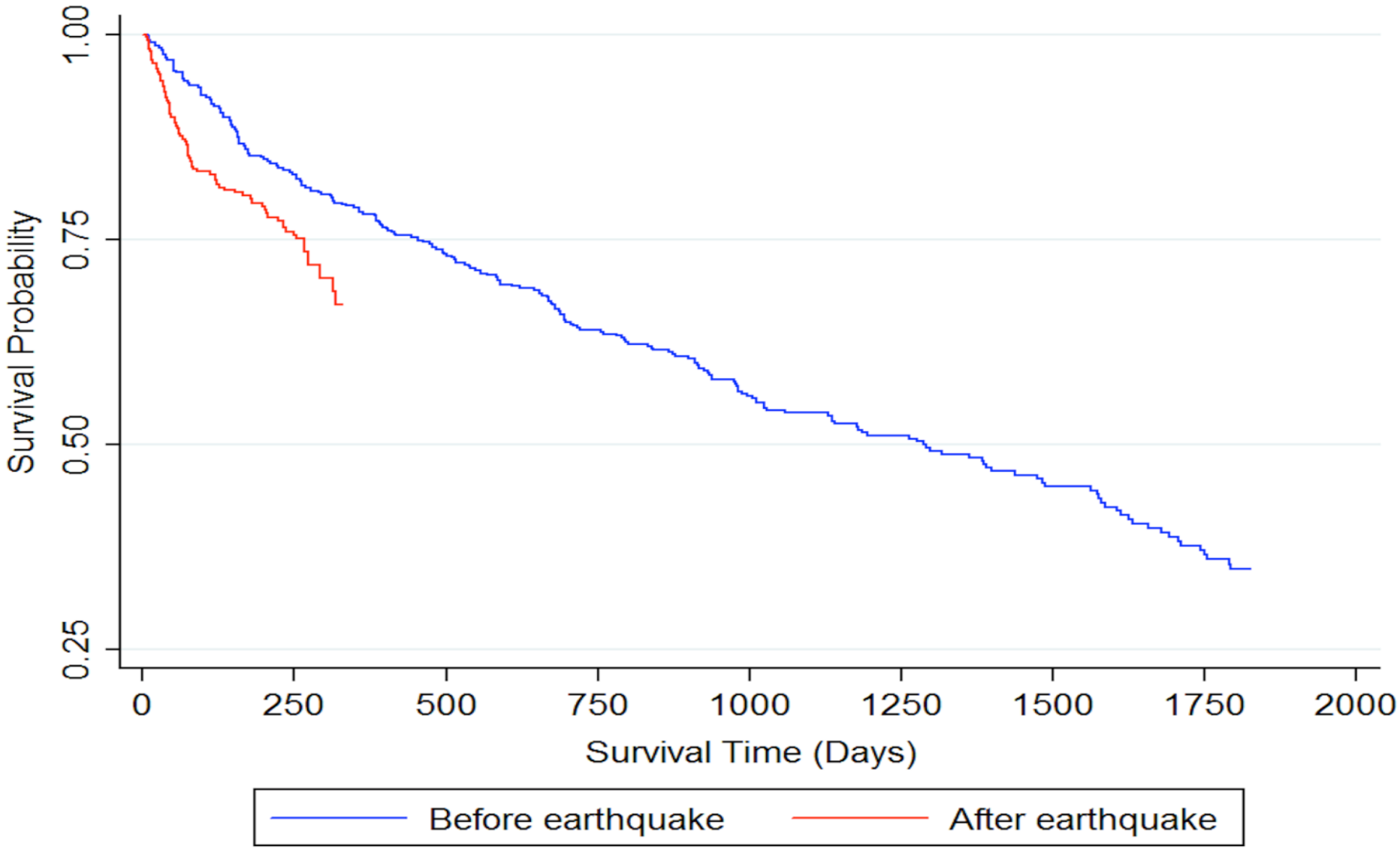


Comparison of doses from sources of exposure

Effective Dose	Source of Exposure
0.02 mSv	Chest X-ray
0.07 mSv	Transatlantic flight
1.4 mSv	CT scan of the head
2.1 mSv	Japan average annual radiation dose (before the incident)
2.7 mSv	UK average annual radiation dose
6.2 mSv	USA average annual radiation dose
6.6 mSv	CT scan of the chest
10.0 mSv	Whole body CT scan

(Source: Public Health England and UNSCEAR)

(3) Evacuation and mortality risk: estimated pre- and post- incident survival



(Nomura S, et al. PLOS ONE. 2013)

(3) Evacuation and mortality risk: Cox multiple regression model of mortality

Variable	Hazard ratio (95% CI)	P-value
Evacuation distance (km)		
less than 150	1.00	
150 to 300	1.01 (0.35–2.91)	1.00
more than 300	0.92 (0.41–2.07)	0.80
Evacuation type		
Initial	1.94 (1.07–3.49)	0.02
Subsequent	1.00	

Adjusted for facility, sex, age, care level

(Source: Nomura S, et al. PLOS ONE. 2013)

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Millennium Development Goals (MDGs)

