OECD Reviews of Public Health: Japan

A HEALTHIER TOMORROW

OECD

OECD Reviews of Public Health: Japan

A HEALTHIER TOMORROW

OECD
BETTER POLICIES FOR BETTER LIVES

Please cite this publication as:
OECD (2019), *OECD Reviews of Public Health: Japan: A Healthier Tomorrow*, OECD Publishing, Paris.
https://doi.org/10.1787/9789264311602-en

ISBN 978-92-64-31159-6 (print)
ISBN 978-92-64-31160-2 (pdf)

Photo credits: © Paul Oakley.

Corrigenda to OECD publications may be found on line at: *www.oecd.org/about/publishing/corrigenda.htm*.

Foreword

This report is the second in the OECD's series of reports reviewing public health policies across selected OECD countries. Health care systems across OECD are increasingly under pressure from social changes – including demographic changes and aging populations – and emerging new health challenges – from a growing burden of chronic disease, to re-emerging and new communicable diseases, or a growing burden of mental ill-health – which demand a strong public health response. The OECD Reviews of Public Health provide in-depth analysis and policy recommendations to strengthen priority areas of countries' public health systems, highlighting best practice examples that allow learning from shared experiences, and the spreading of innovative approaches.

In particular, this series of Reviews of Public Health builds on the OECD's long-standing programme of work on the economics of public health, applying this extensive expertise to country-specific challenges. The OECD Reviews of Public Health are a tool to help countries to strengthen their national public health systems, and help countries to develop and implement innovative public health actions.

This OECD Public Health Review of Japan seeks to assess the current scale of public health challenges, and efficacy of existing public health policies to respond to them, in Japan. In many respects Japan's population is in strikingly good health compared to many OECD populations, with relatively low rates of risky health behaviour, the longest life expectancy in the OECD, and comprehensive primary and secondary disease prevention programmes. Nonetheless, Japan's rapidly aging population means that the need to support healthy and disease-free lifestyles well into old age is greater than ever. This review recommends that Japan focus on a select number of priority interventions, especially when it comes to primary and secondary prevention, and takes steps to promote these across the country. In doing this, and across all public health policies, joined-up government, data-driven policies, and good citizen engagement will all be key.

Acknowledgements

This report was prepared by Charles Baubion, Michele Cecchini, Rie Fujisawa, Emily Hewlett and Sabine Vuik, with input from Yuka Nishina, and research assistance from Chihiro Sudo. The authors also wish to thank Stefano Scarpetta, Mark Pearson, Francesca Colombo and Rabia Kahn from the OECD Directorate of Employment, Labour and Social Affairs for their comments. Thanks also go to Lucy Hulett and Liv Gudmundson for editorial input and to Isabelle Vallard, Lukasz Lech and Duniya Dedeyn for logistical assistance. The completion of this report would not have been possible without the generous support of Japanese authorities.

This report has benefited from the expertise and material received from many health officials, health professionals, patient groups and other health experts that the OECD review team interviewed during a research mission in Japan in February 2018. In particular, the team spoke with numerous officials from the Japanese Government including from the Ministry of Health, Labour and Welfare, the Cabinet Office, and the Ministry of Education. This report has also benefited from the comments of the Japanese authorities and experts who reviewed earlier drafts; the authors' particular thanks go to the numerous Japanese experts who took the time to provide thoughtful and detailed feedback at the review stage.

The OECD also spoke with stakeholders including the National Institute of Public Health, National Institute of Health and Nutrition, the National Institute of Infectious Diseases, The Japanese Association of Public Health Centre Directors at Arakawa City, the Yokohama City Hall, and the Adachi City Hall. Thanks also go to the National Federation of Industrial Health Organizations, the Aichi Health Promotion Public Interest Foundation, the Tokyo Metropolitan Information Service Health Insurance Association, Uchida Yoko Health Insurance Association, Itoki Corporation, SCSK Corporation, for taking the time to meet with the OECD team.

The authors would also like to thank the academics who provided important insights into the Japanese health system and public health, including Professor Hiroya Ogata, Dr Tomonori Okamura, Professor Ryozo Nagai, and Professor Toru Takebayashi.

Particular thanks go to Professor Hideki Hashimoto, from the University of Tokyo, and Sirpa Sarlio from the Finnish Ministry of Social Affairs and Health, for the useful comments that they gave as peer reviewers for this report. Thanks also to Kaisa Lahdepuro for supporting the engagement of the Finland with this process. A draft summary of the report and of the key recommendations were discussed at the 2018 meeting of the OECD Expert Group on the Economics of Public Health. Authors would like to thank all the participants for their review and comments.

Finally, the review team is especially thankful to their key contacts in the Japanese Delegation to the OECD – Hisayo Nomura and Teruhiko Kawabata – and to Masayuki Azuma and Tomohiro Murakami at the Japanese Ministry of Health, Labour and Welfare, whose logistical and coordination support throughout the review process has been critically important.

Table of contents

Tables

Figures

Boxes

Acronyms and abbreviations

AIDS	Acquired immunodeficiency syndrome
AMR	Antimicrobial resistance
ASK	Alcohol Yakubutu Mondai Zenkoku Shimin Kyokai (Non-profit organisation to prevent alcohol and drug problems, and other addictions)
BMI	Body Mass Index
CAN	Dutch Club of Active Non-Smokers
COPD	Chronic obstructive pulmonary disease
CT	Computed tomography
CVD	Cerebrovascular disease
DBH	Disaster base hospitals
DDD	Daily dose per day
DHEAT	Disaster Health Emergency Assistance Team
DMAT	Disaster Medical Assistance Team
DTP	Diphtheria, tetanus and pertussis
EHI	Employee's Health Insurance
EMIS	Emergency Medical Information System
ENDS	Electronic nicotine delivery systems
EU	European Union
FCTC	WHO Framework Convention on Tobacco Control
FOBT	Faecal occult blood test
GDP	Gross domestic product
GEJE	Great East Japan Earthquake
GHSA	Global Health Security Agenda
GP	General practitioner
GPHIN	Canada's Global Public Health Intelligence Network
H1N1	H1N1 Flu Virus (Swine Flu)
HGPI	The Health and Global Policy Institute
HIV	Human immunodeficiency virus
HJ21	Health Japan 21
HPM	Health and Productivity Management
HPV	Human Papillomavirus
IARC	International Agency for Research on Cancer
JANIS	Japan Nosocomial Infections Surveillance
JASSO	Japan Society for the Study of Obesity
JMA	Japan Medical Association
JMAT	Japan Medical Association Teams
JPX	Japan Exchange Group
JPY	Japanese Yen
LUKEX	Germany's National Strategic Crisis Management Exercise
MAFF	Ministry of Agriculture, Forestry and Fisheries
MCM	Medical countermeasures
METI	Ministry of Economy, Trade and Industry
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MHLW	Ministry of Health, Labour Welfare
MITI	Ministry of Economy, Trade and Industry

MRSA	Methicillin-resistant Staphylococcus aureus
NCD	Non-communicable disease
NESID	National Epidemiological Surveillance of Infectious Diseases
NGO	Non-governmental organisation
NHS	United Kingdom National Health Service
NICE	National Institute for Health and Care Excellence (United Kingdom)
NIPH	National Institute of Public Health
NLST	United States National Lung Screening Trial
NRA	United Kingdom National Risk Assessment
PE	Physical Education
PHEIC	Public Health Emergency of International Concern
PM	particulate matter
PRSP	Penicillin resistance Streptococcus Pneumoniae
PSA	Prostate-specific antigen
SALAR	Swedish Association of Local Authorities and Regions
SARS	Severe acute respiratory syndrome
SES	Socio-economic status
TB	Tuberculosis
TNM	Tumour node metastasis
TSE	Tokyo Stock Exchange
UN	United Nations
UPI	Unique patient identifier
WHO	World Health Organization

Executive summary

In some ways, Japan's public health challenges are distinct from those faced by other OECD countries. The rate of obesity is the lowest in the OECD, alcohol consumption is well below the OECD average, and the rate of smoking is slightly below the OECD average, even if this average masks a significant gender gap in smoking rates, with Japanese men smoking well above the male OECD average. Indeed, Japan's life expectancy – 84.1 years in 2016 – is the longest in the OECD, and almost four years longer than the OECD average of 80.8 years. In other respects, though, the health challenges that Japan is facing are familiar to other OECD countries, for example a rising burden of chronic diseases. Other challenges will be felt even more acutely in Japan, in particular the rapidly aging population; in 2050 nearly 40% of the Japanese population will be over 65, and 15% will be over 80. Promoting healthy, disease-free aging must be a central priority for Japan, and attention must also be paid to the potential for rising rates of risky health behaviour, for example rising alcohol consumption, and even rising rates of obesity.

Japan's primary prevention strategy, Health Japan 21 (HJ21) – is a comprehensive programme aimed at improving healthy lifestyles, from increasing fruit and vegetable consumption and exercise, to reducing smoking and alcohol consumption, to improving mental wellbeing and reducing stress. This broad strategy casts the net very wide – for example the strategy includes 53 targets – and local levels of government are expected to tailor their implementation of HJ21 based on local population priorities. In some instances, this has resulted in a variety of innovative, multi-sectoral community-based interventions that bring together different local stakeholders. In other instances, though, HJ21's broad approach risks a dispersion of energy and resources; furthermore, it is not clear that all local governments are equally effective at implementing the types of health promotion and prevention policies that would be required to meet the HJ21 targets. Japan should consider selecting a smaller number of priority areas, and the central government could consider ways to offer more support to local levels of government, for example promoting select interventions that have been proven to be high-impact and good-value. In addition, there is scope for Japan to introduce or strengthen population-level policies alongside HJ21, in particular stronger tobacco policy, as well as new regulation on food labelling, and stronger regulation of the marketing of alcohol products.

When it comes to secondary prevention Japan has also taken a very broad approach; Japan has arguably the most extensive range of health check-ups and screenings of all OECD countries. These include check-ups for infants and children, an annual check for full-time employees, an annual stress test, a specific check focused on chronic diseases, and a series of other screenings which are encouraged but not compulsory, for instance periodic tests of osteoporosis, periodontal disease, or hepatitis B and C. It is not clear that all tests are adding value to the system either in reducing disease, or reducing health costs, and the risk of duplicative tests, waste, over-diagnosis and even unnecessary exposure to harm (e.g. through x-ray radiation) should not be ignored. Conversely, cancer screening – for which there is significant international-evidence of its effectiveness in

reducing cancer mortality – is relatively under-developed, without a nationally standardised approach. There is considerable scope for Japan to re-examine the range of health check-ups that are in place, evaluating all health check-ups and cancer screening together, and likely streamlining the range of tests offered. The focus should then shift to ensuring complete coverage of a smaller range of tests among people with high risks.

Japan faces some relatively significant public health risks, notably a significant exposure to natural hazards such as earthquakes, floods, typhoons, and tsunamis. In some instances, these risks have intersected – for example the frail elderly have been particularly affected by some natural hazards. This significant exposure to hazards has led Japan to make preparedness of public health emergencies a key priority, both internationally and domestically, and a strong set of policies are in place. That said, there is scope for further strengthening, in particular through promoting further co-ordination between stakeholders, for example through inter-agency information sharing, and joint exercises and drills.

Indeed, across all areas there is scope to improve co-ordination and collaboration between stakeholders, and to make the system more data-driven. Japan has a highly decentralised public health system, with the high-level policy direction set by the central government, and implemented at local levels. While respecting the primordial local autonomy established in the Japanese governance system, there may still be scope to offer more support and guidance to less highly performing municipalities, as well as to promote exchange of best practices between local authorities. A more data-driven system could support co-ordination as well as the implementation of other public health goals. For example, a stronger data system – at least part of which should be made easily accessible to the Japanese public – could help benchmarking of local authorities delivering HJ21, the implementation of a more systematic national cancer screening, and even the timeliness and effectiveness of responses during public health emergencies.

Assessment and recommendations

The Japanese population, the longest-lived in the OECD, is undergoing a profound transformation. Japan's birth rate has been falling; based on OECD projections by 2050 36.4% of Japan's population will be over 65, and 15.0% over 80, making Japan's population older than that of all other OECD countries. In some ways, Japan's public health challenges are unlike those of other OECD countries. Japan's obesity rate is the lowest in the OECD (23.8% of the population was overweight or obese in 2015, compared to the OECD average of 53.9%), the rate of smoking is slightly below the OECD average (18.3% of the population were daily smokers in 2015, compared to the OECD average of 18.5), and alcohol consumption is well below the OECD average. In many other respects, though, the health challenges that Japan is facing are very familiar: in particular, a rising burden of chronic disease, and a rising number of frail and elderly persons. In addition, Japan faces some relatively unique public health risks, notably a significant exposure to natural hazards such as earthquakes, floods, typhoons, and tsunamis. In some instances, these risks have intersected – for example the frail elderly have been particularly affected by some natural hazards.

The policy priority in Japan is not just to maintain the impressive life expectancy, but to improve *healthy* life expectancy. Japan's primary prevention strategy – Health Japan 21 (HJ21) – is squarely focused on improving healthy habits, including increasing vegetable and fruit consumption, reducing salt consumption, reducing smoking and alcohol consumption, and improving mental wellbeing. Japan's extensive health check-ups – the main pillar of secondary prevention efforts – aim to detect disease and disease risk as early as possible, and direct individuals towards treatment or advice on behaviour change.

However, in both Japan's approaches to primary and secondary prevention, Japan has taken a very broad policy approach, rather than focusing on target areas or populations. While the aim of both HJ21 and Japan's health check-ups is to reach as much of the population as possible, there is a risk that the policies are too diffuse and not provoking behaviour change amongst the most high-risk population. In addition, the implementation of HJ21 and of health checks, are somewhat fragmented. HJ21 is primarily implemented by local governments, who can choose which areas to focus on from a very wide range of targets. While this strategy can mean that local polices are adapted to local needs, the risk is that local approaches are uneven in their quality, comprehensiveness, and population coverage. Health check-ups, too, are implemented by a wide range of actors including local governments, schools, workplaces, and health care providers. Employers and occupational physicians are expected to play a significant role in assuring health but it is not clear that appropriate provisions are made for those outside of school or full-time employment.

Furthermore, the central government has relatively weak leavers for checking that minimum standards for prevention and promotion policies are met by municipalities – the Ministry relies on written reports by municipalities – and even weaker levers to enforce priority policies. While in some instances local level governments – municipalities,

prefectures – might be excellent, an overall picture of the competency of local government and the degree to which local government is introducing effective and evidence-based policies is unclear.

When it comes to public health emergencies, clear strengths as well as some areas for further improvement can be found. Japan is vulnerable to hazards, and in particular to natural disasters, but has long-made preparedness for public health emergencies a key priority, both internationally and at the domestic level. When it comes to responses to public health emergencies, too, the central government sets the strategic direction but most implementation is primarily the responsibility of the local level. While the responsibility of municipalities to determine local policies is a key feature of the Japanese governance structure, it is nonetheless hard to assess whether the whole country is well prepared for a public health emergency since a detailed picture of the preparedness of each municipality does not appear to be easily available.

The priority for Japan, if the goal of extending healthy life expectancy is to be realised while assuring the sustainability of its health system, is streamlining policies and focusing on high-impact, good-value, and well-implemented interventions that reach the target population. For HJ21 there is scope to select a smaller number of priority areas, based on their impact on overall population health and the availability of effective interventions. Successes in these priority areas could then be used as a springboard for other issues. Japan could also consider ways to better target high-risk groups, especially groups that might sit outside key target groups for delivering public health interventions, for instance unemployed or retired populations. Additional population-level policies could help Japan achieve its HJ21 targets, especially around tobacco and healthy diets. For example, restrictions on smoking in public places could be further strengthened, and more comprehensive, legally binding tobacco marketing restrictions could be introduced. When it comes to health check-ups, this is a particularly congested field. Focusing on improving the quality and reach of a smaller number of targeted screenings could bring greater population benefits, and potentially better value-for money. Policy impact would also be helped by more joined-up governance; better communication, exchange of ideas, and collaboration between different levels of government – both vertically between central and local levels, and horizontally across Ministries and sectors – could strengthen public health policy approaches across the board.

Box 1. Policy recommendations for improving public health in Japan

If Japan wishes to extend healthy life expectancy, and ensure the sustainability of the health system, there is space to strengthen the existing public health policies. The existing policy package is, in many ways, ambitious and comprehensive, but could be more effective if a more targeted and well co-ordinated approach was taken. More could be done to reduce fragmentation between different Ministries and between central and local governments, and between different insurance systems and providers. The central government and MHLW may need stronger levers to pursue policy goals. Efforts should be made to ensure that all good policies reach priority populations; at present there is a profusion of policies targeting employees, while more vulnerable groups may be left out. Additionally, while in some instances local level governments – municipalities, prefectures – might be excellent, a better picture of the competency of local government and the degree to which local government is introducing effective and evidence-based policies is needed to guide policy implementation.

In order to improve the public health system, Japan should:

- Consider setting stronger centrally defined minimum standards or expectations for both local governments and employers given the significant role that both local are expected to play in public health initiatives;
- Share successful practices and promote exchanges, especially between local-level authorities, for example, with an annual conference for local government focused on public health, and by building workforce capacity in municipalities with targeted training from the National Institute of Public Health;
- Seek out ways to foster cross-Ministry collaboration, especially when designing national public health strategies;
- Continue to develop the public health workforce, by maximising the utility of physicians' assistants and newly established general practitioners, as well as looking for ways to ensure that Occupational Physicians deliver high-quality care.

To strengthen primary prevention, Japan should:

- Focus efforts and resources, by identifying a smaller number of priority outcomes, for example smoking reduction, within the extensive Health Japan 21 target framework;
- Consider implementing measures that focus on underperforming regions, for example setting minimum requirements for actions, introducing positive/negative incentives to ensure a minimum level of quality, or by supporting underperforming regions with advice or funding, or training delivered by the National Institute of Public Health;
- Promote the dissemination of successful programmes and interventions, for example by publishing guidelines and case studies, supporting individual champions, and facilitating peer support and networking;
- Consider implementing additional population-level policies alongside Health Japan 21, including:

- Implementing stronger tobacco policy including an expansion of the current indoor smoking ban, more comprehensive legally binding marketing restrictions, introducing visual warnings on packaging, and implementing regulation around the use of potentially misleading terms (e.g. "light" or "low tar") – all recommended by the WHO Framework Convention on Tobacco Control;
- Expanding new regulation on food labelling to front-of-pack information or warning labelling, to help people make healthier choices, introducing restrictions on advertising to children and working with stakeholders to eliminate trans-fat from industrial production;
- Complementing local and employer-based alcohol reduction efforts with stronger regulation of the marketing of alcohol products e.g. restricting event sponsorship by alcohol producers, implementing warning labels on alcohol packaging, and introducing some restrictions on the availability of alcohol e.g. in petrol stations.

To streamline and strengthen health check-ups and screening, Japan should:

- Undertake a comprehensive review of the full health check-up field by involving a wide range of stakeholders, based on national and international evidence, which may include reducing the number of, frequency of or coverage of some check-ups;
- Undertake an economic evaluation of the current health check-ups, looking to weed out check-ups which do not represent good value-for-money;
- Ensure that high-risk population has access to an evidence-based and cost-effective range of tests and screenings. More modern and innovative methods of carrying out screening and more targeted ways of inviting people to screenings, could be pursued;
- Strengthen cancer screening with a systematic implementation of national guidelines across municipalities, insurers and providers;
- Strengthen the health information system through better data linkage, development of a cancer registry, and ideally the systematic implementation of unique identifiers, to maximise the utility of the health check-up data for patient follow-up and monitoring, health policy making, and research.