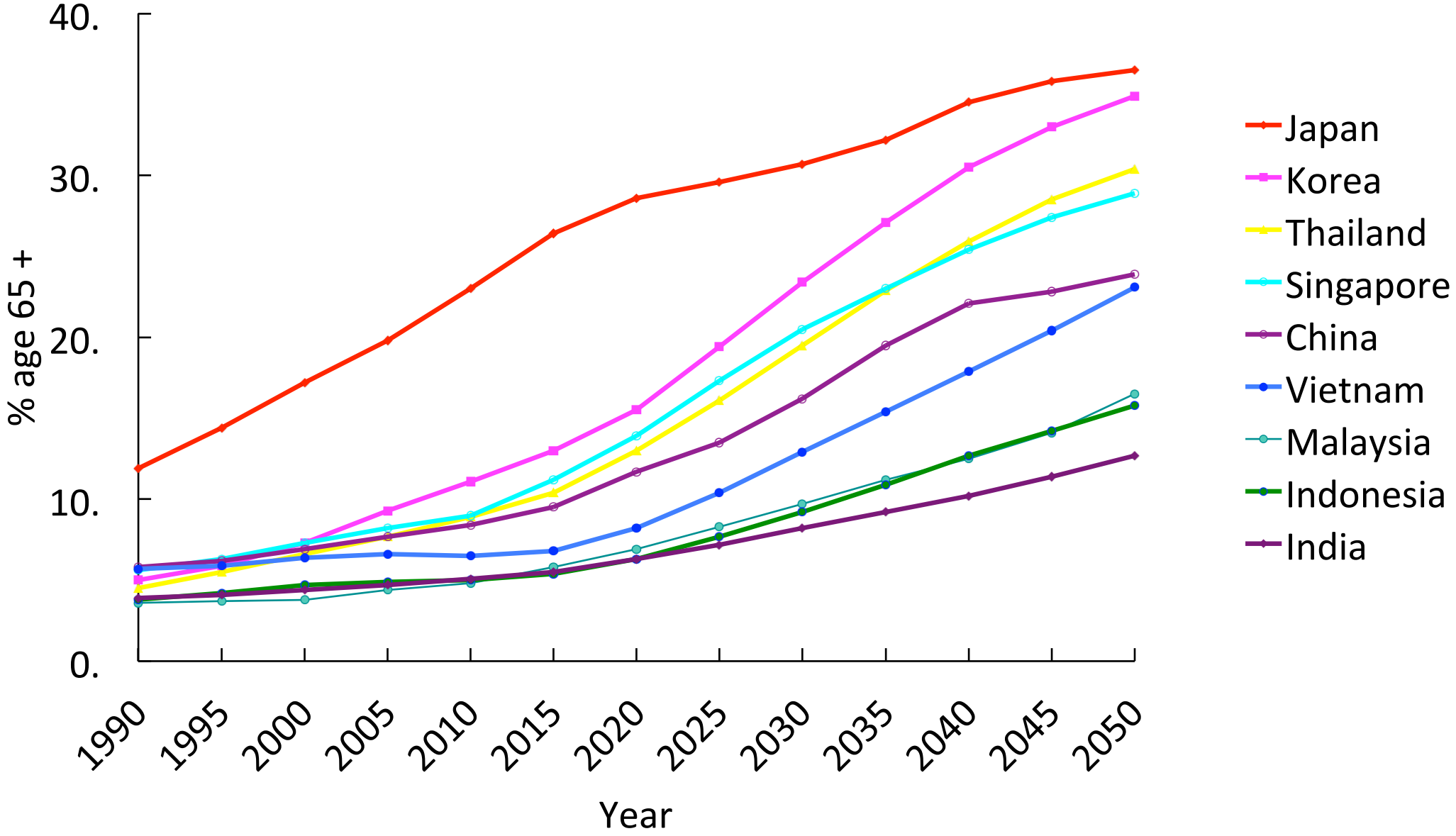
189 Heads of State committed to Achieve by 2015

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV and AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

“Global health is the future of medicine”

3Ds in health care		National interests
1. Discovery		1. Development
2. Development	X	2. Economic growth
3. Delivery		3. National security