To strengthen capacity to respond to public health emergencies, Japan should:

- Better operationalise the co-ordination mechanism for public health emergency response, and in particular, the MHLW should establish a permanent physical Emergency Operation Centre in its premises to rapidly ensure its co-ordination role when public health emergencies occur;
- Strengthen monitoring and information sharing mechanisms across the inter-agency network of emergency responders, including through social media screening, as well as the implementation of the Information Integration System for Disasters;
- Strengthen collaboration, quality assurance and learning across constituencies about public health emergency preparedness, particularly for the risk of infectious diseases;

- Better-use exercises and drills to prepare for the unexpected and identify areas for improvement, especially using crisis simulations, training in crisis risk communication and drills in disaster base hospitals;
- Better-train health professionals on public health emergency preparedness, for example mainstreaming the newly established Disaster Health Emergency Assistance Teams programme and an increasing relevant clinical infectious disease specialists at the local level in Class 1 and Class 2 hospitals.

Japan's public health system

Japan, which has the longest lived population in the world, is taking public health seriously as a key objective of central and local governments. Relative to most OECD countries levels of risky health behaviour are low, but like Japan's OECD peers a growing burden of non-communicable diseases, and a growing elderly population, are significant health challenges.

In 2016, Japan had the longest life expectancy in the OECD: life expectancy was 84.1 years on average in Japan, compared to 80.8 OECD-wide. Japanese women are especially long lived, with a life expectancy of 87.1 years. Japan's long life expectancy and low birth rate have meant that the population is aging. It is predicted that by 2065 Japan will only have 1.3 working-age people for each dependent elderly person, down from an estimated 2.3 in 2015 and 4.8 20 years ago.

Like this other OECD countries, the main burden of disease in Japan is caused by non-communicable disease, including hypertensive diseases, cardiovascular disease, cancers and cerebrovascular diseases, which account for 50% of all mortality in Japan. Cancer has been the main cause of mortality since 1981, with the rate of 28.7% of all mortality in 2015, followed by cardiovascular disease (15.2%), pneumonia (9.4%) and cerebrovascular diseases (8.7%). Rates of communicable disease are generally low, although the incidence rate of tuberculosis is slightly higher than the OECD average – a reported 18 cases per 100 000 population in 2014 in Japan compared to 1.6 on average in OECD countries.

In terms of behavioural health risks, alcohol consumption, the rate of obesity and smoking are lower than the OECD average. However, these averages conceal significant gender differences, especially around smoking and drinking. Men smoke at a significantly higher rate than women in Japan, and indeed there more Japanese men smoke daily (30.2% in 2016) than average (OECD average was 23.0% in 2016). Though the smoking rate has been falling in Japan across the last decade, exposure to passive smoking was still high in 2016, up to 42.2% at restaurants and 30.9 at workplace (The National Health and Nutrition Survey in Japan, MHLW, 2016). Annual alcohol consumption in Japan is 7.2g, below the OECD average of 9.8g. Although the average consumption of alcohol per person has decreased, the number of women who take excess alcohol more than 20g per day is increasing since 2010.

The rate of obesity (Body Mass Index >30) in Japan was 3.7% in 2015, which is again considerably lower than the OECD average of 19.5% in 2015. Japan, however, defines obesity as having a Body Mass Index (BMI) of more than 25 (studies have shown that East Asians can exhibit metabolic risk factors, such as insulin resistance, with a lower BMI than Africans and Caucasians). Following this definition the prevalence of obesity was 30.5% for men and 20.0 for women, and the average BMI was 23.6 for men and 22.3

for women in 2016. The high rate of salt consumption is also a particular risk in Japan. Salt consumption – which is linked to hypertensive disease and vascular diseases such as cardiovascular disease and cerebrovascular disease – was 10.8g for men and 9.2g for women in Japan in 2016, well above the WHO recommended 5g per day.

Another area where Japan is a relative outlier compared to OECD peers is the suicide rate. While suicide is a significant and concerning cause of death among OECD countries, the suicide rate in Japan – 16.6 per 100 000 population in 2015 – is well above the above the OECD average of 11.6. In 2006 the MHLW established the 'Basic Law on Suicide Prevention', followed by a stronger measure in 2015, when the goal of reducing the suicide rate by 30% by 2026 was set. Japan's suicide strategy is focused on improving social issues, detecting mental disorders earlier, changing the norms and stigma around suicide and mental illness, and delivering accurate information about suicide and mental illness through the media. Japan has also been directed towards preventing excessive stress at work, both by setting limits on working hours and obliging employers to regularly perform Stress-Checks.

Japan has a highly decentralised public health system

Governance of the Japanese public health system is highly decentralised. Responsibilities for planning, designing and delivering services are split between central and local levels of government, between different Ministries, and between providers within the health system (for instance Public Health Centres) and private actors (notably work places and occupational physicians). While a decentralised approach can bring policy making and implementation closer to the population and population needs, the risk is that such an approach leads to fragmentation and overly diffuse policies.

The Japanese health care system is organised along four main administrative structures: the Ministry of Health Labour and Welfare (MHLW), prefectural governments, municipal governments and public health centres. The Ministry of Health, Labour Welfare (MHLW) consists of the ministry proper (*honsho*) which includes Minister's Secretariat and 11 bureaus, the external organisations including the Central Labor Relations Commission, various councils, National Hansen's Disease (leprosy) Sanatoriums, testing laboratories, and quarantine offices. The MHLW has also local branches that are made up of the Regional Bureaus of Health and Welfare and Prefectural Labor Bureaus.

The Ministry of Health, Labour and Welfare decides the general direction for public health policy, for example the health goals set out in "Health Japan 21" were established by the MHLW in 2013 to promote risk prevention at the national level. This strategy includes the measure to reduce the health inequality, prevent non-communicable disease, and improve health life expectancy. Based on this direction, more specific targets and policy packages are prepared by municipal and local governments, in response to local health needs, who are responsible for implementing policies to change population health risk and behaviour.

In Japan's decentralised administration local responsibility for public health delivery is clearly key. It is possible, however, that some municipalities have robust public health programmes and others may have weaker ones. The challenge in Japan is that it is difficult to understand which municipalities are delivering high quality and comprehensive public health policy, and which municipalities are struggling; some information, for example copies of municipal strategies and some indicators, is held by the MHLW but this is not publically available. Nor does the central government appear to

have a particularly strong role in supporting or strengthening the approach of 'under-performing' municipalities.

In terms of introducing greater national coherence to the public health sector, and strengthening central leadership, it may be that strategies set are too broad which leaves local levels of government to choose from a selection of different areas on which to focus activities. While this can be a good way to allow local government to be responsive to local context and local needs, it may also contribute to an uneven package of public health activities across the country. While minimum expectations for local authorities and private actors are set in different areas of public health (through the various legislation for instance), it is not clear that there is a strong mechanism for checking that these minimum standards are met. It may be desirable for the MHLW to look for more robust ways to support less highly performing prefectures/municipalities to take up best practices; it is not clear that there is a strong mechanism for checking that each municipality meets centrally defined minimum standards. While the strict decentralised organisation of the Japanese system and the autonomy of municipalities must be respected, a more active supporting role by the MHLW for under-performing municipalities could be envisioned.

In Japan's decentralised system there is more scope for sharing best practice examples

In Japan municipalities and local governments are responsible for playing the central role of implementing public health policies, as well as policies more generally on education and health and welfare services, including for public health. Local governments develop public health programs that attach importance to their local characteristics and meet the needs of local residents. While the central government sets the overall policy direction for the country, at present, the main mechanism that the Ministry uses to promote best-practice examples is through 'awards' which are published on the Ministry website. In this structure, where considerable independence is given to municipalities, there is clear potential for excellent examples of practices to develop. For example, Kanagawa prefecture has developed a comprehensive healthy aging strategy, and Adachi City has introduced a Health Japan 21 strategy which can be considered close to international best practice.

However, more could be done to share successful practices and promote exchanges, especially between local-level authorities. The MHLW has held meetings about 8 times a year since 1999 to exchange information and opinion among municipal staff and the staff of the MHLW for improving health and welfare services according to local characteristics and planning methods, but neither the municipalities nor the MHLW report examples of cross-learning across municipal or local governments. This seems like a major missed opportunity to spread best-practices nationally, and for weaker municipalities to learn from stronger ones. Encouraging local governments to exchange ideas and discuss common issues and challenges around public health (and health in general) seems desirable – other decentralised OECD countries have Association of Local Authorities and Regions, for instance in the Nordic countries, or in Italy – which can serve this function. In Japan, an annual conference for local government focused on public health – for instance focused on Health Japan 21, or the Smart Life Project – might be the place to start. Such a conference could promote informal dialogue between regions, and could also highlight best practice examples from municipalities, or perhaps include an award ceremony for examples of excellence. A stronger role for the National Institute of Public Health in offering targeted training to certain municipalities could also be envisaged, to build capacity at the local level.

Cross-governmental collaboration could be strengthened

In Japan's decentralised system effective collaboration and exchange between diverse stakeholders is not only desirable, but could be a key criteria for successful policy implementation. The MHLW has regular co-ordination with some ministries and agencies such as the Ministry of Agriculture, Forestry and Fisheries (MAFF), the Ministry of Education, Culture, Sports, Science and Technology (MEXT), and the Ministry of Environment, with co-ordination by the Cabinet Secretariat. For instance, Japan's AMR countermeasure plan was created in 2016 in the Ministerial Meeting on Infectious Disease Control Measures under the cooperation of the Cabinet Secretariat which needed cooperation mainly with the MEXT, the MAFF, and the Ministry of Foreign Affairs. In this countermeasure, the MHLW takes the central role, and the responsibilities of each ministry and agency are decided according to their relative functions. For tobacco control there is also a tobacco control ministries liaison conference with more than 10 ministries involved including the Metropolitan Police Department and Ministry of Finance and the Ministry of Environment, the Ministry of Economy, Trade and Industry (METI), etc.

However, when it comes to public health policy, and health policy in general, cross-government co-ordination does not appear to be systematic or a priority in Japan. Some initiatives are undertaken between Ministries, but the different roles of Ministries in developing high-level strategies such as Health Japan 21, for instance, are unclear. When confronting public health challenges, or improving population health in the broadest sense, consistent cross-sectoral engagement is critical, as Finland has found. Challenges around good cross-governmental working seem to be found in other areas of health policy, for instance planning for emergencies, as well. There is also a risk that weak cross-government collaboration is reproduced at the local level, which would not be uncommon compared to other countries. For instance, some prefectural administrations in Japan have suggested lowering silos within the government took a concerted push, and strong leadership from the prefectural leadership. It does not appear that the MHLW offers any guidance to at present to local government to collaboratively deliver on public health expectations.

Companies and employers are expected to play an important public health role

The private sector in Japan plays a particularly important role in promoting public health, for several possible reasons. First, because of the structure of the health insurance system a large number of companies have direct responsibility for the health of their employees. Second, given the strongly decentralised nature of health policy implementation in Japan the MHLW relies heavily on companies to deliver public health interventions in the workplace, from promoting behaviour change to administering health check-ups. Third, it appears that some Japanese companies are already engaged with notion of workplace wellbeing and many are organising interventions in this sphere. Healthy workplace practices in companies are reputed to be a key recruitment tool, and a way for competing companies to attract top graduates. Both the Ministry of Health and Welfare and the Ministry of Economy, Trade and Industry have significant programmes, which encourage health promotion in workplaces.

The engagement of companies in Japan with promoting health behaviour and the strong emphasis that the MHLW and METI put on workplace responsibility can be seen as an example of broad stakeholder engagement with public health concerns. However, existing programmes – the METI and TSE awards, the Smart Life Programme – reward top-performers, while companies that are less engaged with workplace health are far less

visible. In a differently structured health system this might be less of a challenge, but given the strong reliance on employers and workplaces as key actors in delivering public health interventions in Japan, the risk is that only a small part of the population are benefitting. There is also still space for Japan to deepen inclusion of the private sector in public health policy. If employers are expected to be key players in delivering public health interventions then minimum expectations of these employers must be set, alongside the existing rewards for best-performers.

Japan's health workforce presents challenges and opportunities for delivering public health interventions

Unlike many in many OECD countries where primary care practitioners bear the bulk of responsibility for delivering public health education and services, Japan does not have a single dedicated workforce with specific training in areas typically understood as 'primary care', nor do they have a strong gate-keeping function, or general practitioners. Instead, public health care and primary care-type functions, including health checks and screenings, disease management, and vaccinations, are delivered by a mix of semi-generalist/semi-specialists in the community, by Public Health specialists, by Occupational Physicians, by nurses and by public health nurses. Since April 2018, a new system for the certification of new medical specialities, including general practitioners, was launched, but at present it is too early to assess the impact of this new certification on the Japanese medical workforce.

For the moment Japan's somewhat atypical health workforce presents both challenges and opportunities for public health. The contribution of unique workforce roles such as public health nurses is a strength. Similarly, companies with more than 50 employees have one or more occupational physicians (OPs) to take care of employees' health conditions. These physicians observe working circumstances such as safety and working hours, and manage regular health check including cancer screening, medical checks related to jobs and mental health-checks based on working hours. These health check-ups have something of a primary care-equivalent role for employees, however, the quality and contents of service delivery could be different depending on company and employee's benefit.

The MHLW also appears to have ambitious plans around the use of physicians' assistants. However, the design of the Japanese health workforce could present some challenges in terms of delivering effective public health interventions. Notably, the quality of service delivered by occupational physicians could vary significantly; it is not clear that OPs are delivering the most effective interventions for instance to reduce risk factors, nor that their focus is consistently on health improvement so much as the delivery of occupational health checks.

Primary prevention and the Health Japan 21 strategy

Changing lifestyles and a rapidly aging population are creating new challenges for the health system in Japan. Smoking and alcohol consumption are high in men and obesity is increasing, especially if an adjusted BMI measure is used (see previous discussion). Moreover, these risk factors are not evenly distributed across the country, creating inequalities in health outcomes.

To address these public health challenges, Japan has increased its focus on primary prevention. In 2003, the Health Promotion Act was implemented, providing a legal basis

for primary prevention and overall public health improvement. In addition, the Health Japan 21 (HJ21) strategy was developed. The first term of the strategy ran from 2000 to 2012, and the second term is currently in progress. The aim of this strategy is to promote health awareness activities and health promotion efforts, in order to prevent premature death, extend healthy life expectancy, and improve the quality of life.

The central government supports the HJ21 strategy by setting and monitoring targets, and through awards programmes for innovative and effective interventions. To evaluate process, the Ministry of Health and Welfare collects data on 53 targets, covering life expectancy, chronic diseases, mental health, children's and elderly health, social factors and risk behaviours – among others. To encourage local initiatives, and promote their dissemination to other areas, the central government has developed awards and recognition programmes.

At the local level, municipal and prefectural governments develop their own health promotion plans, which are implemented in the community. These plans generally focus on risk factors or health issues relevant to the local population, and are tailored to the available resources and stakeholders. This has resulted in a variety of innovative, multisectoral community-based interventions that bring together different local stakeholders.

Schools and workplaces also contribute to primary prevention through education and interventions in the office or at school. Workplace health promotion programmes generally try to improve diet and physical activity, smoking rates and mental wellbeing by changing the physical environment of the workplace and by implementing rewards programmes. In Japanese schools, nutritional education and healthy meals are a central part of the curriculum.

In addition to the HJ21 strategy, Japan has also implemented a range of population-level policies, which contribute to creating a health-promoting environment. To protect the public from second-hand smoke, Japan has introduced an indoor smoking ban, as well as taxes on tobacco and warning messages on packaging. To improve diets, Japan has recently strengthened its nutrition labelling requirements and regulation around health claims. Finally, to reduce the impact of harmful alcohol use, Japan has implemented strict drink-driving regulation.

The Health Japan 21 strategy takes an ambitious approach to public health risks

The HJ21 strategy sets out an ambitious framework to improve the health of the Japanese population. The HJ21 strategy covers a wide range of risk factors, behaviours, diseases, population groups and outcomes. As part of the first term of HJ21, prefectural governments were required to write and implement health promotion plans for their local population. To guide the development of these plans and measure their impact, 79 targets[1] were set in 9 areas (nutrition and diet; physical activity and exercise; rest and promotion of mental health; tobacco; alcohol; dental health; diabetes; circulatory disease; and cancer). These targets focused primarily on intermediary and final outcomes (e.g. decreased salt intake, increased daily steps taken, decreased complications of diabetes), but some process metrics around knowledge and awareness were included as well (e.g. increased use of food labels, increased willingness to diet, increased awareness of metabolic syndrome).

In the final evaluation of the strategy, it was found that 17% of targets were achieved while an additional 42% showed improvement. The majority of achieved targets were in the area of dental health. Other targets that were achieved were increased awareness of metabolic syndrome, willingness to engage in physical activity, and decreased lack of sleep. However, the remaining targets did not all stay the same: 15% of the metric worsened. There were more diabetic complications, fewer people eating breakfast, fewer steps taken per day, and more stress, among others.

For HJ21's second term, which runs from 2013 to 2022, a new framework was developed containing 53 targets. While the new framework has a different structure – moving from a disease-based grouping to organisation by overall aim, such as improving risk factors or social engagement – many of the metrics remain the same. However, the updated framework has a greater focus on extending healthy life expectancy and reducing health inequalities, includes secondary prevention, and contains new metrics on creating a healthier social environment. The latter includes measures such as the number of corporations, civilian organisations and prefectures that have put in place health promoting measures, and volunteer participation in health promotion. However, while this list of tangible targets provides a measurable way to evaluate the strategy, it provides no prioritisation. The targets cover a very wide range of public health issues – with varying urgency and impact on population health – without prioritising them or ranking their relative importance.

A wide range of actors are involved in delivering Health Japan 21 and other primary prevention interventions

Local communities, companies and other public sector actors are all involved in delivering Health Japan 21. At the local level, the targets for health promotion set by the central government are incorporated in prefectural and municipal health promotion plans. Local governments can choose specific focus areas depending on the local health status, and tailor their approach based on the available resources and stakeholders. This has resulted in a variety of innovative, multisectoral community-based interventions that bring together different local stakeholders. For example, the The Adachi Vegi-tabe Life ("tabe" referring to the Japanese word for "eat") project was established as part of the city's local health promotion plan under HJ21, and aims to increase vegetable consumption. The approach tries to build a supportive environment that encourages and facilitates vegetable consumption, educate children on the importance of vegetables, and includes specific internvetions such as a healthy menu plan, through which 10% of all local restaurants now provide a small salad at the beginning of each meal, or "vegetable rich" meals with over 120g of vegetables. The programme has had a considerable impact. Vegetable consumption in both children and adults increased – notably in both high and low education families. Men and women aged 30 ate 69.1g and 23.6 g more vegetables per day, respectively, in 2016 compared to 2014.

Employers play an important role in Japan's public health system, including in primary prevention efforts. Workplace-based programmes are carried out in both public and private organisations on a voluntary basis, often focusing on diet and physical activity, smoking and mental wellbeing (e.g. decrease of working hours and increase in leave). Participation in workplace-based programmes for employees is usually not compulsory but coverage is reported to be very high, with virtually all employees participating.

Interventions vary across different employers, for example based on the number of employees (with larger employers implementing more comprehensive interventions), the

type of working environment (e.g. whether there is a canteen) and other factors, but typically are a mix of actions targeting people at high risk for NCDs, and those that apply to the entire employee population. A range of intervention have been implemented to make the workplace a healthier environment, for instance providing healthier food in the canteen, discouraging the use of cars for short trips, restricting smoking on premises, providing standing desks, creating places to stretch, or providing places for standing meetings. Again, though, the existence of such interventions is understood to vary significantly between employers. Additionally, the impact of such interventions is difficult to assess, and limited evaluations are found.