% age 65 + in selected Asian countries, 1990-2050



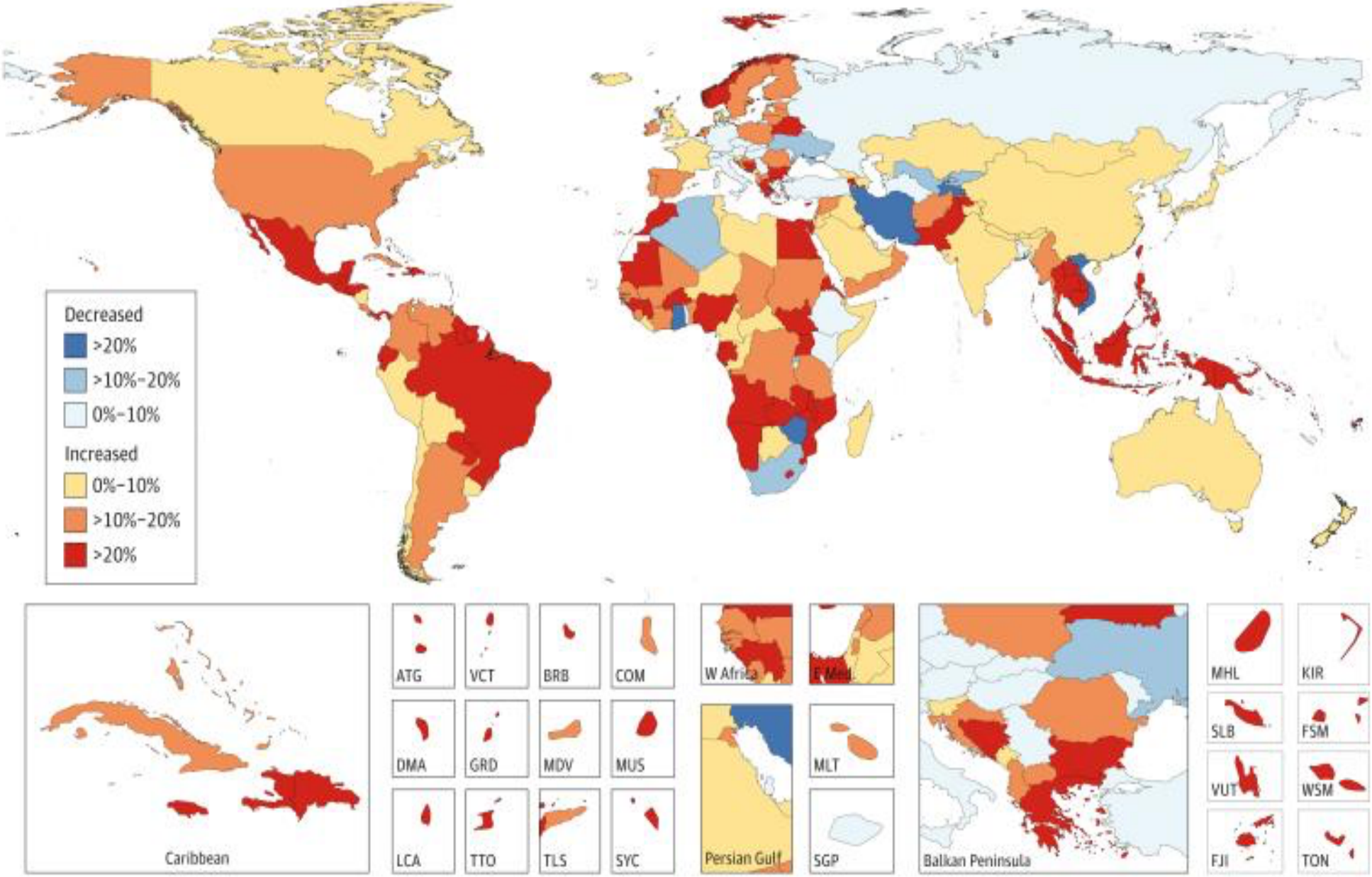
Global Burden of Disease (GBD) study

Global burden of disease and risk factors (2010)

Rank	Deaths	Deaths and disabilities (DALYs)	
		Causes	Risk factors
1	Ischemic heart disease	Ischemic heart disease	Dietary risks
2	Stroke	Lower respiratory infections	High blood pressure
3	COPD	Stroke	Smoking
4	Lower respiratory infections	Diarrheal disease	Household air pollution
5	Lung cancer	HIV/AIDS	Alcohol use
6	HIV/AIDS	Malaria	High body-mass index
7	Diarrheal disease	Low back pain	High fasting glucose
8	Road injury	Preterm birth complications	Childhood underweight
9	Diabetes	COPD	Ambient PM pollution
10	Tuberculosis	Road injury	Physical inactivity