The Ministry of Education is in charge of school-based interventions to promote healthy lifestyles among children, primarily through school lunches. Japan has a long history of school lunches, with the 1954 School Lunch Act making them an official part of the education system. In 2014, 99% of elementary schools and 85% of junior high schools provided school meals, covering a total of nearly 10 million children. The Ministry of Education has set specific nutritional standards for school lunches, requiring them to provide, amongst other, 33% of a child's daily energy, 50% of daily magnesium and 33% of daily zinc requirement, and limit fat to 25-30% of total energy. Based on these requirements, lunch staff and nutrition teachers develop detailed meal plans using fresh ingredients, in some cases with a focus on locally produced products. A diet record study among students found that, compared to their weekend meals, school meals reduced deficiencies in almost all of 60 different nutrients. In addition to providing a healthy meal, school lunches also play an important part in food and nutrition education.

To increase children's physical activity schools are required to provide a minimum number of hours of physical education (PE) classes, as defined in the National Curriculum Standard. All students attend PE class about three times a week in the school term and learn sports skills and rules including traditional martial arts and dance. The Ministry of Education also sets guidelines for school infrastructure and equipment for PE, as part of the school facilities requirements.

Health Japan 21 could be improved by clearer prioritisation and systems to ensure quality of public health actions

While the HJ21 takes an ambitious approach, in the absence of clear priorities there is a risk of dispersion of energy and resources. The government could consider selecting priority areas, based on their impact on overall population health and the availability of effective interventions. Successes in these priority areas can then be used as a springboard for other issues.

In addition to setting priorities, Japan should also evaluate how it ensures quality at the local level. The responsibility for designing, implementing and running programmes and interventions sits with local governments, communities and organisations. As a result, the quality of these interventions can vary across localities. For example, while it is possible to identify a range of local interventions which appear successful, and their design evidence-based, it is unclear whether similar examples are widely present across Japan or if the situation is more heterogeneous.

It is important to ensure that all regions receive high-quality public health promotion. To ensure that quality interventions reach the entire population, the central government could provide support to underperforming regions, in terms of dedicated resources, advice or funding. Setting guidelines and minimum quality standards could help monitor and control the quality of local interventions. The National Institute of Public Health offers a

short training for those involved in monitoring local plans but this is a new task for local public servants and many lack the relevant skills. The central government could encourage or support less innovative municipalities to participate in such trainings.

In addition, the government should focus on disseminating local interventions that have been proven effective, through the creation of guidelines and case studies, supporting individuals to drive innovation, and networking opportunities. Improved horizontal and vertical communication between the central and local governments would also contribute to more co-ordination between approaches and increased accountability.

The MHLW should also be careful not to overly rely upon workplace interventions for primary prevention. In general, while workplace-based interventions can contribute to creating a health promoting environment, they have limitations. These actions are relatively easy to implement in the central offices and headquarters, but local or smaller offices are unlikely to be covered by the same services, particularly for actions entailing significant structural changes. Moreover, in the mid- and long-term, these programmes become routine and people lose interest. There is a need for continuous innovation and evaluation to ensure the programme remains appealing to employees and effective. To maintain interest in the programme, the interventions can be further tailored to specific individuals based on their risk factors or attitudes, or by increasing health literacy among employees. Even if all workplaces had a full package of health promotion activities in place, which is not currently the case, workplace-based interventions would still only cover a limited share of the population, and only during working hours. Their impact on overall population health is therefore limited, and other interventions are needed to target children, unemployed populations, and the elderly.

Japan has a small number of population-level policies to reduce health risks

In addition to these activities under the HJ21 strategy, which is the basis of many local initiatives and programmes, Japan has a number of population-level policies that contribute to creating a health promoting environment, with a particular focus on reducing smoking rates, improving diets and reducing alcohol consumption.

To try to reduce smoking rates – while female smoking rates are low, Japanese men are heavier smokers than the OECD average – Japan is implementing a ban on smoking in public places. In 2017, the Ministry of Health proposed a bill that would make all indoor public places smoke free. Despite strong support from the general public, patient groups, academia, and health care professionals, including the Japan Medical Association, the bill did not pass. A revised bill was accepted in Japan's National Diet in July 2018. This bill extends the exemption from establishments smaller than $30m^2$ to those smaller than $100m^2$ (though with a caveat that this is a temporary measure and regulation may become stricter in the future). These smaller establishments where smoking is not banned are required to post a sign warning stating that they allow smoking, and people under the age of 20 are not allowed to enter those establishments. The ban on public facilities was also relaxed in the revision: although smoking in indoor public places is banned, smoking in outdoor space on public premises is allowed as long as the necessary measures are taken to contain smoke. The measures will be fully enforced by April 2020, ahead of the 2020 Tokyo Olympic and Paralympic Games.

Currently, the total tax on cigarettes, at 63.1%, is slightly below the WHO recommended level of 75%. However, the tobacco excise tax rate is set to increase with JPY 1 per cigarette in October 2018, 2020 and 2021, increasing the excise tax by 25% from 12.2 to

JPY 15.2 per cigarette. This will bring the level of taxation in line with recommended levels, though the tax burden will be dependent on consumption tax and retail price.

In 2015, the Food Labelling Act came into force in Japan. This Act aims to improve diets and population health by changing the requirements for food labels. The Act requires food producers to provide nutritional information, including energy, protein, fat, carbohydrate, and sodium (as salt equivalent), on processed foods and additives sold in containers. In addition, a new system of sanctioned health claims was introduced under the Act.

Japan has implemented a number of population-level alcohol prevention policies, including taxation and a minimum age for alcohol consumption (set at 20 years). The national alcohol tax law was reformed in 2017, setting out three changes over the next ten years. This staged approach will eventually equalise the tax rates for wine and sake (increasing tax rates for the former, reducing tax rates for the latter), as well as the tax rates for malt based beer and beer flavoured liquors (decreasing the tax on the former and increase tax on the latter). One of the impacts of having the same rate of tax for alcohol products with a similar production process and consumption pattern is that it may prevent consumers from switching to a lower taxed product. However, the main reason for the change in tax rates is to improve fairness in tax burden among different alcohol types.

In 2013, the Basic Law on Measures Against Health Problems Caused by Alcohol Intake was enacted, which requires national and local government to implement measures to reduce the impact of alcohol consumption. However, there is little guidance or oversight as to what this action should entail. The Law also established a yearly Alcohol Problems Awareness week, to be held every November.

Additional population-level policies could help Japan achieve its HJ21 targets

While Japan has implemented some population-level policies to reduce risk factors such as alcohol use, smoking and obesity, they currently play a relatively minor role in Japan's prevention strategy. By implementing additional population-level policies, in line with international best practice, a health promoting environment can be created that supports the progress made at the local level.

There are a number of policies that Japan could implement to reduce smoking rates, in line with the WHO Framework Convention on Tobacco Control (FCTC). Firstly, Japan should consider increasing the coverage of the public smoking ban, to ensure comprehensive protection from second-hand smoke. While it is encouraging that a bill on passive smoking has been passed, the exemptions to the smoking ban mean that only approximately 45% of eating and drinking establishments are covered by the ban. Secondly, it could consider implementing more comprehensive mandatory restrictions on the marketing of tobacco products. Currently there is no binding legislation banning tobacco marketing. There is a voluntary code is in place, which is less effective at reducing the public's exposure to advertising. Thirdly, Japan could consider changing the regulation on tobacco packaging to include graphics or images on packaging. In addition, it should review the use of potentially misleading terms such as "low tar" or "light".

To improve diets and tackle the rise in BMI, Japan could consider expanding its new labelling law to include front-of-package labelling. The current labelling regulation mandates that product packages contain detailed nutritional information. However, easy-to-understand labels that are printed clearly on the front of the package prompt a greater

response rate from consumers in terms of food and diet choices than back-of-package nutrient lists.

In addition, there is a range of other options that Japan could consider to improve diets. A mandatory trans-fat ban could help improve the quality of foods. Restricting advertising to children of high fat, high sugar products could reduce their appeal and consumption – especially among this vulnerable group.

When it comes to alcohol, Japan could consider implementing restrictions on marketing and sales. While many other OECD countries have strict regulation about when, where and how alcohol can be promoted, Japan does not have any restrictions in place. Similarly, Japan currently has no restrictions on when and where alcohol can be sold or consumed. Restricting the availability of alcohol can reduce alcohol consumption and alcohol-related harm. Such a policy could begin gradually, for example by banning alcohol sales in petrol stations, in light of the links between drinking and road traffic accidents.

Health check-ups in Japan

Japan relies significantly on population-based health check-ups to improve population health through early detection of diseases. Based on health check-up results Japan also aims to promote individual's effort to manage their own health conditions by preventing the onset or severity of diseases through better lifestyles.

The coverage of health check-up items and target population have expanded over the past few decades, and routine health check-ups are now available to almost all segments of population throughout their life course. There are legally required health check-ups such as health check-ups for infants and preschool children, an annual health check-up for school children and full-time employees, an annual stress test for employees, and an annual health check-up for people aged between 40 and 74 which specifically aims to prevent lifestyle-related diseases. There are also a number of other health check-ups which are not legally required but provided by municipalities and insurers based on national recommendations. A multitude of other health check-ups are also provided voluntarily by municipalities, insurers and providers but their quality varies and benefits and risks are not well understood. These secondary prevention strategies in Japan are unique in the OECD, and certainly such an extensive range of screenings and tests in place, covering such a large proportion of the population, are far from common across OECD health systems.

However, unlike the majority of OECD countries, cancer screening is not provided nationally in a standardised manner and screening protocols vary across municipalities, insurers and providers even though national guidelines are available.

A wide range of health check-ups are offered to the Japanese population

Several health check-ups, for preschool children, at school, for employees, and 'specific health check-ups' are legally required in Japan. These include check-ups for preschool children (for example, physical measurement, assessment on nutritional status, oral health, and developmental problems related to physical and mental health and vaccination history), and check-ups for children at regular intervals throughout childhood. At Japanese schools in the primary, lower secondary, upper secondary and tertiary levels, a health check-up is provided to students by professionals such as school doctors, for example checking height and weight, eyes, ear, nose and throat, tuberculosis, vision and

hearing. Students or their parents are notified of health check-up results and if the results suggest that students have any diseases or abnormalities, they are recommended to seek follow-up diagnosis and/or health care. In Japan, the uptake of health check-ups among school children has been nearly 100% across educational institutions. The high uptake has been achieved by its well-established and organised delivery, high public awareness and free access.

Employers are required to provide a core health check-up (*Ippan kenshin*) annually to full-time employees, at the time of hiring and annually, for free. Employees are also obliged to take up this health check-up. Employers are not legally required to provide check-ups for employees, for instance who work less than half-time. The core health check-up needs to include a standardised set of items, for instance medical history, weight, vision, hearing, blood pressure and urinary sugar and uric protein. To try to reduce worker's accidents and deaths related to cardiovascular diseases, a further health check-up specific to cerebrovascular and cardiovascular diseases (*Niji kenkou shindan*) are provided free of charge. This secondary health check-up is for employees who are identified to have high levels of associated risk factors (e.g. blood pressure, glucose, blood lipid, and abdominal circumference or BMI) based on core health check-up results or the discretion of occupational health doctors and it is provided upon the request of eligible employees. Secondary health check-up items include, for example, blood lipid and glucose levels at the time of fasting, haemoglobin A1c, or a stress electrocardiogram. Based on the results of secondary health check-up, face-to-face health guidance focusing on nutrition, physical activities and lifestyles including smoking, drinking and sleeping is provided by doctor or nurse with an aim of reducing risk factors for these diseases.

In order to prevent mental health illnesses and reduce their burden in the Japanese labour force, and to encourage improved working conditions, employers with more than 50 employees are obliged to evaluate the stress level of workers (*stress check*) once a year without an out-of-pocket payment for the employee. This initiative was first introduced by the National Federation of Industrial Health Organization in Japan to its affiliated employers, and the central government then implemented this initiative nationwide in 2015. This stress test measures employees' mental health through an online questionnaire which was developed based on the questionnaire designed by the National Institute of Occupational Safety and Health in the United States. It aims to make employees aware of their stress level so that they can try to prevent developing mental health problems, and also aims to promote changing the work environment based on stress check results.

Finally, specific health check-up (*Tokutei kenshin)* to tackle lifestyle-related diseases is provided annually to people aged 40-74. All insurers in the Japanese health system are obliged to provide a specific health check-up to people in this age group every year as they are considered to have higher risks of developing lifestyle-related diseases. They need to provide a nationwide standard set of health check-up items. The employees aged between 40 and 74 who undergo a core health check-up (*Ippan kenshin*) do not need to duplicate the examination of the same health check-up items.

In addition to the compulsory health check-ups, a number of other health check-ups are encouraged, and are delivered by various stakeholders including municipalities, employers, and employment-base insurers. Municipalities are encouraged to provide a range of additional checks, for example periodic tests of osteoporosis, periodontal disease, hepatitis B and C, or lifestyle-related diseases. However, coverage of the tests varies between municipalities, as does the level of out-of-pocket payments for the various tests. Some cancer screenings are also offered by municipalities and employment-based

insurers – for instance mammography for women over 40, cervical cancer screening, lung or colorectal screening. Again, they are widely different across municipalities and employment-based insurers since they develop cancer screening protocols themselves without following the national cancer screening guideline.

The MHLW also recommends that employer-based insurance provide additional health check-ups. For example under the Society-Managed Health Insurance, health insurance for large companies are recommended to provide health check-ups for lifestyle-related diseases at least once every five years for employees and their dependents aged between 30 and 40. In general, a wider coverage of health check-up items is considered favourably as this is seen as the level to which employers care about the welfare of their employee. Insurers with good financial conditions try to cover additional health check-up items, but across insurers the coverage of additional health check-up items varies substantially. Moreover, there is limited information on the uptake and effectiveness of these health check-ups because of the fragmented nature of data holdings at the provider levels.

Many other health check-ups are available privately, and individuals can freely choose to undergo health check-ups from many offered outside of publicly funded health care. Many health care providers provide such health check-up services (*ningen dock*) and the content and cost of health check-up items provided vary substantially. For full-time employees, the cost of such health check-up is sometimes covered by their insurance, particularly among those insured by the Society-Managed Health Insurance. Some private health insurance also reimburses part of the out-of-pocket payment paid by their insured if their contract includes such coverage. Information on these additional check-ups covered either by publicly funded insurance or privately is stored and managed in a fragmented manner at the provider level, so the uptake and its effectiveness is not known. There is no quality assurance mechanism including regulations on the coverage and frequency of these health check-ups unlike health check-ups which are legally required to provide.

Japan should undertake an assessment of whether all health check-ups are necessary

The volume and range of health check-ups in Japan is, compared to OECD peers, unusually high. It is not clear that all tests are adding value to the system in terms of both the health of the population and financing through cost-saving. The risk of duplicative tests, waste, over-diagnosis and even unnecessary exposure to harm (e.g. through x-ray radiation) should not be ignored. Additionally, among adults, given the concentration of tests on the working-age population it seems sensible to suspect that Japanese full-time workers are being tested far more frequently and extensively than necessary, while those not in employment or those with part-time employment contracts may be overlooked. An appraisal of whether all tests are necessary and effective seems timely.

Generally, each health check-up has been evaluated and developed separately through consultations of its own working group, often composed mainly of providers. Japan would benefit from reviewing and evaluating all health check-ups and cancer screening together based on consultations with a wider range of stakeholders including financing agencies and users, to assess priorities in Japanese secondary prevention strategies and the role of secondary prevention in the health system and to streamline different initiatives while maximising their impact. Such a comprehensive review needs to include an assessment of health check-ups which are provided legally and recommended and also those which are provided voluntarily by municipalities, insurers and providers. It is

important to review health check-ups based on the studies undertaken in Japan, but policy developments and evidence from other OECD countries could also be used to complement any analyses carried out in Japan. For example, a number of studies conducted in other countries suggest that population-based routine general health check-ups, provided between the 1960s and 1990s, were not effective, although some argue that the effectiveness may be different nowadays due to progress in medical technologies. A systematic review also highlighted problems such as false-positive results, which causes anxiety and leads to unnecessary follow-up tests, over-diagnosis and overtreatment, that were not well studied. In addition, several studies found a lower participation in screenings among those with low socio-economic background and high risk factors compared to those with high socio-economic background and low risk factors, suggesting that population-based health check-ups may potentially increase health inequality. Possibly reflecting this and similar evidence, only very few OECD countries provide general routine health check-ups. In these countries, the intervals of health check-ups also tend to be less frequent, and the target population is narrower, compared to the Japanese health check-ups.

There may be more cost-effective ways to deliver secondary prevention in Japan

The assessment of the health check-ups ought to also include an economic evaluation. Even if check-ups are not causing harm to population health, there may still be more cost-effective ways to improve population health and detect disease early. Some attempts have been made to assess changes in the health care cost in relation to secondary prevention interventions by MHLW and insurers, but more economic evaluation studies need to be conducted to contribute to policy discussions and decision-making. Again, economic implications need to be evaluated for the entire range of health check-ups. Evidence and policy debates from other countries have often led to unfavourable economic evaluation for population-based or routine health check-ups and can provide useful evidence when assessing and further developing Japanese policies.

For a more streamlined set of check-ups, more innovative approaches to providing health check-ups could be pursued. There are some examples of utilising technologies such as apps and mobile screening units to increase access to health check-ups in Japan, and best practices in effectively utilising technologies to increase access need to be shared systematically across municipalities and insurers. Japan could also consider using innovative approaches taken in other countries if they are found effective in the context. For example, within the national cancer screening programmes, a use of selected self-sampling tools for cancer screening were found effective in reaching out to non-participants for cervical and colorectal cancer.

The health information system needs to be developed further for better monitoring and evaluation

The health check-ups generated a wealth of potentially very valuable health information, which could be used both for better managing population health, designing and targeting more effective public health interventions, and for research. A strong health information system has the potential to be the backbone for monitoring and evaluating different aspects of health check-ups and cancer screening and further developing its secondary prevention policies. A few national initiatives such as guideline development and an introduction of financial incentives have started to promote analyses of health check-up data among insurers. However, more could still be done. In order to further promote evidence-based development of secondary prevention policies. Japan could learn from

other OECD health information systems, for insights and examples of how to protect patient privacy and use linked data for monitoring and evaluation of health systems and also for policy developments in relation to health check-ups.

A stronger health information system could also facilitate streamlining the efforts to invite target population for health check-ups and cancer screening, and potentially to deliver health check-ups only to a high-risk population, or to those who have not followed up on worrying results from a previous check-up. Currently invitations are usually sent through multiple sources in an uncoordinated manner. Invitations are also usually sent to individuals in the target group who are already seeking treatment, even if results of relevant medical examinations were recently evaluated. Using a stronger health information system including cancer registry, invitations could be sent in a more personalised and targeted manner, without duplication, to those in need of health check-ups and cancer screening as done in other OECD countries to effectively recruit participants.

Cancer screening could be strengthened with a standardised, national approach

Globally, the benefits of high-quality national screening programmes in detecting cancer at an early stage and reducing preventable deaths, particularly for breast, cervical and colorectal cancer, have been well-evidenced. Internationally established recommendations suggest that cancer screening should be offered if it is proven to reduce mortality, cost-effectiveness is acceptable, high quality is assured and the public is informed of its benefits and potential harms. Based on national and international findings of effectiveness and cost-effectiveness of cancer screening and also national efforts to assure quality of cancer screening and to build public awareness, the majority of OECD countries have free nationwide screening programmes for breast, cervical and colorectal cancer.