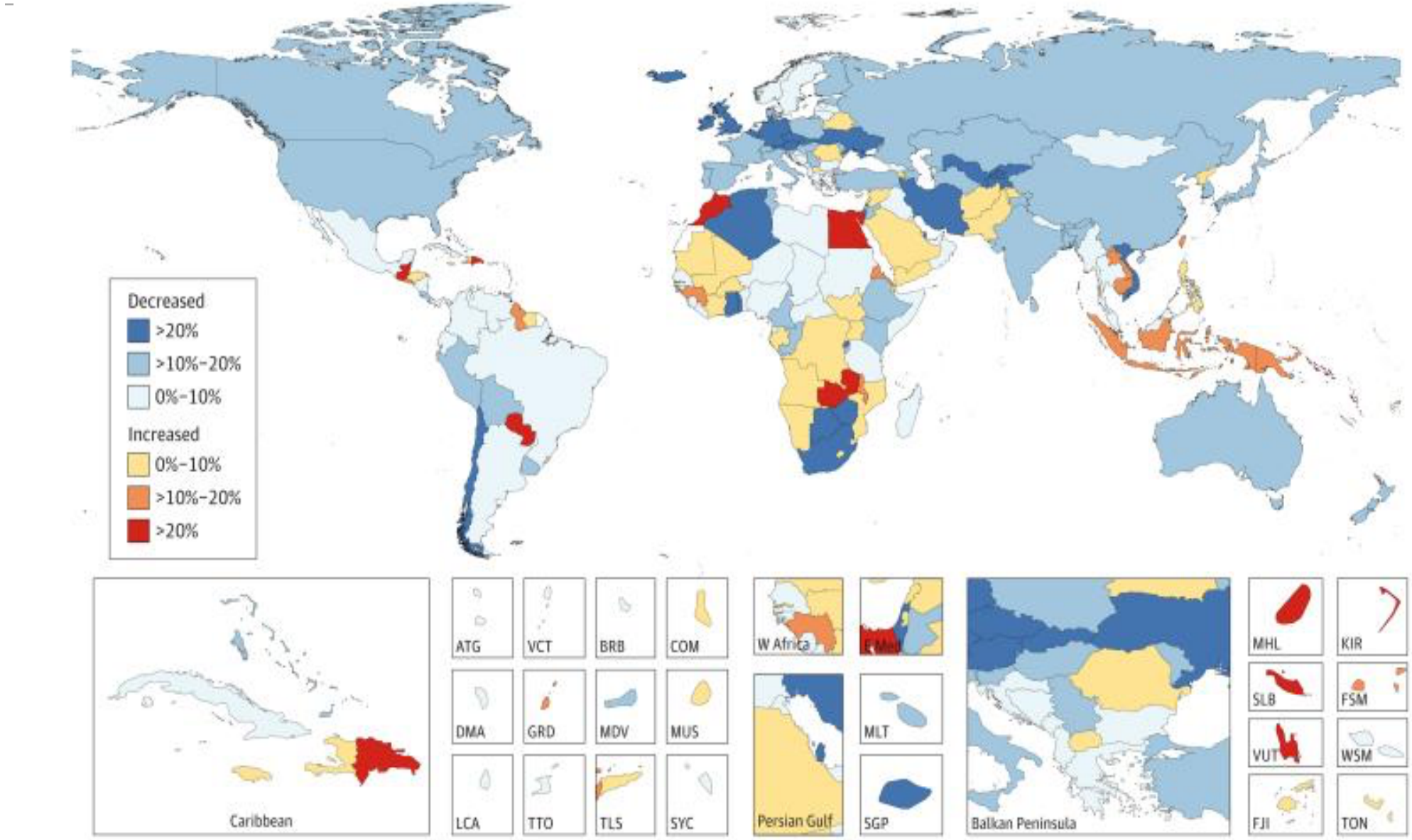
(Source: GBD 2010)

Relative changes in age-standardized incidence in both sexes for all cancers in 188 countries from 1990 to 2013



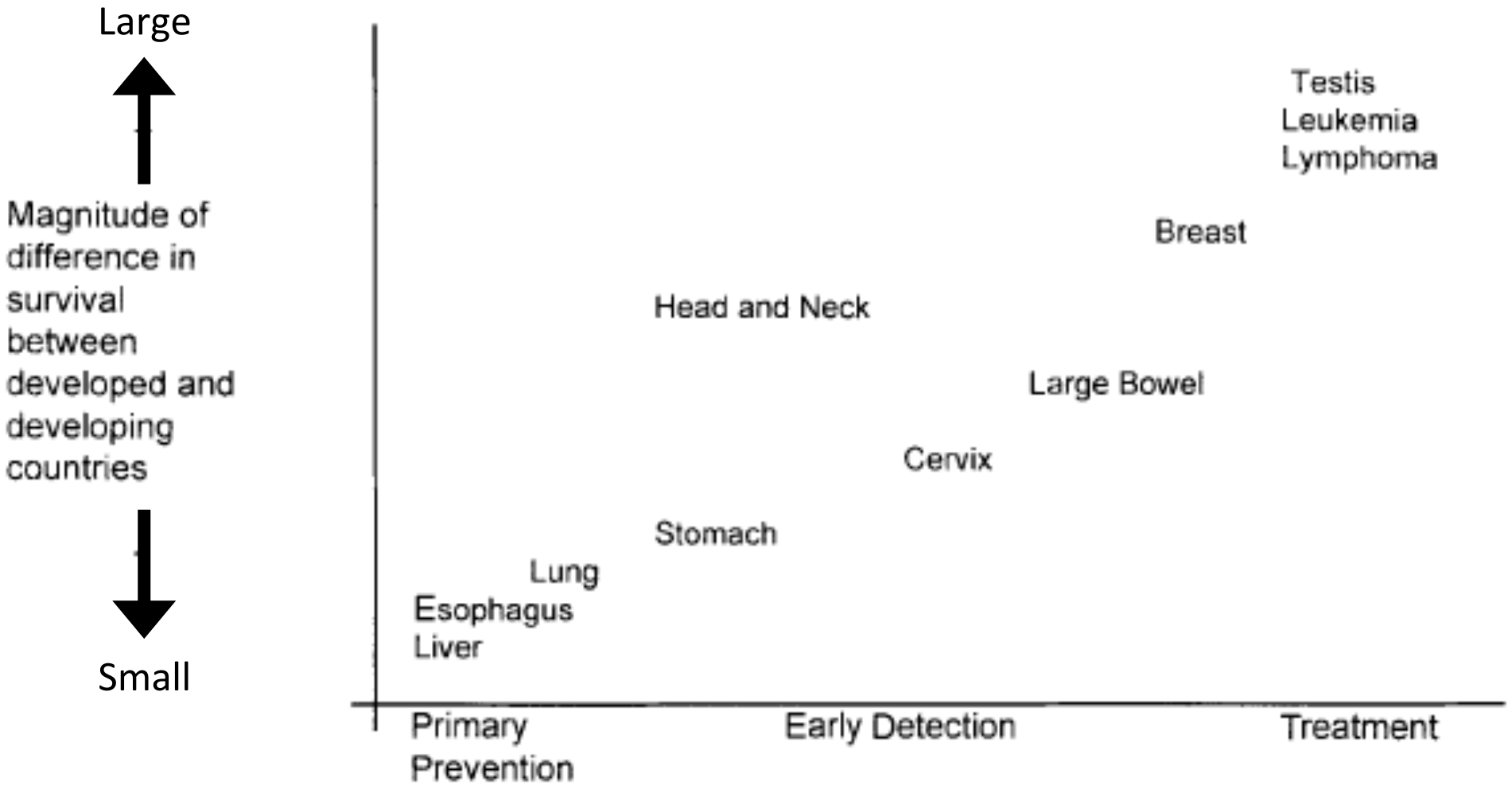
(Source: Globl Burden of Cancer Collaboration 2015)