As in other OECD countries, to tackle cancer – the leading burden of disease in Japan – a nationwide standardised approach needs be followed systematically. The target age, screening interval and methods that are recommended in the national guideline need to be used consistently across municipalities, insurers and providers. Japan could also learn from countries with highly developed cancer registries and utilise the data collected through the national cancer registry to improve and assure quality of cancer screening. Additionally, these data could be used to conduct cost-effectiveness studies of its cancer screening particularly for lung cancer, which is uncommon in the OECD. Furthermore, public awareness needs to be built around standardised cancer screening protocols including target age and screening intervals, and the public also needs to be effectively informed of benefits and potential harms of cancer screening so that they can make decisions on their participation themselves.

Public Health Emergency Preparedness in Japan

Japan is particularly vulnerable to hazards, and the country's risk profile requires for preparedness to public health emergencies to be at the top of the public policy agenda. Japan is at risk of earthquakes and tsunamis, typhoons, as well as pandemic and infectious disease risks. Japan does make of preparedness for public health emergencies a key priority, both internationally and at the domestic level, and has implemented a comprehensive set of prevention policies to tackle disasters, and has invested significantly in public health emergency preparedness.

However, the overreliance on pre-planned emergency scenarios revealed the limit of this approach in time of complex disasters such as the Great East Japan Earthquake. The lack of quality assurance of the implementation at the local level, the limited collaboration across ministries and levels of governments, and the insufficient number of real-condition exercises prevent Japan's preparedness level from reaching its full potential. Strengthening its capacities for a more agile response based on better situational awareness and well-designed information flows, multi-stakeholder partnerships, and flexible incident-management should be priorities for Japan going forward. It will also be important to develop and maintain the relevant skills of health workers in disease control and post-disaster health care and to make the most of innovation.

Japan should consider introducing an all-hazard preparedness approach to cope with risks of public health emergencies, which could start by establishing an all-hazards and cross-government National Risk Assessment. While this analysis mostly concentrates on the risks of natural hazards and infectious diseases, it also aims to apply any kinds of public health emergencies preparedness policies in Japan.

Japan is a disaster-prone country with growing vulnerabilities

As a global economic hub, Japan's exposure to risk of pandemic and infectious diseases outbreaks is similar to other OECD countries. Japan is subject to the resurgence of classic infectious diseases (e.g. tuberculosis, dengue, rubella, or measles) as well as to pandemic influenza and new infectious diseases outbreaks. At the same time, Japan is characterised by its multi-hazard exposure to earthquakes, tsunamis, volcanic eruptions, and hydro-meteorological hazards such as floods, typhoons, extreme temperatures, avalanches or landslides. Earthquakes have been the leading cause of disasters regarding fatalities and casualties, displaced or affected people, in addition to their economic damages. Hydro-meteorological risks are also widespread across the country, and can cause severe public health consequences, especially on vulnerable populations, as shown in the tragic flood of July 2018.

Compared to other OECD countries, Japan suffers on average 4 times more human casualties per inhabitants from disaster risks. Reducing the death toll caused by natural hazards is a fundamental policy objective. From a public health perspective, it is equally important to consider indirect health effects, occurring after the disaster, which can be caused by affected health care provision, post-traumatic stress and related psychological impact, or population evacuation and displacement. The Great East Japan Earthquake was a tragic example of such wide-reaching and long-running consequences.

Japan shows some specific demographic vulnerabilities to disasters. The increased share of the elderly in the Japanese population is of serious concern when it comes to individual resilience to disaster risks. Demographic projections indicate that the share of the elderly (65+) will rise from around 26% today, already the highest in the OECD area, to almost 40% at mid-century. Japan's high population density and international exchanges also contribute to increasing the risk of infectious disease outbreaks. Across the 300 metropolitan areas of the OECD metropolitan database, five out of the 20 densest ones are located in Japan.

Japan does have some defences against public health risks. Overall the vaccination rate in Japan slightly exceeds the OECD average contributing to a good level of immunisation for many infectious diseases. Efforts should be made to keep vaccination rates high. While difficult to measure, the large use of precautionary and hygienic measures within the Japanese population is largely recognised as a factor that limits the risk of infectious

diseases propagation in the country. These measures include regular handwashing or the widespread use of face masks.

Japan prioritises preparedness for public health emergencies, as reflected in its legal and institutional framework and its international cooperation activities

Japan has a sophisticated legal framework to deal with national emergencies and their public health consequences. Both for pandemic and disaster risk preparedness, parliamentary acts clearly define the roles and responsibilities of ministries, prefectures and municipalities. All actors have to prepare countermeasure plans for their jurisdictions from national to local levels, following the principle of subsidiarity.

Japan's legal framework allows for whole-of-government engagement in public health emergency preparedness and response, both horizontally across sectors, and vertically across levels of government. However, Japan does not have a unified all-hazards approach to emergency preparedness and response but has separate laws covering all hazards. In any case, the government initial response system is mobilised for any hazards.

All levels of governments have a role to play in public health emergencies. For all public health emergencies, Japan builds on its three-tiered decentralised governance system, with its 1719 Municipalities, its 47 Prefectures and its National Government, which all have preparedness responsibilities within their jurisdictions, and action plans to prepare following national guidelines. The Basic Disaster Management Plan and the National Action Plan for Pandemic Influenza and New Infectious Diseases govern the national government efforts, and are replicated locally in each Prefecture and Municipality of the country.

Regarding horizontal co-ordination, all ministries concerned are involved in public health emergency preparedness and response. Overall co-ordination is ensured by the Japanese Center of Government, the Cabinet Secretariat and the Cabinet Office, which has a dedicated Minister of State for Disaster Management. The engagement of national leadership in policy formulation, approval of national plans, multi-stakeholder co-ordination, strategic crisis management and regular exercises are enshrined in acts.

Beyond government, the private sector and civil society also play a role to support emergency response with surge capacities or specific capacities required for the response, such as the production of vaccines or treatments. This is favoured by legislation which encourages citizens' self-preparedness and volunteer activities.

As a major promotor of the Global Health Security Agenda (GHSA), Japan takes a leading role on these issues internationally: under its G7 Presidency in 2016, global health was at the top of the agenda, leading to the adoption of the G7 *Ise-Shima* Vision for Global Health. This is similar for disaster preparedness, as demonstrated by the hosting of the UN World Conference on Disaster Risk Reduction in 2015. The Sendai Framework on Disaster Risk Deduction adopted thereof recognises in particular the need to enhance the resilience of the health system.

A good knowledge of the critical risks and their public health consequences is essential to prepare for public health emergencies

Japan assesses its main risks and their public health consequences with a scenario-based approach. By combining the use of elaborate modelling and solid databases, the association of its world-class scientific research and the application of international guidelines, Japan has identified a series of major risks and estimated their public health

impacts. This is undertaken for most categories of National Emergencies in Japan, which range from earthquakes, to flood, volcanic eruptions, nuclear and industrial accidents, terrorism or pandemic influenza and other infectious diseases. Unlike many OECD countries; however, Japan does not conduct a National Risk Assessment, allowing to compare all its major risks in terms of likelihood and potential impacts, and to prioritise resources accordingly.

Japan conducts a comprehensive risk assessment for infectious diseases under the Infectious Diseases Control Act. Beyond risk identification, Japan has developed scenarios of pandemic diseases outbreaks for several of them, based on the most advanced scientific knowledge and conservative assumptions. In Japan all the major risks of earthquakes, tsunamis, floods, and volcanoes have been assessed, and scenario developed for the most important ones. Every year, the revision of the Basic Disaster Management Plan provides an opportunity to improve some of these assessments by integrating the latest knowledge.

Risk communication and awareness programs are a major priority in Japan. Japan is among the most advanced countries of the OECD when it comes to disaster education: curricula from kinder garden to university integrate risk management, regular exercises are organised at all levels in the country, risk maps are mandatory to be made available to the public and indicate evacuation routes to be taken and anticipated safe meeting points. Similarly, regarding diseases outbreaks, local governments plans, information at public health centres and school programmes all contribute to raising citizens' awareness on potential health risks and precautionary measures to be taken in case of an outbreak.

Capabilities for public health preparedness and response in Japan are fairly robust

Overall, in terms of capabilities, preparedness for disaster risks appears fairly advanced in Japan. Preparedness is based on risk analysis, with constant improvements, and a significant mobilisation of resources throughout the country. Capabilities' planning for infectious diseases is also risk-based and at a good level, even though concerns about maintaining this level of preparedness, ensuring human resources have the right skills and ensuring that local government can properly fulfil their requirements appear to be widespread across health professionals.

Based on its risk analysis, Japan has invested significant resources for the development of a robust infrastructure and dedicated capabilities to prepare for public health emergencies, from their detection and surveillance to the response and medical care. While progress can continuously be undertaken in this area, these capacities appear to be tailored in good accordance with the level of risk, national policies and international standards.

Surveillance, monitoring and information systems make good use of innovation, but more could be done to foster early detection and inter-agency cooperation. From disease outbreak surveillance to natural hazard detections, early warning systems and information sharing platforms, innovative tools are utilised by the Japanese authorities to timely detect emergencies, rapidly evaluate their probable public health consequences and disseminate this information across the large network of emergency stakeholders. However, the absence of a permanent dedicated and well-equipped Emergency Operations Centre at MHLW makes it challenging for the ministry to ensure a rapid reaction and a smooth co-ordination of all the different stakeholders. The potential of big data, social networks and artificial intelligence could further increase timeliness and accuracy of emergency

information, as is under development in several on-going public sector innovation projects, which hold great promises of rapid operationalisation.

Japan has made significant investments in health infrastructures dedicated to emergencies. Since the mid-90's, Japan has invested significantly in its health infrastructure to strengthen its preparedness level for emergencies. MHLW established programmes for disaster base hospitals and for Class 1 and 2 infectious diseases designated hospitals based on lessons learned from disasters or following legislation requirements. Japan has also a dense network of Designated Shelters, which are used when evacuation advice are emitted in case of disasters.

Japan plans large stocks of medical countermeasures and emergency supplies for emergency response. Emergency capabilities also include stockpiling of medical countermeasures (MCM) for diseases outbreaks, as well as of emergency relief supplies for disasters. Japan has a dynamic policy for MCM stockpiling which is currently under revision. New drugs are included in its antiviral portfolio to address also the risk of resistance to these largely used treatments. An increased share of the market storage and production is envisioned as well, which would lead to a more dynamic stockpiling policy, allowing also addressing the risk of drugs expiration when managed by local governments.

Emergency health care providers can be mobilised rapidly when disasters hit, but skills shortage in infectious disease control and treatment is a concern. Following the 1995 Kobe earthquake, MHLW has developed a dedicated programme for disaster medical care with the Disaster Medical Assistance Team (DMAT). As a complement to the well trained local and specialised search and rescue teams of Japan's disaster risk management system, DMAT are specialised teams – typically composed of a doctor, two nurses and one coordinator – which can be immediately deployed in disaster hit areas to provide emergency medical care in the acute phase. With their advanced skills in disaster trauma care, they can be particularly useful when major earthquakes occur. These 1426 teams throughout the country composed of 9328 members, automatically go in standby when major disasters occur. The DMAT Secretariat ensures their transportation to the stricken area through self-defence force airplanes to provide surge capacities in disaster base hospitals. While this is a fundamental asset for public health emergencies, Japan needs to reflect on how to best to utilise and train this capacity for large-scale disasters where public health needs can sometimes require multiple health care skillsets.

In the case of infectious diseases, there are more concerns over human resources. According to the National Institute of Public Health, 33% of Class 1 hospitals are lacking clinical infectious diseases experts for instance. The Field Epidemiologist Training Programme of the National Institute of Infectious Diseases also does not train sufficient staff. In a context where infectious diseases outbreaks are not as frequent as disasters, and with a decreasing budget and population, maintaining capacity, expertise and awareness within the public health system to deal with the risk of pandemic diseases outbreaks is a challenge. It is also important to ensure that sufficient dedicated staff are trained and tasked to lead and coordinate public health preparedness and emergency response at the central level, particularly at MHLW.

Improvement to inter-agency co-ordination across sectors and more regular multi-stakeholders exercises with the health sector are necessary

Japan has developed a set of emergency plans to mobilise its capabilities and implement countermeasures when public health crises occur. There is a large set of preparedness plans from national to local levels which make clear the different countermeasures to be

applied to reduce public health consequences of all kinds of emergencies. However, the lack of oversight and quality control is a lost opportunity for cross-constituencies learning and overall continuous improvement of the national preparedness level.

Public health emergency plans are developed at all levels but there is a lack of oversight and control of these plans. From the overarching Basic Disaster Management Plan and National Action Plan for Pandemic Influenza and New Infectious Diseases, which govern the national whole-of-government emergency response for disasters and diseases outbreaks, national guidelines instruct all ministries and local authorities to prepare their own emergency plans. As such, MHLW has developed a series of response plans for public health emergencies in Japan, which address all the potential public health emergencies. While all Prefectures published their action plan by the end of 2014, one year after the new act, there is no system in place set up by the Ministry or the association of the Prefectural governments to assess their quality, monitor their adherence or identify areas for improvement in these plans. As a complement, designated public institutions in critical sectors, disaster base hospitals, and public health centres all are required to develop business continuity plans for disasters and other public health emergencies, but there is no detailed guidelines for such plans nor a review process in place.

While all these preparedness measures and plans ensure that every relevant institution prepares for public health emergencies, recent crises revealed shortcomings in inter-agency co-ordination, as well as between the different levels of governments. Even if improvements have been made notably after the GEJE or the H1N1 pandemic, there is still a need to better prepare joined-up emergency response across sectors. Overall, the disaster risk management system appears to have established more robust coordination mechanisms over the years. This is understandable given the regular occurrence of large-scale disasters in Japan. Coordination of the public health sector with other government agencies for diseases outbreaks is in its early stage and would benefit from learning from the better established disaster risk management process. During the Ebola outbreak, several inter-agency coordination mechanisms were established, which helped support the response of the Japanese Government.

Improving crisis communication requires better training of public officials and an increased use of social media. Effective communication is fundamental to convey critical messages for the safety and security of the population as well as to reduce citizen's uncertainty during crises. Good or poor communication can significantly change the course of a crisis, both on its public health consequences – if citizens are not well-informed of the countermeasures taken – and on trust on government and public institution - if the perception that the crisis is not well managed prevails.

Full-scale multi-stakeholders emergency exercises could be undertaken more regularly. In Japan, simple exercises are performed regularly to test emergency plans and procedures as well as the different inter-agency co-ordination committees, but simulation exercises based on more complex scenario including multiple stakeholders are necessary to improve preparedness. There is a disaster exercise organised every year at Cabinet level, as well as one on new types of influenza, and the Prime Minister regularly takes part in both. MHLW also conducts four exercises per year, one to set up a task force within the ministry, one for the emergency personnel in charge of long distance evacuations and a drill for safety confirmation of the personnel. This is similar at the local level where Prefectures must exercise their disaster plan and infectious disease plan, every year. Sill, these exercises are too often conducted as table-top exercises and lack elements of surprise and complexity, which would force crisis managers and officials to go out of

their comfort zone as real emergencies do require, and to detect areas of improvement. Furthermore, there are not sufficient simulation that involve the entire network of emergency responders, from the different sectoral ministries as well as the levels of government, the private sector and civil society.

Chapter 1. The Public Health System in Japan

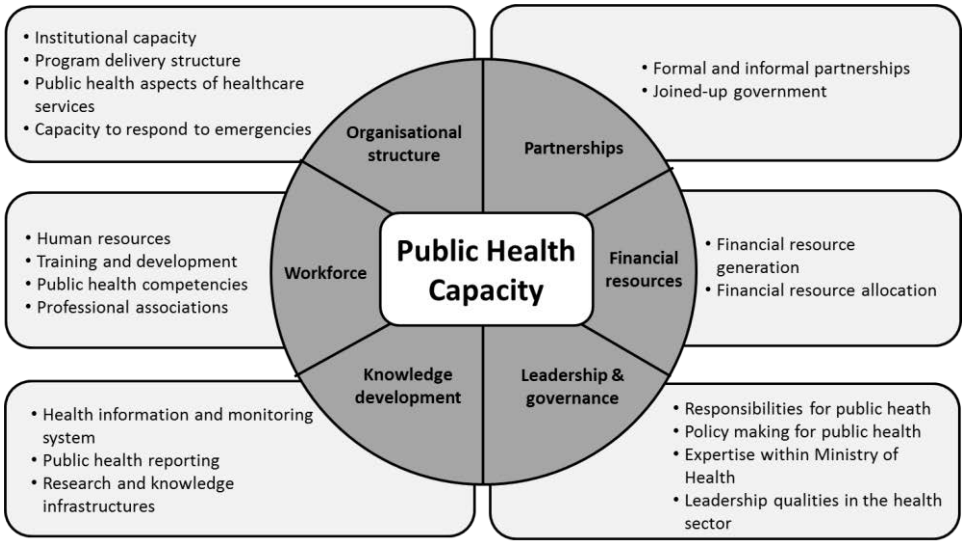
Japan, which has the longest lived population in the world is taking public health seriously as a key objective of central and local governments. Relative to most OECD countries levels of risky health behaviour are low, but like Japan's OECD peers a growing burden of non-communicable diseases, and a growing elderly population, are significant health challenges. This chapter, which appraises the overall architecture Japan's public health system, points to areas of strength and weakness. In particular, this chapter stresses that in a highly decentralised system, where local government has significant responsibility for delivery of public health actions, Japan must establish a careful combination of strong central strategic leadership, local autonomy and responsiveness to local needs, and sharing of best practice across regions, and across sectors.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

1.1. Introduction

Public health issues have gained importance across OECD countries in recent years, as governments grapple with the best way to prevent disease and ill-health, and help their populations live longer, healthier lives. This chapter gives an overview of the epidemiological context and national public health needs in Japan, sets out a summary of the strengths and weaknesses of Japan's public health system, and where weaknesses are identified makes recommendations for policy strengthening. The description of public health policies in this chapter is structured according to a framework for analysing the public health system detailed in Figure 1.1 below.

Figure 1.1. Appraising Japan's public health capacity – analytical framework

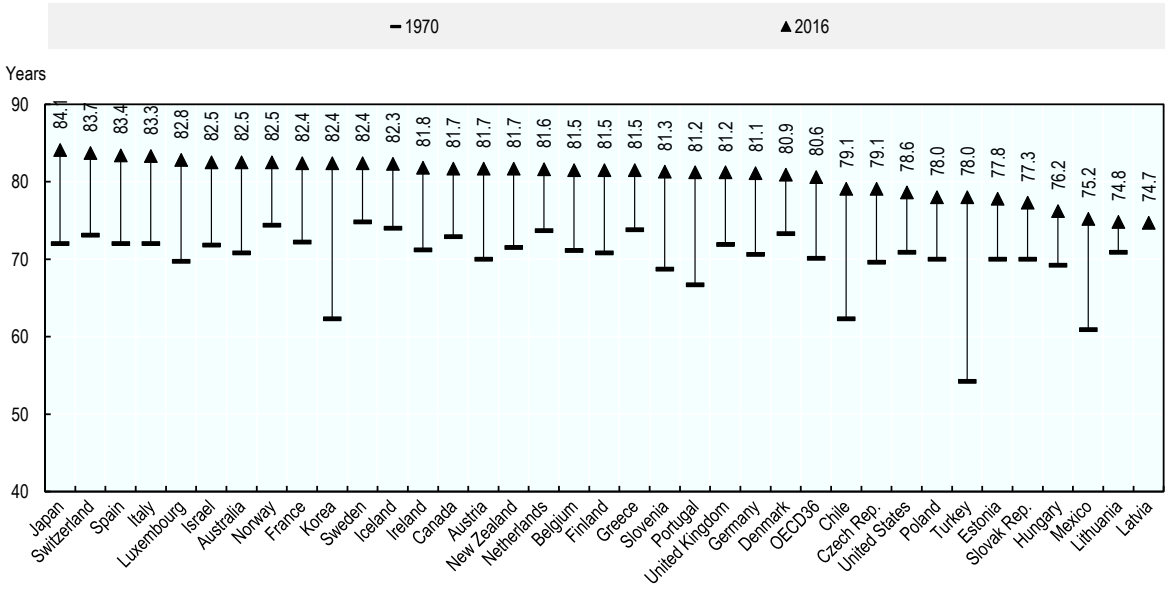


1.2. The public health picture in Japan

1.2.1. The health status of the Japanese population

While Japan has the longest life expectancy at birth in the OECD (Figure 1.2), it is nonetheless an increasingly elderly society, with a low birth rate. The average life expectancy in Japan was 83.9 in 2015; 80.98 for men and 87.14 for women, compared to the OECD average of 80.6 years (OECD, 2017[1]).