Relative changes in age-standardized mortality in both sexes for all cancers in 188 countries from 1990 to 2013



(Source: Globl Burden of Cancer Collaboration 2015)

Difference in survival of patients between developing and developed countries



(Source: R. Sankaranarayanan et al. 1996)

Global burden of cancer

- In 2013 there were 14.9 million incident cancer cases, 8.2 million deaths, and 196.3 million DALYs.
- Prostate cancer was the leading cause for cancer incidence (1.4 million) for men and breast cancer for women (1.8 million). Tracheal, bronchus, and lung (TBL) cancer was the leading cause for cancer death in men and women, with 1.6 million deaths.
- Cancer poses a major threat to public health worldwide, and incidence rates have increased in most countries since 1990.
- The trend is a particular threat to developing nations with health systems that are ill-equipped to deal with complex and expensive cancer treatments.

(Source: Globl Burden of Cancer Collaboration 2015)

Globalizing health: too many issues...

1. Unfinished agenda of communicable disease

2. Non-Communicable disease epidemic

3. Inevitable consequence of globalization:
    - Climate change
    - Trade policy
    - Intellectual properties
    - Human rights, etc.

Players in global health systems

- National governments
- UN systems (WHO, UNICEF, UNFPA, UNAIDS)
- Breton-woods institutions (World Bank, regional development banks)
- Global health initiatives/PPPs (GAVI alliance, Global Fund, UNITAID, etc.)
- Philanthropies (Bill and Melinda Gates Foundation, Rockefeller Foundation, Wellcome Trust, etc.)
- Civil society (MSF, Oxfam, CARE International. etc.)
- Private industry
- Professional associations
- Academic institutions

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“Japan: a mirror for our future” – Richard Horton

“The success of Japan’s health system matters not only because of its importance to Japanese citizens, but also because Japan is a barometer of western health...”

“Japan has enormous soft power. The country now seeks to marshal its considerable resources to claim its rightful place globally, as well as to improve its policy making domestically.”