Figure 1.2. Life expectancy at birth, 1970 and 2016 (or nearest year)

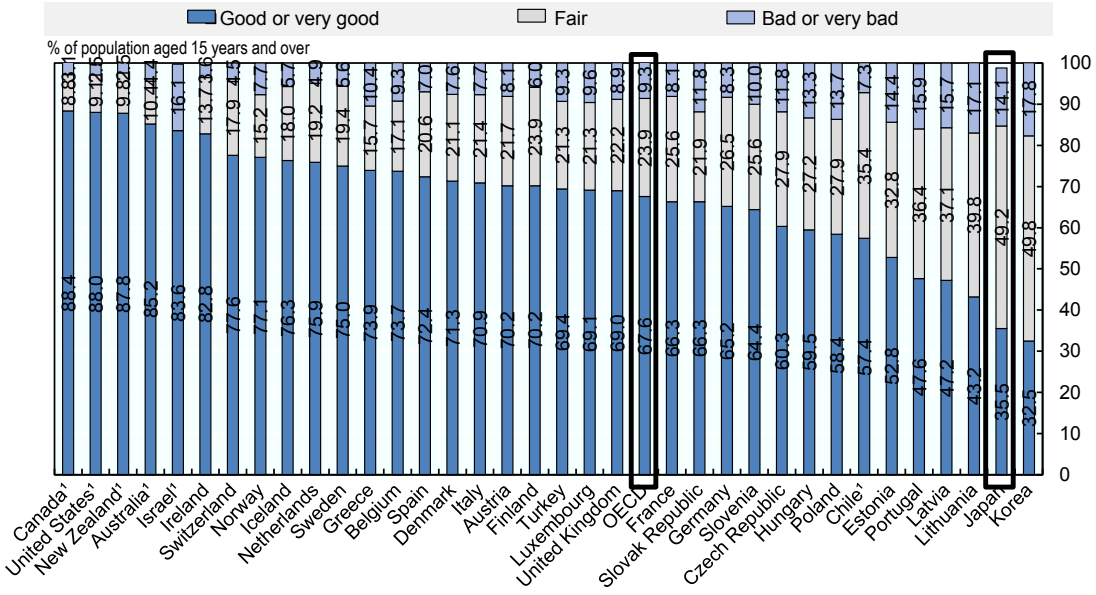


Source: OECD Health Statistics, https://doi.org/10.1787/health-data-en.

The proportion of people over 65 years old in Japan rose to 27.3% in 2016, the highest among the OECD countries. Although Japan's total fertility rate has grown slightly over the past ten years, the number of birth has been declining overall. Changes to the structure of Japan's population have had an impact on the stability of Japan's social security systems; rapid aging of the Japanese population has significantly increased the old-age dependency rate. Twenty years ago there were 4.8 working-age people for each dependent elderly person; by 2015, the number had dropped to 2.3. The dependency rate is projected to fall even further in Japan, to 1.3, by 2065 (National Institute of Population and and Social Security Research, 2017[2]).

Despite being the longest-lived population in the OECD, perceived health status among adults in Japan is relatively poor; in 2015 only one third of the Japanese population reported that their health status is 'good or very good', almost half of the OECD average (Figure 1.3), while other OECD countries with similar longevity like Spain, Switzerland and Australia show better perceived health status than the OECD average. There are at least two possible explanations: first, the perceived health status is made by the self-assessment and can be affected by cultural factors; secondly, elderly people and women often report themselves in poor health, and in Japan the proportion of elderly people, and elderly women in particular, is high (Fujii, Oshio and Shimizutani, 2014[3]; OECD, 2017[1]).

Figure 1.3. Perceived health status among adults, 2016 (or nearest year)



Source: OECD Health Statistics (EU-SILC for European countries), https://doi.org/10.1787/health-data-en.

1.2.2. Burden of disease

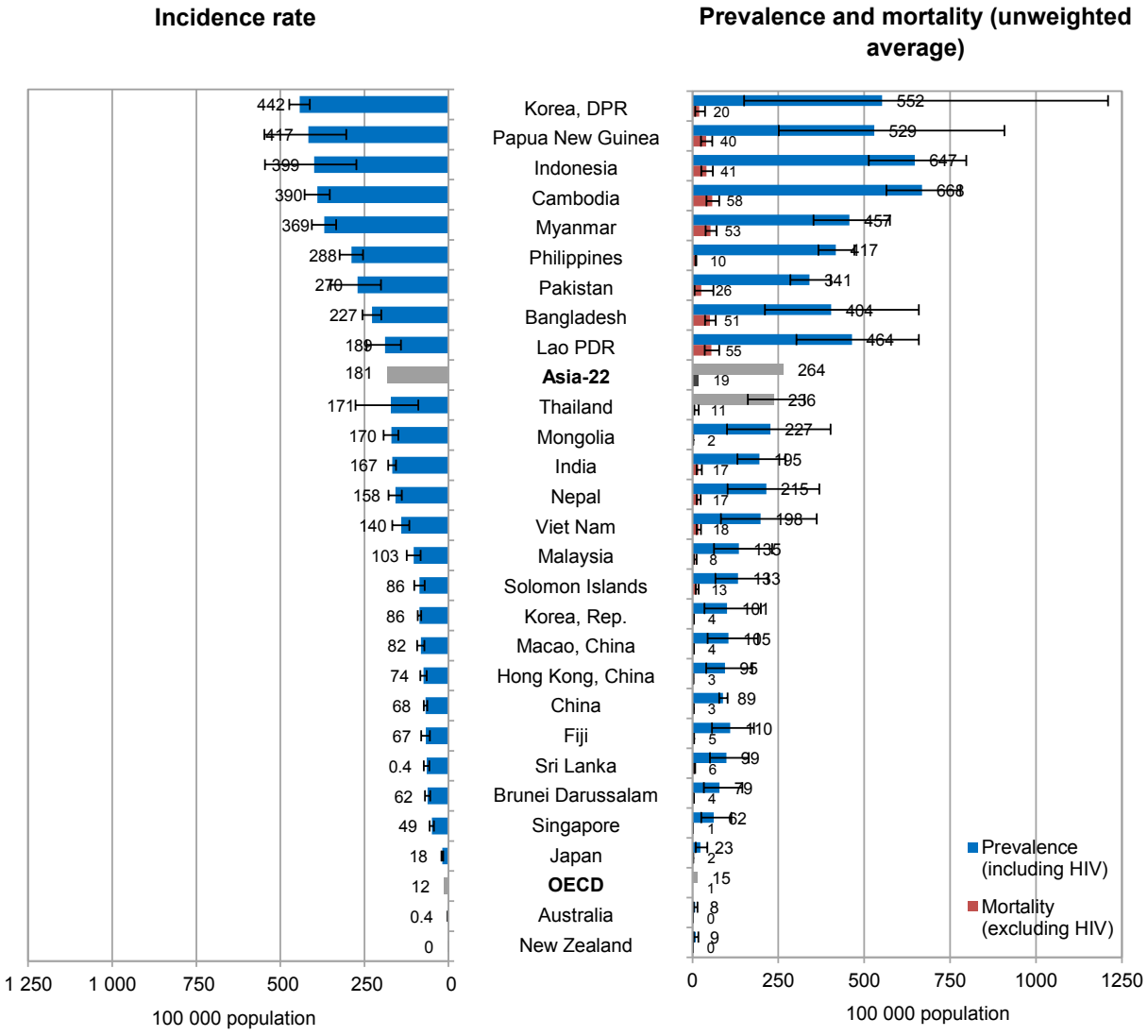
As in other OECD countries, the main burden of disease in Japan comes from non-communicable diseases. Hypertensive diseases, diabetes, cardiovascular diseases, cancers, and cerebrovascular disease account for 50% of all mortality; cancer has been the main cause of mortality since 1981, with the rate of 28.7% of all mortality in 2015 followed by cardiovascular disease (15.2%), pneumonia (9.4%) and cerebrovascular diseases (8.7%) (MHLW, 2015[4]). Looking at the mortality rate by major cancers, lung cancer is the highest among men and colon cancer for women. OECD data shows that overall cancer incidence is lower in Japan (217.1 aged-standardised rates per 100 000 persons) than other OECD countries (270.5 per 100 000). Although cardiovascular diseases are the second leading cause of mortality in Japan, the mortality rate with age-standardised rates per 100 000 population is the lowest among the OECD countries and shows a 40% decrease in the mortality rate between 1990 and 2015 (OECD, 2017[1]).

Although non-communicable disease represents the most significant part of Japan's disease burden, some communicable diseases are still present in Japan, notably tuberculosis, which has higher incidence in Japan than in other OECD countries. The incidence rate of tuberculosis in Japan was 18 (per 100 000 person) in 2014, which is lower than the other Asian countries, yet higher amongst OECD countries (WHO, 2015) (see Figure 1.4). Mortality rate from tuberculosis was 2.4 (per 100 000 people) in Japan in 2016, while the OECD average is 1.6 (WHO, 2016[5]).

Amongst newly registered tuberculosis patients, 14.2% were diagnosed as diabetic and 9.1% as HIV positive. Of the 9 878 newly enrolled pulmonary tuberculosis culture positive tuberculosis patients, 0.5% showed drug resistance in 2016. Newly registered cases are found mostly among elderly people over 80 years old; 29.2% between 80-89 years old and 10.5% among over 90 years old (MHLW, 2016[6]). Since tuberculosis is an air-borne infectious disease (which is nonetheless recommended as a routine

vaccination in Japan) it can cause a huge impact once it spread in a community such as at school or a hospital. There was a tuberculosis outbreak in 2012 at a hospital in Japan, which had 78 tuberculosis patients among the inpatients and the staffs (Nikkei Economic News, 2012[7]).

Figure 1.4. Incidence rate and prevalence and mortality rate of tuberculosis in 2014



Source: World Health Organization (2015[8]), Global tuberculosis report 2015, http://www.who.int/iris/handle/10665/191102.

The incidence of HIV/AIDS in Japan increased up to 2008, but has been relatively stable since then; 1 448 of new cases were reported in 2016, the majority of which occurred among men, and amongst young people under 30 (MHLW, 2016[9]). HIV incidence and AIDS prevalence are nonetheless much lower than the OECD average. The major transmission route is sexual contact; there were a few cases of HIV/AIDS reported among intravenous drug users of 0.1%, while no cases of mother-to-child transmission were reported (MHLW, 2016[9]).

Acquired immunodeficiency syndrome (AIDS), including HIV infection, and syphilis, are classified as the term "Class V Infectious Disease" as used in the Act on the Prevention of Infectious Diseases and Medical Care for Patients with Infectious Diseases. Under the Act, the MHLW prepares and makes public guidelines on the prevention of specified infectious diseases, such as sexually transmitted diseases and HIV/AIDs, to facilitate comprehensive prevention measures. These measures consist of three goals: (1) the promotion of public awareness and dissemination of information on infectious diseases; (2) the establishment of screening and counselling service systems via public health centres; and (3) the delivery of quality and proper medical services.

In particular since 2007, when HIV/AIDS incidence was increasing, Japan renewed the prevention measures and HIV tests at the local health centres. Specific measures include producing and distributing posters and leaflets, holding various educational events including those for World AIDS Day, producing and distributing supplemental materials distributed at school for health education, and establishing a community centre for counselling and providing information about sexual practices. Japan should ensure that information campaigns target all populations, especially statistically at-risk population groups, for example young men who have sex with men. Public health centres nationwide offer individuals HIV screening tests free of charge in an attempt to establish screening and counselling systems. Screening tests for sexually transmitted diseases are also available at local public health centres, but the fees and the subjects for screening differ according to municipalities. Sexually transmitted disease education for students has been implemented in classes for physical education, and health and physical education. HIV/AIDs treatment services are well integrated into the public health system in Japan though the network of various types of hospitals specialised in HIV/AIDS treatments. HIV/AIDS patients have access to 380 core hospitals specialised in the comprehensive treatment of HIV/AIDS at the national level, to 59 core hospitals at the prefectural level, to 14 regional core hospitals in eight regions nationwide, as well as to the AIDS Clinical Centre at the National Centre for Global Health and Medicine which offer the state-of-the-art technologies to treat HIV/AIDS treatment.

1.2.3. Risk factors

The majority of non-communicable diseases, such as cancer, cardiovascular diseases, cerebrovascular diseases and diabetes are driven by some risk factors such as obesity, tobacco and alcohol consumption, which make up the primary disease burden in Japan.

Compared to other OECD countries, rates of risky health behaviour such as drinking and smoking are relatively low. In Japan annual alcohol consumption is 7.2g, below the OECD average of 9.0g (OECD, 2017[1]). Although the average consumption of alcohol per person in Japan has decreased, the number of women consume 'excess' amongst of alcohol (more than 20g) on a daily basis has been increasing since 2010 (MHLW, 2016[10]). Cigarettes per smoker per day are 15.5 in Japan, lower than the OECD average of 18.4 per day. The population of smokers in Japan was 18.3% in 2015; with 30.2% of men and 8.2% of women smoking. Smoking rates are relatively low and have been declining of average, driven by declining rates of male smoking, while rates of smoking amongst women especially young women has not changed (Chao, Hashimoto and Kondo, 2015[11]; Honjo and Kawachi, 2000[12])Exposure to passive smoke is up to 42.2% at restaurants and 30.9 at the workplace (MHLW, 2017[13]).

The rate of obesity (BMI >30) in Japan was 3.7% in 2015, which is again considerably lower than the OECD average of 19.5% in 2015 (OECD, 2017[1]). Japan, however,

defines obesity as having a BMI of more than 25 (studies have shown that East Asians can exhibit metabolic risk factors, such as insulin resistance, with a lower BMI than Africans and Caucasians (Kodama et al., 2013[14]). Following this definition the prevalence of obesity was 30.5% for men and 20.0 for women, and the average BMI was 23.6 for men and 22.3 for women in 2016 (MHLW, 2017[13]).

Salt consumption among adults in Japan was 10.8g per day for men and 9.2g per day for women in 2016 (MHLW, 2017[13]) which is much higher than the WHO-recommended salt intake of less than 5g per day (WHO, 2016[15]). "Dietary Reference Intakes for Japanese (2015)" sets the tentative dietary goal for salt consumption by 2020; the index recommends that men consume less than 8.0g per day of salt and 7.0g for women as the median between the WHO intake recommendation (5 g/day) and the intake (10.8g per day for men and 9.2g per day for women) in 2010-2011, while Health Japan 21 (the second term) recommends decreasing salt intake to 8g by 2022. The WHO recommends that adults consume no more than 2 g sodium/day, which is equivalent to 5 g salt/day, and that children consume less (WHO, 2012[16]). Japanese salt consumption decreased significantly in the 1970s, and has remained steady since the 1980s, and is higher compared than in other OECD countries (Anderson et al., 2010[17]; Asakura et al., 2014[18]). Traditionally Japanese food contains significant quantities salt, for instance in foods such as pickles or miso soup, with people in the northern area of Japan tending to take more salt rather than the Japanese overall average, but more recently processed food is becoming another major source of salt (MHLW, 2015[19]; Asakura et al., 2016[20]).

Outdoor and indoor air pollution is a major environmental cause of NCDs such as ischemic heart disease, stroke and respiratory disease including acute respiratory infection and chronic obstructive pulmonary disease (WHO, 2014[21]). It can also lead low-birth weight, dementia and immune system disorder (WHO, 2017[22]). It is estimated that 7 million people died due to the air pollution on the earth and this is a global burden of disease. The main outdoor pollutions are carbon monoxide, nitrogen oxide, ozone, and particulate matter (PM). PM2.5 with a smaller diameter rather than PM10 goes to deeper inside lung and cause more serious lung and circulation problems. Most of the OECD countries show higher grade of exposure to PM2.5 compared to the WHO guidelines. While the average exposure population to PM2.5 amongst OECD has decreased between 1990 and 2015, Japan shows an increased rate of exposure, from 5% to 24% (OECD, 2017[1]). The Air Pollution Control law in Japan stipulates responsibilities of each entity in implementing countermeasures for hazardous air pollutants. The Ministry of Environment monitors the level of the different types of air pollutants and gives a warning in case of detecting harmful level of air pollution (The Ministry of Environment, 2012[23]). Local municipalities also monitor pollution level, and Tokyo prefecture supports those diagnosed air pollution-related lung disease under 18 years old by the air pollution medical expenses subsidy system (Tokyo Metropolitan Welfare and Health Administration, 2018[24]). Business operators are checked by local municipalities under the air pollution health measures, and required or encouraged to reduce the emission of hazardous pollutant and to report emission exceeding set thresholds (The Ministry of Environment, 2012[23]).

1.2.4. Mental wellbeing and suicide in Japan

Suicide is a significant cause of death among OECD countries, and is a global concern. The rate of suicide in Japan in 2014 was 17.6 per 100 000 population, above the OECD average of 12.1 (OECD, 2017[1]). Although the suicide rate in Japan has shown a gradual decrease since 1998, it remains higher than the OECD average indeed, the suicide rate is

steadily decreasing across OECD countries, falling by approximately 30% between 1990 and 2015. Most recently, despite an overall falling trend, suicide has increased amongst young Japanese populations.

In 2006 the MHLW established the 'Basic Law on Suicide Prevention', followed by a stronger measure in 2015, when the goal of reducing the suicide rate by 30% by 2026 was set. Japan's suicide strategy is focused on improving the social issues, detecting mental disorders earlier, changing the norms and stigma around suicide and mental illness, and delivering accurate information about suicide and mental illness through the media (MHLW, 2007[25]). The MHLW has also established policies in the "Suicide Measure Outline" for preventing suicide and supporting people at risk. First, to reduce the risk of excessively long working weeks, the working hours have been regulated since 2016, a measure against harassment at work was introduced and employers are obliged to regularly perform Stress-Checks (MHLW, 2017[26]) (see Chapter 3). Second, the strategy sets out that stronger cooperation system is needed by local doctors and psychiatrists for improving early detecting of mental health disorders. Given the stigma around mental illness in Japan, the MHLW considers it important to disseminate accurate information about mental illness, including among 'gatekeepers' such as primary care physicians, school teachers, local health staffs and industrial health workers, who can guide the high-risk people to proper intervention by psychologists and other specialists (MHLW, 2007[25]). The Ministry of Health has also set up suicide prevention telephone 'hotlines' for people who needs mental support. (MHLW, 2017[27]).

Some more localised plans have also been put in place. Suicide was the biggest cause of death between people aged 20 and 39 years old in Japan in 2016 (MHLW, 2018[28]). Kyoto, where a lot of universities are located, with large population of 1.47 million in 2017, implemented a treat for suicide in 2015. Under this initiative, the universities in Kyoto created a community where students can support each other and watch out for signs of mental distress (Kyoto prefecture, 2015[29]).

1.3. Organisational Structure

Governance of the Japanese public health system is relatively fragmented: responsibilities for planning, designing and delivering services are split between central and local levels of government, between different Ministries, and between providers within the health system (for instance Public Health Centres) and private actors (notably work places and occupational physicians).