Source: Horton R. Offline: Japan: a mirror for our future – The Lancet 2010

Health Care 2035

Leading the World through Health

The Japan Vision: Health Care 2035

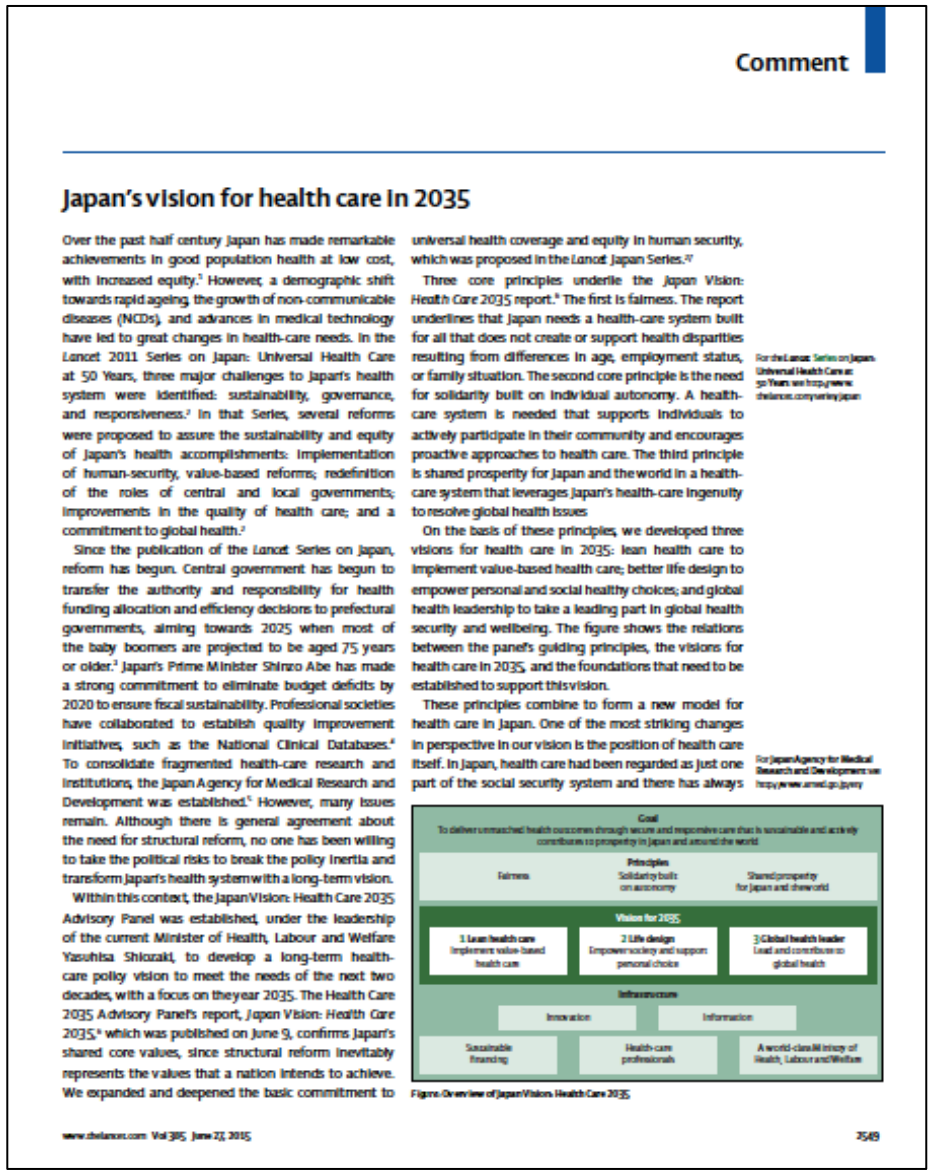
Report Summary

http://www.mhlw.go.jp/healthcare2035

Key questions

- What existing policies should be strengthened?
- What key issues have been repeatedly sidelined due to politics?
- Where and how does public input fit?
- How can Japan best contribute to other countries through health? What can Japan learn from the health care experiences of other countries?

Speed and Impact


Comment

Japan's vision for health care in 2035

Over the past half century Japan has made remarkable achievements in good population health at low cost, with increased equity.[1] However, a demographic shift towards rapid ageing, the growth of non-communicable diseases (NCDs), and advances in medical technology have led to great changes in health-care needs. In the *Lancet* 2011 Series on Japan: Universal Health Care at 50 Years, three major challenges to Japan's health system were identified: sustainability, governance, and responsiveness.[2] In that Series, several reforms were proposed to assure the sustainability and equity of Japan's health accomplishments: implementation of human-security, value-based reforms; redefinition of the roles of central and local governments; improvements in the quality of health care; and a commitment to global health.[2]

Since the publication of the *Lancet* Series on Japan, reform has begun. Central government has begun to transfer the authority and responsibility for health funding allocation and efficiency decisions to prefectural governments, aiming towards 2025 when most of the baby boomers are projected to be aged 75 years or older.[3] Japan's Prime Minister Shinzo Abe has made a strong commitment to eliminate budget deficits by 2020 to ensure fiscal sustainability. Professional societies have collaborated to establish quality improvement initiatives, such as the National Clinical Databases.[4] To consolidate fragmented health-care research and institutions, the Japan Agency for Medical Research and Development was established.[5] However, many issues remain. Although there is general agreement about the need for structural reform, no one has been willing to take the political risks to break the policy inertia and transform Japan's health system with a long-term vision.

Within this context, the Japan Vision: Health Care 2035 Advisory Panel was established, under the leadership of the current Minister of Health, Labour and Welfare Yasuhisa Shiozaki, to develop a long-term health-care policy vision to meet the needs of the next two decades, with a focus on the year 2035. The Health Care 2035 Advisory Panel's report, *Japan Vision: Health Care 2035*,[6] which was published on June 9, confirms Japan's shared core values, since structural reform inevitably represents the values that a nation intends to achieve. We expanded and deepened the basic commitment to universal health coverage and equity in human security, which was proposed in the *Lancet* Japan Series.[7]

Three core principles underlie the *Japan Vision: Health Care 2035* report.[6] The first is fairness. The report underlines that Japan needs a health-care system built for all that does not create or support health disparities resulting from differences in age, employment status, or family situation. The second core principle is the need for solidarity built on individual autonomy. A health-care system is needed that supports individuals to actively participate in their community and encourages proactive approaches to health care. The third principle is shared prosperity for Japan and the world in a health-care system that leverages Japan's health-care ingenuity to resolve global health issues.

On the basis of these principles, we developed three visions for health care in 2035: lean health care to implement value-based health care; better life design to empower personal and social healthy choices; and global health leadership to take a leading part in global health security and wellbeing. The figure shows the relations between the panel's guiding principles, the visions for health care in 2035, and the foundations that need to be established to support this vision.