1.3.1. The Japanese Health System

Medical provision in Japan is managed by the Japanese Medical Law (*Iryo Hou*), which controls the establishment of hospitals and their function, Medical Plan (*Iryo Keikaku*), and Basic Policy for Securing Medical Delivery System (MHLW, 1948[30]). Medical Facilities are largely divided into hospitals with more than 20 beds, and clinics with less than 20 beds. There were 179 000 medical facilities in total in Japan in 2016 including dental facilities; 5% of facilities are hospitals and more than 55% is clinics. National or public hospitals count for less than 20%, and 3% for clinics, which are increasing (MHLW, 2016[31]).

The *Iryo Keikaku* medical plan defines the medical area (geographically) and the numbers of beds at the secondary medical area to the tertiary medical area; the secondary medical area is made up by some municipal areas, where the number of general and nursing care

beds are controlled. The tertiary medical area includes a defined number of high-functioned medical institutions in prefectural units such as for mental care, tuberculosis and infectious care (MHLW, 2010[32]). Although the medical functions in each medical area are clearly defined, patients have free choice over which hospital to consult, based on their preference.

Box 1.1. Long-Term Care Insurance in Japan

As Japan's population is aging, the number of elderly people who require support and care are increasing; Japan's lower birth rate has also meant that there are fewer family members to assist elderly people in their care. The Long-term Care Insurance (Kaigo Hoken) Act was enacted in 1997 and came into effect from 2000 in order to support elderly people to be more independent in daily activities, offering user-oriented programmes based on the social insurance. This is not only for those over 65 years old with demands of nursing care or assistance, but also applies to those over-40 years olds who need medical care or assistance with specific chronic diseases and diseases such as terminal stage of cancer or rheumatoid arthritis (MHLW, 2018[33]).

Long-term care users are able to receive medical and welfare services at a lower cost, and they have more options from both public and private services including a home-visit service, out-patients services and admission services depending on the degree of assistance demands. There are seven categories for demands and they are certified by municipalities according to the needed support in a daily life such as eating meal, taking a bath or going to the toilet (MHLW, 2018[33]).

Source: MHLW (2018[331]). *"Current Public Long Term Care System",* https://www.mhlw.go.jp/content/0000213177.pdf.

Primary care system

Most of the OECD countries have significant and well-developed primary care system to manage non-emergency care, chronic conditions, and in some countries act as a gatekeeper for secondary care, typically led by general practicioners or family doctors. In Japan, though much of the health care activity that takes place outside of inpatient settings could be classed as primary care, the vast majority of physicians are specialist or semi-specialists (OECD, 2015[34]). Primary care specialists, generalists, or specialised family doctors are not common. Instead, primary care is delivered at community clinics, and at some municipal and prefectural health centres (see (Ikegami, 2016[35]), by missed teams including physicians and nurses (OECD, 2015[34]).

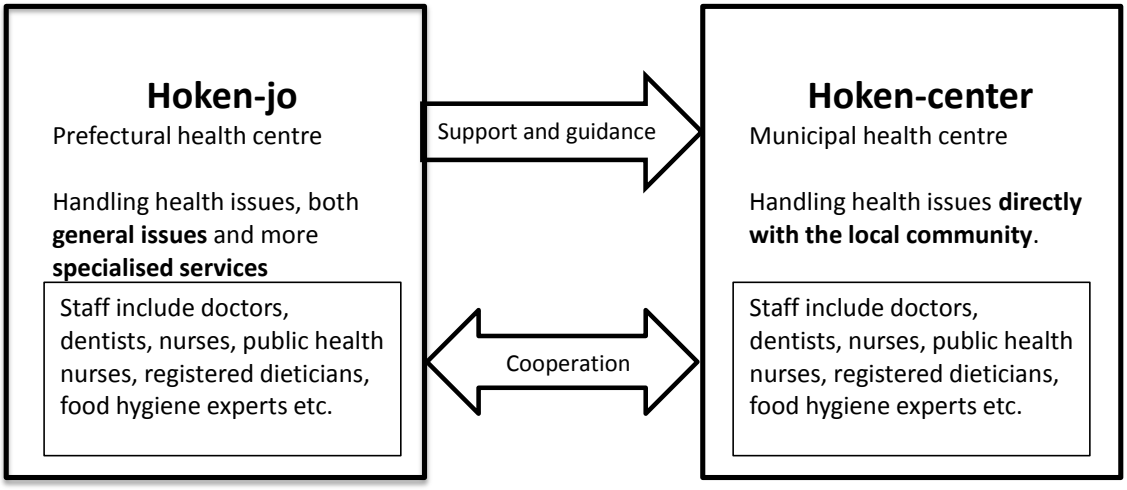
This health system structure means that primary care-led management of chronic conditions such as diabetes or chronic heart disease is more challenging in the Japanese context. According to the Japan Medical Association, only 53.7% of Japanese had a personal doctor in 2014, although almost 70% of people agree to have a specific primary doctor expecting wide range of treatment and care such as health check, providing proper information about a specialist, visiting homecare and mental health care (The Japan Medical Association General Policy Research Organization, 2014[36]). Patients are not required to register with a single practice or physician, and instead can visit multiple physicians, in many cases without a referral; Japan had the second-highest rate of doctor consultations per person in the OECD in 2015 (12.7 annually per person, compared to the OECD average of 6.9) (OECD, 2017[1]).The Japan Medical Association (JMA)

established a training system in 2016 to become a personal doctor who can be the first consultant for a patient as a gatekeeper and familiar with the local medicine and social welfare (Japan Medical Association, 2016[37]), but these professionals are not widespread in Japan. Since 2010 the Japan Primary Care Association has also lobbied for the establishment of a 'primary care board'.

However, while Japan does not have a traditional primary care/General Practitioner system, in Japan employers with more than 50 employees are required to have more than one occupational doctor to take care of employee's health and safety based on the labour safety and health law (*Rohdoh annzenn eisei*); employers with more than 3000 employees must have more than two full-time occupational doctors. Occupational doctors at workplace are mainly in charge of managing health condition of workers, giving advices on overworking workers, and preventing mental disorders in cooperating with a public health nurse and a sanitation supervisor at workplace (MHLW, 2017[26]). Considering the increasing demand for attention to mental health at workplace, the MHLW reset the labour safety specifications in 2015 for the occupational doctors roles; occupational physicians are now also expected to collect the specific working conditions such as over working and stress about a workers who has a problem on his/her health (MHLW, 2017[26]).

Local health centres also play an important role in delivering public health care. Local public health centres – prefectural health centres and municipal health centres – conduct medical surveillance, improve public health projects, prevent epidemic disease, investigate and analyse population statistics for communities, which are located at each prefecture, cabinet designated city, core city and other city specified by cabinet (MHLW, 2010[38]). Prefectural public health centres are responsible for conducting broad-based operations such as food hygiene and infectious diseases, while municipal health centres deal with direct businesses closer to the communities such as infant health checks, cancer screening, and health promotion. Prefectural and municipal governments set the budget for public health centres and health plan as a whole under the discussion with relevant organisations (Japanese Association of Public Health Center Directors, 2016[39]) (Figure 1.5).

Figure 1.5. Hoken-jo and Hoken-center



Source: Adapted from: the Role and System of Health Government in Japan, http://slidesplayer.net/slide/11365156/.

As an independent administrative corporation, some medical research centres and national hospitals specialised in cancer, cardiac disease, mental illness and paediatrics contribute to the improvement and promotion of public health by conducting surveys, research and development of technology (MHLW, 2012[40]).

1.3.2. Delivery of essential public health operations in Japan

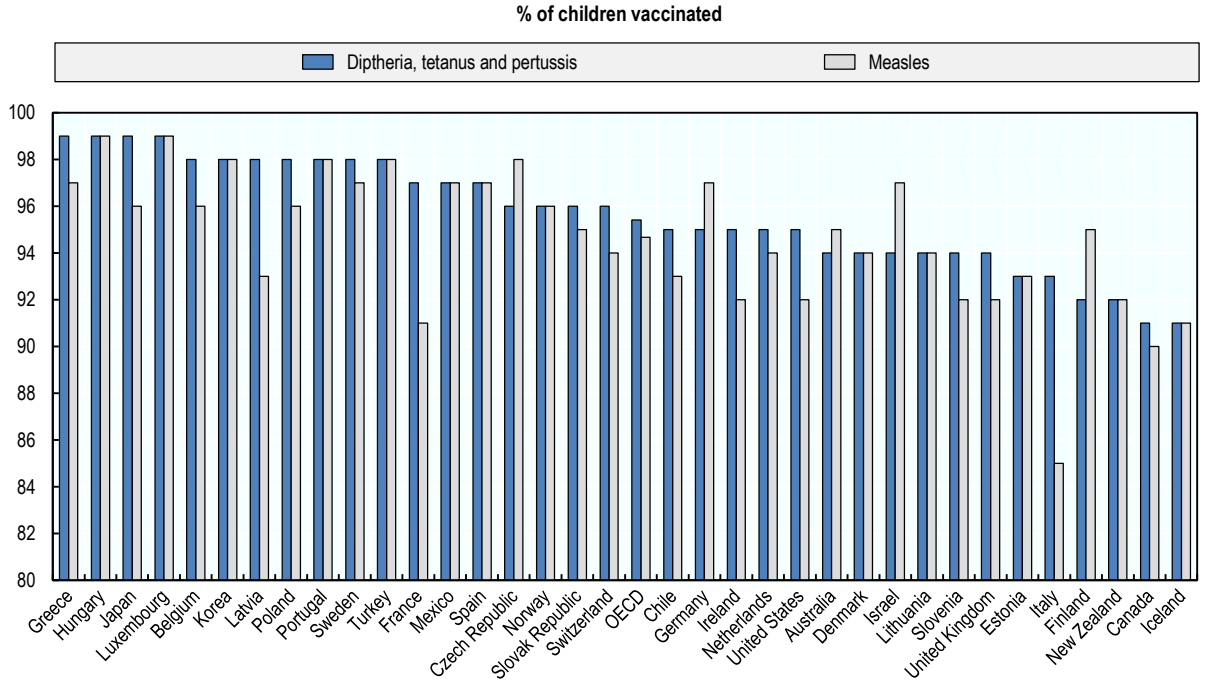
Vaccination programmes in Japan

Vaccine administration and promotion is the responsibility of the local government, based on recommendations by the Ministry of Health, Labour and Welfare. Vaccination programmes in Japan were started by the Immunization Act, established in 1948. Some vaccinations are highly recommended for the 13 selected diseases as a routine vaccination programme based on the WHO recommendation (WHO, 2018[41]), including hepatitis B virus added in 2016. In addition, 5 vaccinations are recommended depending on health status and age as part of a non-routine vaccination programme (National Institute of Infectious Diseases, 2016[42]). Since 1994 no vaccinations are mandated by law. The vaccination guidelines are reviewed every five years and as necessary.

The central government prepares stockpiles of vaccinations, while Public Health Centres allocate vaccinations and establish vaccination prioritisation along with the Municipality and local branch of the medical association. Municipalities are mainly in charge of implementing the vaccination programmes and providing information about effectiveness and safety to citizens. Vaccination based on the immunisation law is covered by municipal voucher, yet actual expenses may be collected depending on local municipality. On the other hand, non-routine vaccination is paid by out-of-pocket (MHLW, 2018[43]).

The vaccination rate in Japan slightly exceeds the OECD average with 96% for diphtheria, tetanus and pertussis (DTP) and measles in 2015, which is scheduled at the age of one (Figure 1.6) (OECD, 2017[1]). The vaccination rate is overseen by the MHLW every year.

Figure 1.6. Percent of children aged 1 vaccinated for diphtheria, tetanus, and pertussis (DTP) and measles, 2016 (or nearest year)



1. All data estimated. 2. Measles data estimated.
Source: OECD Health Statistics, https://doi.org/10.1787/health-data-en.

In Japan there is some anxiety around vaccinations and adverse events. The HPV (Human Papillomavirus) vaccination programme was initiated in 2009 in Japan as a part of routine vaccination programme with the expectation of reducing risk of cervical cancer, in line with a WHO review of the impact of HPV vaccinations (WHO, 2007[44]), and the initial rate of vaccination in 2012 was almost 70%. In the United States, 60% of adolescents aged between 13-17 years old received one or more doses of HPV vaccine (Walker et al., 2017[45]). National data in Australia shows that HPV 3 dose vaccination coverage for adolescents turning 15 in 2016 is approximately 77% for females and 71.6% for males (National HPV Vaccination Program Register, 2016[46]) Although HPV vaccination is recommended for females, the rate of HPV vaccination in Japan declined to 0.5% in 2015 after the Ministry of Health, Labour and Welfare withdrew the HPV vaccine recommendation in 2014. This withdrawal was followed suspicions being raised by patient organisations and some experts that the vaccination had induced adverse events such as extensive pain and movement disorders. Although the Japan Society of Obstetrics and Gynaecology declared in 2017 that there is no evidence of a link between HPV vaccination and the neurological disorders based on available research, the MHLW has not retracted its statement on the HPV vaccination, and further research is ongoing.

Food Safety Commission for food safety assurance

Food assessment and control in Japan is led by the Food Safety Commission, MHLW and the Ministry of Agriculture. The Food Safety Commission takes charge of evaluating the amount of hazardous substances such as pesticide or feed additives in food. The MHLW

establishes the standards for food contents, and monitors whether the rules are complied with for domestic food, and implements quarantine tests for imported food. The Ministry of Agriculture is responsible for pesticides and drugs used on animals. Operations for evaluating quality, safety and effectiveness of chemical substances in food are entrusted to external research institutions as necessary, such as National Institute of Health Sciences.

Public Health Centres at the municipality level oversee the food safety of food suppliers such as shops, restaurants, and manufacturers. Certain types of food stores, restaurants and food industries must obtain a licence from a Public Health Centres to be able to handle food, and they must have a full-time food administrator, who conduct food hygiene and sanitary environment control under the Food Sanitation (*Syokuhinn Eisei*) Act (MHLW, 2018[47]). Public Health Centres conduct regular or ad-hoc on-site inspections to check building structure, water supply, food storage, and handling of food. A restaurant mainly serving alcohol needs additionally to obtain a licence from the police. In the process of food manufacturing, there are national standards for processing and cooking food. Some food has a strict manufacturing condition; raw milk and raw goat milk must be heat sterilised with 63℃ for 30 minutes or with an equivalent method (Distribution System Research Center, 2007[48]). When food poisoning is suspected, the diagnosing doctor must report within 24 hours to a Public Health Centres, after which the MHLW monitors incidence. Bacterial contamination is strictly monitored with a national standard (MHLW, 2014[49]).

Tackling Antimicrobial resistance (AMR) in Japan

AMR is now spreading worldwide as a result of misuse or overuse of antibiotics. This is a global public health concern, threatening human and animal health, and above all efficacy of antibiotics. The measure should be taken for protecting human from treatable infectious disease. The average antibiotic consumption amongst OECD in 2014 was approximately 20.5 daily dose per day (DDD) per 1 000 persons and the prevalence of antibiotics resistance was about 15%, which had increased during the previous 10 years (OECD, 2016[50]) http://www.oecd.org/health/health-systems/AMR-Policy-Insights-November2016.pdf). Japanese survey report reported that Japan used approximately 15.8 DDD in 2013 and the data reports that antimicrobial resistance for gram negative bacillus was relatively lower in the world; 17% of Pseudomonas aeruginosa and 18% of Escherichia coli (WHO, 2014[51]).

Japan Nosocomial Infections Surveillance (JANIS) was established in 2000 for early detection of in-hospital infection and had monitored the rate of antimicrobial resistance in Japan. In 2006, an amendment to the Medical Care Act was endorsed: all the medical institutes were obliged to have an infectious control committee and all staff had to participate in an educational lecture on in-hospital infectious control. According to JANIS' 2014 report, the prevalence of Methicillin-resistant Staphylococcus aureus (MRSA) had decreased between 2009 and 2014 from 58.7% to 49.1% (The Government of Japan, 2016[52]).

Due to the growing global concern around AMR, an international action plan on AMR was adopted at the World Health Organization General Assembly in 2015. Accordingly, Japan took the measure of tackling AMR following the 'One Health' approach across affiliated ministries and related agencies between 2016 and 2020, including local municipality governments, medical institutes, medical and pharmaceutical association. 'One Health' sets out that AMR policy must take an inter-sectoral approach, considering

the impact of antimicrobial use in animals, agriculture and the environment and the impact on human health. The Government of Japan set goals in the 6 fields to reduce the usage of antibiotics to 33% for humans and animals, and to reduce the prevalence of AMR in Japan for sustainability of infection control in the future: The fields are education, monitoring, infection control, usage of antimicrobial drugs, medical research, and international cooperation (The Government of Japan, 2016[52]). Education programmes are necessary not only for medical workers but also for the general population ; 2014 survey in Japan showed that more than two thirds of parents had given a medicine to their children not following the instructions, which is thought to also contribute to increased microbial resistance (The Government of Japan, 2016[52]). Amongst the member countries of WHO, only Japan is setting the numerical targets by 2020; Penicillin resistance Streptococcus Pneumoniae (PRSP) should be less than 15%, MRSA 20%.

1.3.3. Primary, secondary and tertiary prevention in Japan

Primary prevention programme with Health Japan 21

The MHLW established "Health Japan 21" as the primary strategy for health promotion and risk prevention in 2013, aiming at preventing lifestyle diseases at the national level based (Knko Zoshin) Law. This strategy includes extending the healthy life expectancy, reducing health inequality, preventing non-communicable diseases, managing supportive society, and improving healthy lifestyle, etc. Under Health Japan 21 the government set out a role for prefectural and municipal governments and local health centres. Although the government set broad targets to be achieved by 2022, the specific targets are entrusted to each prefecture based on each situation (MHLW, 2012[53]). Health Japan 21 is further discussed in Chapter 2.

Secondary prevention

Secondary prevention consists of identifying diseases at an earlier stage to enable more effective treatment and better outcomes. Screening and health checks are major pillars of secondary preventions in many OECD countries, and can be applied selectively (e.g. to a target population, based on risk and vulnerability), or to the whole population. In Japan a wide number of health checks are in place, which are detailed in Chapter 3. For example, for detecting 'lifestyle diseases' the *Tokutei-Kenshin* 'Specific Health Check-up' is offered to persons between 40 and 74 years old. If any irregularities are identified individuals are advised on appropriate follow-up steps (MHLW, 2018[54]).

Tertiary prevention

In many cases, if chronic diseases are well-managed, the complications of these diseases can be avoided or delayed, contributing to a better quality-of-life for the affected person and lower costs for the health system.

The approach to tertiary prevention depends on the disease. To take an example, mismanagement of diabetes can lead to various complications, such as diabetic kidney disease. There were approximately 330 000 haemodialysis patients in Japan in 2016 and it was estimated that 43.2% of new haemodialysis patients were caused by diabetes (Japanese Society for Dialysis Therapy, 2017[55]). Haemodialysis costs 400 000 Japanese yen per person per month, and the total medical cost for haemodialysis in Japan comes up to 1.57 trillion Japanese yen per year. Many municipalities have taken measures to

prevent diabetic kidney disease, as it can impair patients' health status and has a profound impact on medical expenses. In Matumoto City, Nagano prefecture, for instance, after offering preventive education to type 2 diabetes patients with the 2nd and the 3rd stage of diabetic nephropathy under the cooperation with local doctors, pharmacists and nutritionists, medication compliance. The MHLW also promotes a wide use of measures to prevent people from developing diabetic nephropathy by collecting advanced efforts made by Matumoto City and other municipalities and reporting them nationwide (Japanese Society for Dialysis Therapy, 2017[55]). In Hiroshima a particularly effective disease management effort prevent diabetic nephrology was undertaken, in which patients received self-management education from disease management nurses and were supported by the nurses in cooperation with their primary physicians (Kazawa et al., 2015[56])Efforts such as the one in Matumoto City do exist in Japan, but it does not appear that there is a national approach to chronic disease management. The government, therefore, has developed the standard disease management programme for diabetic nephropathy as a guideline for municipalities and other relevant institutions. Furthermore, while many countries rely on large primary care sectors and/or general practitioners to manage chronic diseases and prevent complications, Japan does not have a traditional primary care or GP sector (see (OECD, 2015[34]). Therefore, alternative approaches to tertiary prevention are all the more critical in the Japanese context.

1.4. Leadership and governance

While the Ministry of Health, Labour and Welfare can set the strategic direction for the Japanese health system, and has some influence over key actors in the system through a range of legislative requirements delivery of public health actions and more detailed planning are to other system stakeholders. The MHLW may need to seek ways to establish the extent to which public health actors are effectively delivering on the nationally set strategies and public health competencies, and to look for more effective ways of sharing and promoting best practices.

1.4.1. Key actors in the public health system

Japan's health service structure has four administrative boundaries: the Ministry of Health, Labour and Welfare; prefectural governments (at public health departments); public health centres (*Hoken-jo*); and municipal governments of cities, towns or villages (at public health sections). The Ministry of Health, Labour Welfare (MHLW) consists of the ministry proper (*honsho*) which includes Minister's Secretariat and 11 bureaus, the external organisations including the Central Labour Relations Commission, various councils, National Hansen's Disease (leprosy) Sanatoriums, testing laboratories, and quarantine offices. The MHLW has also local branches that are made up of the Regional Bureaus of Health and Welfare and Prefectural Labour Bureaus (MHLW, 2018[57]).

1.4.2. Engagement across government

Health-related policies are diverse and coordination with other ministries and agencies is very important. The Ministry of Health, Labour and Welfare (MHLW) collaborates with other ministries such as Ministry of Agriculture, Forestry and Fisheries (MAFF), the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the Ministry of Environment, with coordination by the Cabinet Secretariat. For instance, the AMR countermeasure plan was created in 2016 in the Ministerial Meeting on Infectious Disease Control Measures, which needed cooperation mainly with the MEXT, the MAFF,

Ministry of Foreign Affairs. In this countermeasure, the MHLW takes the central role and the responsibilities of each ministry and agency are decided according to the purpose. They established each part of plans working with other partners including Ministries and independent administrative agency such as National Institute of Infectious Disease, National Centre for International Medical Research, and local health centre (The Government of Japan, 2016[52]).

For tobacco control, there is a tobacco control ministries liaison conference with more than 10 ministries involved including the Metropolitan Police Department and Ministry of Finance and the Ministry of Environment, the Ministry of Economy, Trade and Industry (MITI), etc. (MHLW, 2004[58]). However, this liaison conference has not been held since 2014.

Other examples of cross-government coordination include:

- With the MEXT, the MHLW created a council and three subcommittees: the Education and Labour Policy Subcommittee, the Childcare Support Measures Meeting Subcommittee, Education, Child Welfare and the Social Security Measures Subcommittee, and conduct practical consultations. The MAFF has established the Shokuiku Promotion Meeting, comprised of experts and related Ministers. This meeting promotes the Basic Program for Shokuiku Promotion (*Syoku-iku Kihon Keikaku*) to improve population knowledge of diet and understanding of how to make more appropriate food choices
- Regarding food safety management, the Food Safety Committee performs the general risk assessment, with the MHLW and the MAFF cooperating to decide regulation for each risk related to food hygiene, and agriculture, livestock and fisheries respectively based on the assessment (Food Safety Commission of Japan, 2016[59]).
- The MHLW works with the Environment Agency for reduction of CO2 from industries with other Ministries such as the National Land Ministry of Transportation and the MITI (The Ministry of Environment, 2017[60]).

However, when it comes to public health policy, and health policy in general, cross-government coordination does not appear to be systematic or a priority in Japan. Some initiatives are undertaken between Ministries, but the different roles of Ministries in developing high-level strategies such as Health Japan 21, for instance, are unclear. When confronting public health challenges, or improving population health in the broadest sense, consistent cross-sectoral engagement is critical, as Finland (see Box 1.2) has found. Challenges around good cross-governmental working seem to be found in other areas of health policy, for instance planning for emergencies, as well (see Chapter 4). There is also a risk that weak cross-government collaboration is reproduced at the local level, which would not be uncommon compared to other countries. For instance, some prefectural administrations in Japan have suggested that lowering silos within the government took a concerted push, and strong leadership from the prefectural leadership. It does not appear that the MHLW offers any guidance to at present to local government to collaboratively deliver on public health expectations.

Box 1.2. Joined-up government in Finland

In Finland, a 'Health in All Policies' approach has been put at the centre of health policy making for close to half a century. Such an approach emphasises that decisions and policies made in areas outside of traditional health policy making – around transport, agriculture, education, employment, etc. – have a significant impact on citizens' health, and on the delivery of services by the health system. In Finland the Health in All Policies approach therefore demands that all sectors of government keep health concerns at the forefront, are kept accountable for policies impacting health and health care, that pro-health inter-sectoral action is prioritised, and that policy makers, politicians and the public across all sectors are informed about how decisions they make will affect health and health systems.

This cross-sectoral focus in Finland in fact began with a desire to improve public health, starting with a focus on improving nutrition, reducing smoking, and reducing accidents. This approach has been promoted both at the WHO and in EU-level work, for example during Finland's EU Presidency in 2006 they adopted 'Health in All Policies' as the theme for work on health. At the Finnish level, work has evolved from addressing single health problems such as accidents, to larger scale programmes, to the introduction of legislation, broad objectives, and Governmental inter-sectoral programmes. A cross-governmental approach is seen, for example, as having been key to the halving of overweight and obesity rates amongst five-year olds. To improve the nutrition of Finnish children, and reduce overweight, municipal health departments, urban planning departments, schools and day care worked together. Each actor played a part: the urban planning department improved school playgrounds, more physical activity was introduced in schools, sugary snacks were replaced by healthier school lunches, and the health department focused on parent education on healthy eating.

In addition, cross-governmental cooperation is pursued around specific health risks, for example diabetes. In a preventive strategy coordinated by the Finnish Diabetes Association, the Ministry of Education and the Ministry of Social Affairs and Health came together to prevent diabetes, support high-risk populations, and deliver early diagnosis and management for newly diagnosed diabetics. The Ministry of Education took responsibility for managing the health-care system and non-governmental organisations such as Finnish Centre for Health Promotion and schools for children. The Ministry of Social Affairs and Health was in charge of setting up support from the national network of nutritional-education and weight-management services (Finish Diabetes Association, 2003[61]).

Source: Melkas, T. (2013[62]), "Health in all policies as a priority in Finnish health policy: A case study on national health policy development", *Scandinavian Journal of Public Health*, Vol. 41/11_suppl, pp. 3-28, http://dx.doi.org/10.1177/1403494812472296; Leppo, K. et al. (2013[63]), *Health in All Policies*, http://www.euro.who.int/__data/assets/pdf_file/0007/188809/Health-in-All-Policies-final.pdf; Finnish National Institute for Health and Welfare (2016[64]), *Health in All Policies – Health promotion – THL, https://thl.fi/fi/web/health-promotion/health-in-all-policies*; WHO (2015[65]), *Finland curbs childhood obesity by integrating health in all policies*, World Health Organization, http://www.who.int/features/2015/finland-health-in-all-policies/en/.

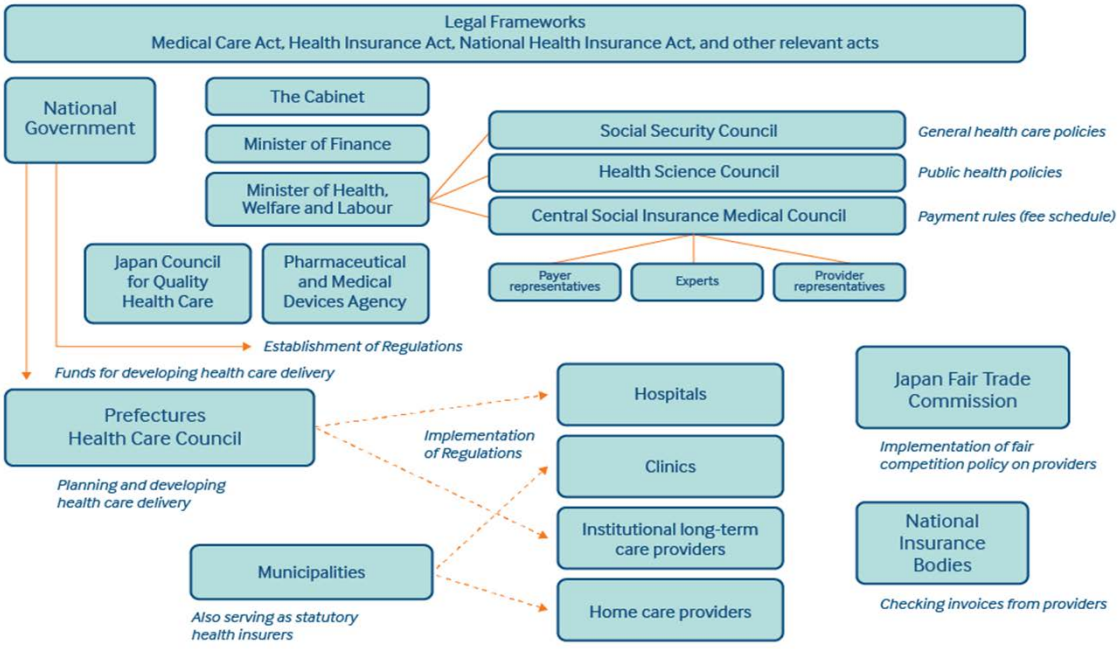
1.4.3. Regional and local public health leadership

Japan has a decentralised administration, and municipalities and local governments are responsible for playing the central role of implementing policies on education and health and welfare services, including for public health. Basic protocols and legislation are set by the central government, and local government (prefecture or municipality) must follow the mandated legal frame set by the upper legislative hierarchy (for instance, a municipality must follow directives set by MHLW and relevant prefecture office). The central regulation and local implementation should ensure minimum requirements across municipalities.

The public budget is often a mix of municipality's own budget with a subsidy from prefecture level, and central government level. For example, long-term care insurance is operated by the municipality (or alliance of municipalities) and is half financed by premiums from municipality beneficiaries, and the rest is covered by the central government (25%), prefecture level (12.5%), and municipality (12.5%).

Local governments develop public health programs that attach importance to their local characteristics and meet the needs of local residents. This process provides local residents with opportunities to be involved in their own communities and become responsible for the maintenance and improvement of their own health.

Figure 1.7. Structure of health service delivery and planning in Japan



Note: This figure gives a simplified representation of the structure of the Japanese health system.
Source: Ryozo Matsuda (2017[66]), "Japan: International Health Care System Profiles", in *The Commonwealth Fund: International Health Care System Profiles*, The Commonwealth Fund, https://international.commonwealthfund.org/countries/japan/.

Based on the guidelines of the Ministry of Health and Welfare, each prefecture establishes a Medical Plan in consultation with relevant professional associations (e.g. the Japanese Medical Association), and with some community and patient representative organisations at

the local level to reflect local medical condition and need. Under the Medical Law enacted in 2007, the medical collaboration system was introduced for each of four diseases (cancer, cerebro vascular disease, acute cardiac ischemic disease, diabetes) and 5 projects (emergency medical care, disaster medicine, remote medicine, perinatal care, paediatric medicine including paediatric emergency medicine). In 2013, mental illness and home health care were added: "5 diseases, 5 projects and home care medicine" is promoted with this system, as is cooperation with neighbouring prefectures to secure medical care in the area around the boundary of the prefecture (MHLW, 2017[67]).

In this structure, where considerable independence is given to municipalities, there is clear potential for excellent examples of practices to develop. For example, Kanagawa–prefecture has developed a comprehensive healthy aging strategy (see Box 1.3); Adachi City has introduced a Health Japan 21 strategy which can be considered close to international best practice (see Chapter 2).

Box 1.3. Me-Byo Project in Hakone, Kanagawa-prefecture

There is a local municipality which performs active implementations in the east of Japan. Kanagawa–prefecture shows its positive action by joining the WHO's global programme, 'Age-friendly Cities', which aims to create comfortable communities for elderly people to live in (Kanagawa Prefecture, 2018[68]).

While Hakone-city, one of the cities in Kanagawa-prefecture, plans the clear vision for the aging society, which influences widely on the government's measure. This project is now implemented at the prefecture level.

Me-Byo is an invented word meaning preventing diseases and managing healthier status even with a health issue. In an aging society, living without any health issue might be difficult, however, people can obtain healthier status even with a health problem.

Kanagawa-prefecture takes a measure for tackling an aging society called 'Healthcare New Frontier aiming at an active society where all the generation could live healthy lives even at the age of 100. They insist on the importance of the four main achievements, being aware of each role in a society as an individual, a professional, researcher, a municipality, and a nation;

1. Visualising the risk and current situation in order to prevent a disease,
2. Developing human resource for leading the local health activities and innovations,
3. Promoting the data management for the better products and services,
4. Changing the behaviour for better lifestyle and health literacy.

The plan is based on the two main concepts; 1. Improving the health status by preventive intervention such as keeping motivation and changing behaviour for healthier lifestyle. 2. Doing practical research and development of the latest medical technology . For example, Kanagawa-prefecture plans to promote working circumstance at a company to improve health satisfaction among the workers, and building an educational institute which takes part in improving a human recourse in the future (Kanagawa Prefecture, 2018[68]).

In 2017, Kanagawa-prefecture held a conference to establish concrete solutions to these achievements (Kanagawa Prefecture, 2018[68]). Although evaluation method is necessary, it is expected that they would proceed a countermeasure against the aging society ahead the other prefectural administrations.

Source: Kanagawa Prefecture (2018[68]), *Collaboration with WHO,* http://www.pref.kanagawa.jp/docs/mv4/cnt/f537393/p1104811.html.

In Japan's decentralised administration local responsibility for public health delivery is clearly key. It is possible, however, that some municipalities have robust public health programmes and others may have weaker ones. In addition, it is possible that some centrally set expectations actually hinders competition and efficient use of local resources across and within municipalities.

The challenge in Japan is that it is difficult to understand which municipalities are delivering high quality and comprehensive public health policy, and which municipalities are struggling; some information, for example copies of municipal strategies and some indicators, is held by the MHLW but this is not publically available. Nor does the central government appear to have a particularly strong role in supporting or strengthening the approach of 'under-performing' municipalities. At present, the main mechanism that the Ministry uses to promote best-practice examples is through 'awards' which are published on the Ministry website. In terms of introducing greater national coherence to the public health sector, and strengthening central leadership, it may be that strategies set are too broad which leaves local levels of government to choose from a selection of different areas on which to focus activities. While this can be a good way to allow local government to be responsive to local context and local needs, it may also contribute to an uneven package of public health activities across the country. While minimum expectations for local authorities and private actors are set in different areas of public health are set (through the various legislation for instance), it is not clear that there is a strong mechanism for checking that these minimum standards are set.

In addition, despite the strongly decentralised system, Japan does not have a good system for sharing best practices and promoting exchanges, especially between local-level authorities. Occasionally the MHLW has taken best practice examples from local settings and applied them to legislation, for example the co-payment reduction for elderly medical care which was begun by a rural municipality, and then adopted to national legislation in 1973. The MHLW has held meetings about 8 times a year since 1999 to exchange information and opinion among municipal staff and the staff of the MHLW for improving health and welfare services according to local characteristics and planning methods (MHLW, 2018[69]), but neither the municipalities nor the MHLW report examples of cross-learning across municipal or local governments. This seems like a major missed opportunity to spread best practices nationally, and for weaker municipalities to learn from stronger ones. Best practice examples are also usually showcased in narrative reports, rather than through empirical evaluation of processes and/or outcomes, which precludes municipalities from extracting lessons from the best practice case to be applied to their own local conditions.

It may be, firstly, desirable for the MHLW to look for more robust ways to support less highly performing prefectures/municipalities to take up best practices; it is not clear that there is a strong mechanism for checking that centrally defined minimum standards are met by each municipality. While the strict decentralised organisation of the Japanese system and the autonomy of municipalities must be respected, a more active supporting role by the MHLW for under-performing municipalities could be envisioned. Secondly, encouraging local governments to exchange ideas and discuss common issues and challenges around public health (and health in general) seems desirable – other decentralised OECD countries have Association of Local Authorities and Regions, for instance in the Nordic countries, or in Italy – which can serve this function (see Box 1.4). The way in which Finland uses a nationwide benchmarking tool is particularly compelling. In Japan an annual conference for local government focused on public health – for instance focused on Health Japan 21, or the Smart Life Project – might be the place

to start. Such a conference could promote informal dialogue between regions, and could also highlight best practice examples from municipalities, or perhaps include an award ceremony for examples of excellence.

Third, the MHLW should better use existing monitoring systems and statistics for empirical evaluation of policy successes and shortcomings. The MHLW could support local government to adopt data-driven monitoring, policy-evaluation and policy-making through central legislation and/or targeted subsidies. In Finland the public data portal that benchmarks local public health performance shows top performers, and those with room to improve (Box 1.4).

Box 1.4. Cross-region learning in decentralised health systems: Finland, Italy and Sweden

Decentralised health systems are not uncommon in OECD countries. In order to facilitate the sharing of best practice between regions, and to benchmark performance, some countries have established associations of regional and local authorities, and/or annual events to gather together representatives of local government.

Finland launched a nationwide benchmarking tool called TEAviisari in 2010 to evaluate the health promotion activities delivered by its 297 municipalities (Saaristo, 2017[70]). The National Institute for Health and Welfare collects data on 810 individual indicators every two years. These indicators are presented in an online tool, where they can be analysed and compared at the municipal, regional or administrative level.

The tool assesses Health Promotion Capacity Building, focusing on seven dimensions: commitment, management, monitoring and needs assessment, resources, common practices, participation and other core functions (Saaristo et al., 2018[71]). For each dimension, municipalities receive a score between 0 and 100, with 100 indicating a desirable quality.

While the tool was primarily designed to increase the accountability and transparency for municipalities, the data also serves other purposes. It is used to monitor the implementation of the Health Care Act and the Act on the Promotion of Sports and Physical Activity (Saaristo, 2017[70]). The data is also used to determine whether or not municipalities qualify for a "health promotion incentive" – accounting for 2.5% of the national municipality budget.

In Italy, the National Agency for Regional Health Services (AGENAS – *Agenzia Nazionale per i Servizi Sanitari Regionali*) acts as a scientific and technical body of the Italian National Health service, and acts to support health care planning at the national and regional levels (OECD, 2015[72]). For example, AGENAS compares costs and efficiency of health services, promotes quality, seeks to spread health innovation and experimentation with new models of care. AGENAS is jointly accountable to the Italian health care regions, and the Ministry. Maintaining high standards across the regions, including through benchmarking of regional performance through comparable indicators, accreditation, and surveillance of medical education are other roles.

In Sweden, the Swedish Association of Local Authorities and Regions (SALAR) represents Sweden's 290 municipalities and 20 county councils/regions (SALAR, 2018[73]; OECD, 2013[74]). Membership to the Association is voluntary, but SALAR can act as a powerful advocacy voice representing the local governments at the central and European level. SALAR strives to promote and strengthen local self-governance, and also

provides local governments with practical support and advice. When it comes to health, SALAR takes a leading role in benchmarking activities amongst the regions, publishing quality registers, and more than 150 indicators of health care quality and efficiency. SALAR has also collaborated with national bodies, for example the National Board of Health and Welfare, to produce thematic reports and studies.