These principles combine to form a new model for health care in Japan. One of the most striking changes in perspective in our vision is the position of health care itself. In Japan, health care had been regarded as just one part of the social security system and there has always

For the *Lancet* Series on Japan, Universal Health Care at 50 Years see http://www.thelancet.com/series/japan

For Japan Agency for Medical Research and Development see http://www.amed.go.jp/en/

Figure: Overview of Japan Vision: Health Care 2035

- Complete the report within 3 months
- Nicely designed award-winning web site
- Everything in both Japanese and English

- Publication in The Lancet and Nikkei

Paradigm shift: from health system to social system

Existing model	Towards 2035
Quantity	Quality
Inputs	Value
Regulation	Autonomy
Cure	Care
Fragmentation	Integration

Overview of “Health Care 2035”

GOAL

Health care in 2035 should strive to deliver unmatched health outcomes through care that is secure and responsive to each member of society. This system should not only fit the public’s image of what a health system should be, but be both sustainable and actively contribute to prosperity in Japan and around the world.

PRINCIPLES

Fairness

Solidarity built on autonomy

Shared prosperity for Japan and the world

VISION

Key concepts for health care in 2035

LEAN HEALTHCARE 1

Implement value-based health care

LIFE DESIGN 2

Empower society and support personal choice

GLOBAL HEALTH LEADER 3

Lead and contribute to global health

INFRASTRUCTURE

Foundations of this vision

Innovation

Information

Sustainable financing

Health care professionals

A world-class Ministry of Health, Labour and Welfare

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Japan's global health contributions

- G8 Kyushu-Okinawa Summit (2000): Global Fund to Fight AIDS, Tuberculosis and Malaria
- G8 Hokkaido Toyako Summit (2008): Health system strengthening (financing, health workforce and information)
- Strategy on Global Health Diplomacy (2013)
- Act on Promotion of Healthcare Industries and Advancement of Healthcare Technologies (2014)
- G7 Ise-Shima Summit (2016)

Prime Minister Abe on universal health coverage (UHC)

"We should now pursue universal health coverage (UHC) to solve existing global health challenges and to embark on the post-2015 development agenda."

"Japan's strategy on global health diplomacy corresponds to the changing strategic environment."

"Global health diplomacy is the very strategy that embodies our vision and aspiration."

Human security

- Conceptualized by the UN Human Security Commission chaired by Amartya Sen and Sadako Ogata
- The protection of the "vital core of all human lives" in a way that enhances human freedoms and fulfillment/capability.
- Human security must be preserved alongside national security.

Basic Design for Peace and Health (2015)

1. Building health security that is resilient to external factors such as public health emergencies and disasters

2. Seamless utilization of essential health and medical services; promotion of UHC throughout lifecycle

3. Making effective use of Japanese health workers, expertise, medical products and medical technology to strengthen health systems and ensure health security.

SDGs: a major paradigm shift

1. Emphasis on universality, not just a North-South aid
2. Systems approach focusing on sustainability, not just ending poverty
3. Elaboration by both governments and CSOs, not by technocrats

SDGs goals

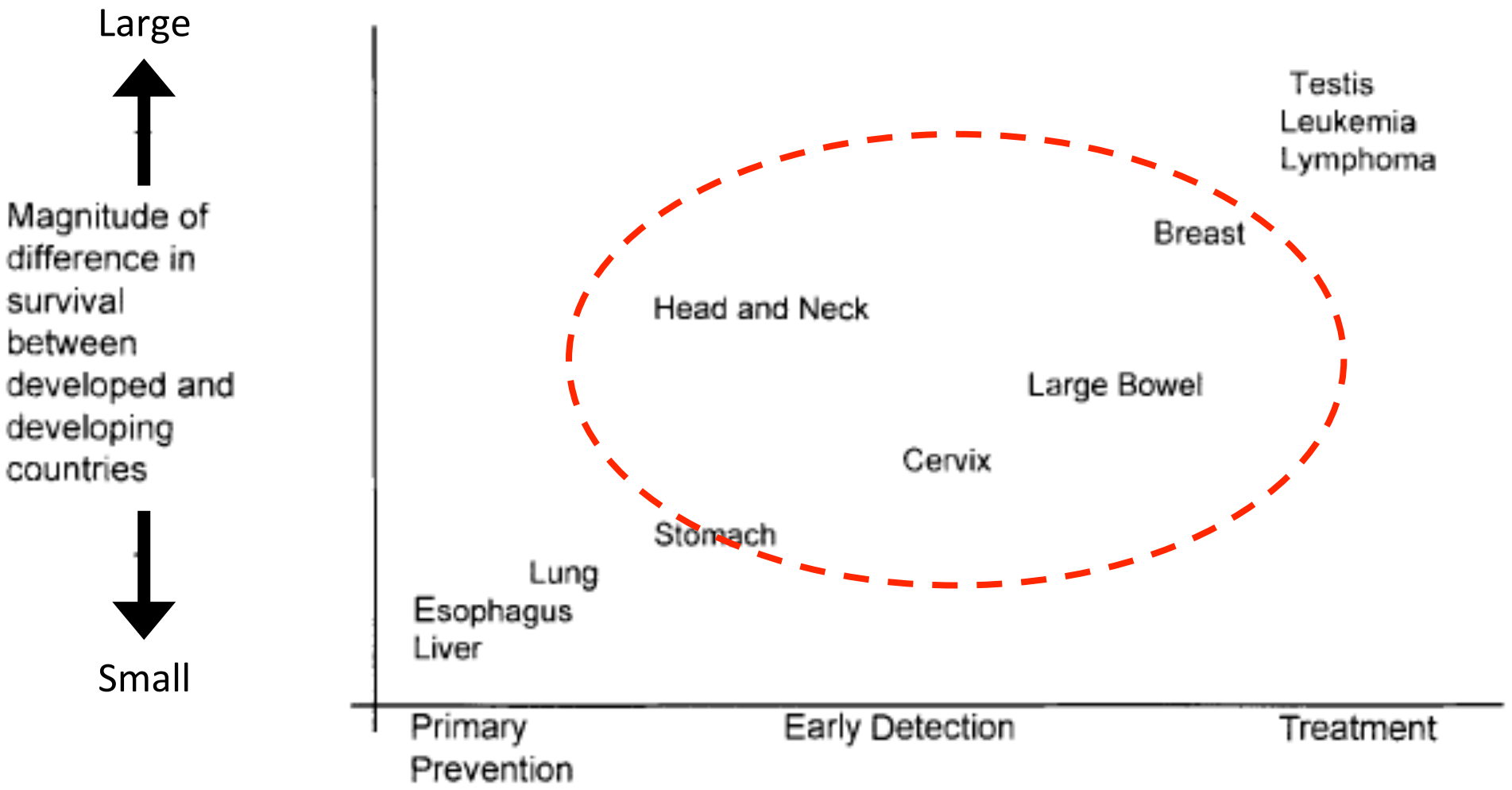
Goal 3: Ensure healthy lives and promote well-being for all at all ages

- 3.4 by 2030 reduce by one-third pre-mature mortality from non-communicable diseases (NCDs) through prevention and treatment, and promote mental health and wellbeing

- 3.8 achieve universal health coverage (UHC), including financial risk protection, access to quality essential health care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all.

Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation

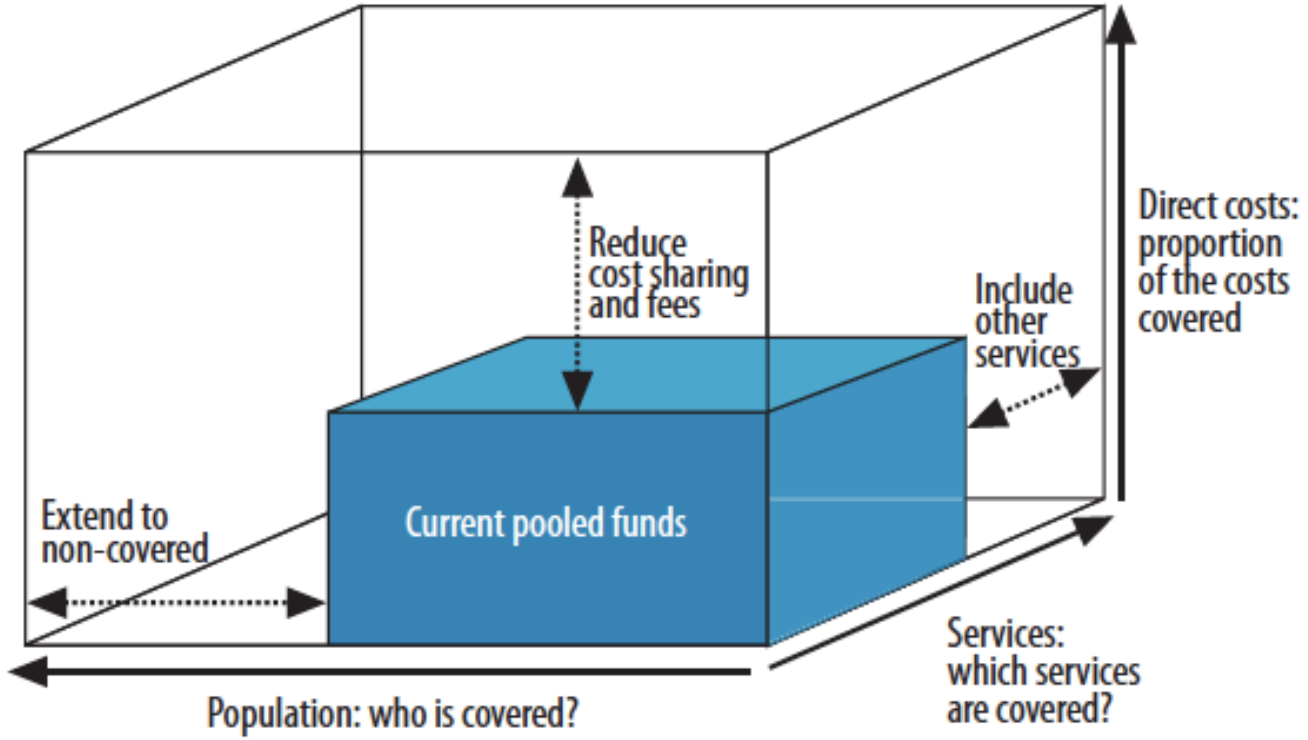
Difference in survival of patients between developing and developed countries



(Source: R. Sankaranarayanan et al. 1996)

UHC dimensions

1. Equity in access to health services
2. Provision of quality of health services
3. Financial-risk protection



(Source: WHO, 2010)

Paradigm shift

Partnership

Performance

Passion