Source: Saaristo, V. (2017[70]), TEAviisari, a tool for benchmarking health promotion capacity building in Finland, http://www.eurohealthnet-magazine.eu/ehn-magazine-8/teaviisari-a-tool-for-benchmarking-health-promotion-capacity-building-in-finland/; Saaristo, V. et al. (2018[71]), "The comparative and objective measurement of health promotion capacity-building: from conceptual framework to operationalization", http://dx.doi.org/10.1177/1757975918769608; SALAR (2018[73]), About SALAR – SKL, https://skl.se/tjanster/englishpages/aboutsalar.995.html; OECD (2015[72]), *OECD Reviews of Health Care Quality: Italy 2014: Raising Standards*, https://dx.doi.org/10.1787/9789264225428-en; OECD (2013[74]), *OECD Reviews of Health Care Quality: Sweden*, https://doi.org/10.1787/9789264204799-en.

1.4.4. Leadership from Japanese civil society

The Japan Medical Association, and its regional branches, have an influential role in the governance of the Japanese health system. The JMA contributes to local Medical Plans, setting concrete numerical targets, and then local municipalities are responsible for the promotion and implementation of medical plan for citizens based on prefectural medical policy. The medical plans, and progress made, are reported to the MHLW every year especially for "5 diseases, 5 projects and home care medicine" (MHLW, 2017[67]).

However, aside from the involvement of the JMA – representing physicians – Japanese civil society is notably absent from the public health sphere. For example, civil society do not appear to be systematically consulted when municipalities develop public health strategies (although this could happen on an ad-hoc basis). Nor is the MHLW obviously engaging civil society groups in the Health Japan 21 strategy.

It may be that the civil society voice in the health space – including around public health – is relatively under-developed in Japan. There are a small number of actors, for example the HGPI. The Health and Global Policy Institute (HGPI) is a Japanese non-profit think-tank established in 2004 conducting medical policy survey and research, information exchange, human resource development with the aim of presenting policy options for citizen-based health policy. They work with various stakeholders, such as clinical doctors, medical journalist, public health professionals, and politicians, to seek feasible policies, while keeping a politically neutral position. Their activities include providing policy lectures to those with high interest in policy, performing surveys on Japanese public opinions and suggesting a recommendation on specific issues in Japan, for instance about dementia and cancer (Health and Global Policy Institue, 2018[75]).

The MHLW should seek out dialogue with civil society groups systematically, and especially when designing and assessing major strategies such as Health Japan 21; in time regular engagement by the MHLW could improve the confidence of nascent patient and citizen groups. Some other OECD countries have a diverse range of groups with different focuses in the public health space, even if in general engagement of civil society is not a main pillar of efforts to improve public health. In general, reflecting and collecting patients' views is understood to be a priority part of a people-centred health care system (OECD, 2017[76]). Japan should seek to systematically include patient's voices in policy making and any performance assessment or evaluations that are undertaken, either through inclusion of civil society or patient groups, through collection of patient-reported indicators of care experiences or outcomes, or both.

1.5. Partnerships and collaborations

1.5.1. Engagement with patient groups

Many patient associations in Japan mainly support patients to with learning and knowledge-acquisition related to diseases they suffer from, and peer-support in a group settings. Such groups are mostly made up of members with same diseases such as breast cancer or lung cancer, or similar health conditions such as chronic status with a respirator. "*Baku-baku no kai*" is one of the patient associations in Japan for patients with ventilator and their parents founded in 1990. Currently, there are 500 members nationwide, and this association is supporting families for the patients to live with their goals in the society, and appealing the necessity of enriching regional support (Baku-baku no kai, 2018[77]). Another organisation in Japan, called the National Federation of Mental Health and Welfare Party "*Minna (mi-n-na) Net*" was established in 2006 to contribute to independence of mentally disabled people and promotion of social participation. They provide consultation support for people with mental disorders and their families, and research on social participation of people with mental disabilities, to promote the welfare of mentally disabled people and their families. They organise all the 47 prefectural-based association and support their regional events. There are limited exemption supports of transportation expenses for patients with mental disorders in Japan and this organisation created a petition and signed campaign to reduce the economic burden of patients and their families in 2015 (The National Federation of Mental Health and Welfare Party, 2018[78]).

Japanese patient groups formally engage with the central government in various policymaking processes. A number of regulations mandate that representatives of patient groups take part in of councils and committees sponsored by the MHLW to discuss relevant policies. Under the Cancer Control Act, for example, the following is stipulated, "Article 10 (2) The Minister of Health, Labour and Welfare requires to hear the opinions from the Heads of relevant administrative agencies and Cancer Control Promotion Council the in designing the Basic Plan to Promote Cancer Control Program. Article 25 The Cancer Control Promotion Council shall be organized within 20 members. The members of the council shall be appointed by the Minister of Health, Labour and Welfare from among cancer patients, their families, their bereaved families, those engaged in cancer medical and experts with academic experience." Some patient associations do try to send a patient's representative as a stakeholder to a conference for the development of treatment guidelines or medical projects, but this does not appear to be systematic (MHLW, 2015[79]). However, there are a large number of small non-governmental organisations in Japan, about half of which are working in the health and welfare space, including around public health issues (see Box 1.5) (Cabinet Office, 2018[80]) (MHLW, 2010[81]). The MHLW has formally recognised the importance of working with such groups, but it does not appear that the groups engage with local governments on any systematic basis.

The engagement of patient groups in the public health sphere can be more challenging, as many patient groups are as in Japan focused on advanced or established diseases, rather than preventive activities. However, patient involvement is increasingly seen as a fundamental necessity for policy making in OECD countries, especially at the national level. In OECD countries such as Australia, Norway, Sweden and the United Kingdom there is national legislation that gives a formal definition of patient rights and patients and service users are also systematically involved at the service level or the decision-making level. Some organisations in OECD countries have well-established two-way cooperation

between medical providers and patient groups in making decision on health care system. In the United Kingdom, for instance, requirements for the development of clinical guidelines by the National Institute for Health and Care Excellence (NICE) include at least 2 lay members who have personal experience of using health care or care services as participants to the drafting process (NICE, 2014[82]).

Box 1.5. A Japanese NGO tackling alcohol addiction

Alcohol addiction can be a major challenge for affected individuals, and can lead to further serious short and long-term health issues. Additionally alcohol-related problems are highly likely to affect not only the addicted person also the people around them such as family and friends (MHLW, 2006[83]). Alcohol-addiction and harmful alcohol can also contribute to third party harm such as traffic accidents.

ASK, a Japanese non-governmental organisation, was established in 1983 to increase the awareness of the risks of alcohol addiction, and to aim for a society which can support those who recover from addiction. ASK's activities are raining awareness of risks caused by alcohol, organising group activities for preventing binge drinks and promoting alcohol related disorders basic law, etc., suggesting the health policies about alcohol, developing human resource, doing research about the drinking habit among teenagers to raise a social issue and supporting the patients with alcohol related disorders and their surroundings.

ASK supports, for instance, families who have addicted members, and also give some lectures and offer programmes for training supporters such as medical staffs, educators and leaders in a community. ASK also has worked with the government to address some problems around drinking, for example in 1986, ASK asked the Ministry of Education to have preventive education programmes on alcohol at school for teenagers. There are lectures for preventing alcohol, smoking and substance use since 1989 at elementary school to high school (for students aged between 6 and 18 on average). Another request was made to the government and alcohol companies to attach warning signs on alcohol beverage to prevent pregnant women from drinking alcohol in 2003. The MHLW has created a guideline for this, and alcohol consumption amongst pregnant women has fallen in 2013 compared to 2010 although the rate of drinking population amongst women increased (National Institute of Health and Nutrition, 2016[84]).

ASK's activity has since broadened to preventive actions for multiple addictions including substance addiction, gambling addiction and internet addition (ASK, 2018[85]).

Source: MHLW (2006[83]), *Prevention of Drinking Behavior and Related Problems*, http://www.mhlw.go.jp/topics/tobacco/houkoku/061122b.html; National Institute of Health and Nutrition (2016[84]), *Health Japan 21 Assessment, National Institute of Health and Nutrition*, http://www.nibiohn.go.jp/eiken/kenkounippon21/kenkounippon21/dete_detail_05.html#04_03; ASK (2018[85]), *Welcome to ASK's website!*, https://www.ask.or.jp/english.

1.5.2. Partnerships with the private sector

The private sector in Japan plays a particularly important role in promoting public health, for several possible reasons. First, because of the structure of the health insurance system a large number of companies have direct responsibility for the health of their employees. Second, given the strongly decentralised nature of health policy implementation in Japan the MHLW relies heavily on companies to deliver public health interventions in the workplace. And third, it appears that Japanese companies are particularly engaged with

notion of workplace wellbeing and many are organising interventions in this sphere. Healthy workplace practices in companies are reputed to be a key recruitment tool, and a way for competing companies to attract top graduates.

The Ministry of Health and Welfare has significant programmes which encourage health promotion in workplaces. Health Japan 21 and the Smart Life Project encourage workplaces to prevent health lifestyles – increased movement and exercise, eating more healthfully, smoking cessation for example – and the Smart Life Project has an awards programme that recognises workplaces who have introduced commendable initiatives. Additionally, under occupational health and safety laws set by the central government, employers are mandated to provide health check-ups (see Chapter 3), and preventive measures for safety, including the provision of an occupational physician for all companies with over 50 employees.

However, since the provision of an occupational physician applies only to large companies, around half the workers in Japan are not covered under the law. For the small business sector, the Japan Organization of Occupational Health and Safety (under MHLW labour bureau) provides regional occupational health centres to support occupational health prevention for small business.

The Ministry of Economy, Trade and Industry (METI) has also been focused on improving health as a means of boosting workplace productivity, and working with the Tokyo Stock Exchange has developed an awards programme for large companies (listed on the JPX) which have done the most to promote a healthy workplace and healthy employees. The approach was expanded in 2017 to a broader programme which surveys and recognising excellent 'Health and Productivity Management (HPM)' organisations, including in smaller companies ('major enterprises' and 'SMEs'). Companies volunteer themselves for the programme which, while showing that a large number of companies see HPM practices as important, risks drawing out only the top performers.

Building off of the other efforts by the MHLW and METI, the Japan Health Conference *(Nihon Kenko Kaigi*) is an organisation fully supported by the government to promote healthy life expectancy and appropriate health care in Japan. The conference encourages private organisations such as economic organisations, health care organisations, insurers and local governments to take measures to improve health status among their workers. In 2018, the Japan Health Conference, with the support of MITI , honoured companies which practice excellent health management. The Conference also develops guideline to promote healthier working practices, and educational materials about prevention, primary care, health insurance and medical information. The ambition is that by 2020 small-scale organisations, such as companies and local communities , to function on health promotion independently. (MITI, 2018[86]).

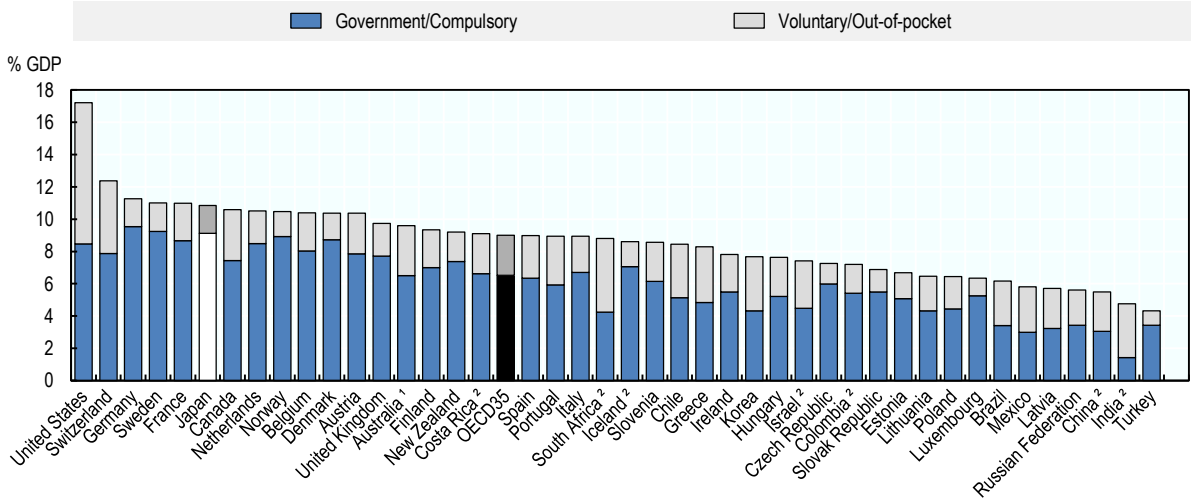
The engagement of companies in Japan with promoting health behaviour and the strong emphasis that the MHLW and METI put on workplace responsibility can be seen as an example of broad stakeholder engagement with public health concerns in Japan. However, existing programmes – the METI and TSE awards, the Smart Life Programme – reward top-performers, while companies that are less engaged with workplace health are far less visible. In a differently structured health system this might be less of a challenge, but given the strong reliance on employers and workplaces as key actors in delivering public health interventions in Japan, the risk is that only a small part of the population are benefitting.

1.6. Financial resources

1.6.1. Spending on health and public health

Estimated national health expenditure in Japan per capita was USD 4 519 in 2016, situating Japan as one of the highest spenders on health in OECD (OECD, 2016[87]). The ratio to gross domestic product (GDP) (Figure 1.8) was an estimated 10.9% in 2016, higher than the OECD average of 9.0% (OECD, 2017[1]). Looking at the medical expenses by age group, elderly people aged 65 years or over accounted for almost 60% of expenditure in 2015 (MHLW, 2015[88]).

Figure 1.8. Health expenditure as a share of GDP, 2017 (or nearest year)



Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en; WHO Global Health Expenditure Database.

National health expenditure in Japan is covered by central government, municipal governments, health insurance and out-of-pocket payments; in 2015 38.9% was covered by the public funds (25.7% by the central government and 13.2% by the local government), 48.8% by health insurance (20.6% employers and 28.2% the insured), and 11.6% by patient's out-of-pocket Overview of the National Health Care Fee in 2015 (MHLW, 2015[88]).

Public spending on public health is used for activities including health check-ups, vaccination programmes, infectious disease such as treatment of tuberculosis and sexual transmitted diseases, maternal health and some care for those with mental disorder, and for those who harmed by public pollution (MHLW, 2015[89]) Responsibility for funding particular areas of public health services vary: for example, the expenses for specific health check-up, excluding a co-payment, are covered by the central government, prefectural government and municipal governments (cities, towns, and villages), each paying one third, as set out under Article 72-(5) of the National Health Insurance Act. Article 20 of the Act on Assurance of Medical Care for Elderly People provides that the insurers carry out specific health check-ups (tokutei-kenshin) for the insured aged 40 and older.

Under the Employee's Health Insurance (EHI) programs, the contributions, which are collected by the insurers (providers) from the insured, cover the expenses for benefits, part of the contribution is allocated to the expenses for specified health check-ups. Insurers are obliged to provide specific health check-ups and specific health guidance to the insured and the non-working dependents who are aged between 40 and 74. Prior to 2008 employers or municipalities were responsible for the provision of such check-ups.

No tax resources are earmarked for public health programs, but some major programmes are financed by the central government budget, or by municipalities, or both. These include:

- Vaccination programs: the central government has the office for vaccination programs at Health Service Department, Health Service Bureau of the MHLW. A total of 1741 municipal governments nationwide are responsible for the implementation of routine vaccination programs. Routine vaccines for babies and children are offered at no cost by most municipalities. For immunisations that can prevent individuals from developing a disease or from worsening disease conditions, part of the cost may be covered by some municipalities;
- Health promotion programs implemented by municipalities under the Health Promotion Act: The central government finances part of the expenses paid by prefectural governments earmarked for the health promotion programs that are implemented by municipalities, and finance part of the expenses required for Designated Cities to implement these programs;
- Cancer screenings implemented by municipalities: most cancer screenings are financed by grants to local government

The central government also helps finance only the public health programs that are particularly designed to improve health, but local public health programs are mainly financed by municipalities.

1.6.2. Some payment mechanisms exist to incentivise public health functions amongst key providers

An amendment was made in 2015 to the National Health Insurance Act to establish a sustainable health insurance system. The Amended Act obliges insurers to make efforts to perform health promotion activities necessary to enhance the health of the insured, besides specific health check-up and specific health guidance. The MHLW created the concrete guideline in 2016 for insures to incentivise the insured at workplaces (MHLW, 2017[90]) On the other hand the government decided a mechanism to evaluate insurers' achievement, which incentives insurers who are tackling specific health examination, specific health guidance, health prevention and promotion. Insurers receive a penalty (by being charged with additional amounts in subsidies that are paid by insurers and taken into the programs for those 75 and over organized at prefectural level) when they show a low rate of receiving health check-up among the employees, and are incentivised (by earning reduced amounts in subsidies for the programs for those 75 and over) when they increase the rate of health check-up receivers and encourage employees for health prevention and better healthy behaviours in order to optimise health care spending (MHLW, 2017[91]).

Japan has experimented with a small number of programmes that offer financial or in-kind incentives to citizens undertaking healthy behaviours. There was a pilot study in one of the cities in Shizuoka prefecture, through an initiative started by the municipal

governments, where the citizens can get benefits from shops supporting the health promotion programme by practicing health exercise and health check-up. People can receive some coupon for shopping at local shops when they follow a 'healthy life' for two weeks, for example exercising, eating healthy meals, undertaking a health check etc. The coupons are offered through the cooperation of companies and stores in the city, while no public expenditure was used for this incentive system. (MHLW, 2017[92]).

1.7. Knowledge development

1.7.1. Key data sources for understanding public health

Japan has some rich sources of public health data, including data from health checks, from public municipal data, health insurance data, data drawn from institutions, and surveys. The National Survey of Health and Nutrition for example has existed for 70 years and is a best practice model that other OECD countries could follow (Box 1.6).

However, linking data from different data sources is challenging. Problems with linkages mean, firstly, that data does not follow the individual if they change employment or insurance provider, and secondly that there are limits to how data can be exploited within the system. For example, health check data could be used more fully (see Chapter 3), and data on screening is collected but not centralised.

There are some signs of planned efforts to link data to improve understanding health care use, for example the MHLW is planning to initiate the Data Health Plan in 2020 based on the Act on Assurance of Medical Care for Elderly People to decide and assess the proper medical expense by collecting the medical receipt data and information of specific health check-up and specific health guidance, which counts more than 14 billion cases and 220 million cases. These data have been provided to a third party since 2013 for improving the quality of medicine and promoting evidenced based medicine (MHLW, 2018[93]).

In addition, discussion of having a unique patient identifier are ongoing (social security number is used for taxes) – in Japan's relatively fragmented system (especially in this case the many insurers) having a UPI would be an advantage when it comes to disease management.

Box 1.6. The National Survey of Health and Nutrition

The National Institute of Health and Nutrition has existed almost for 100 years and been in charge of analysis of the national health and nutrition survey conducted by the MHLW and technical support for the research by not only the central government and municipalities to make the better health policies including Health Japan 21 (National Institute of Health and Nutrition, 2018[94]). The survey samples about 15 000 citizens annually to document their health and nutrition characteristics and behaviours. The survey is also used to monitor the Health Japan 21 strategy; to correspond with the baseline, interim and final assessments of the second term of HJ21, expanded surveys were or will be conducted in 2012, 2016, and 2020, covering a larger number of districts and triple the sample.

The survey gives very detailed information on the health and habits of the population, and can also be used to compare regions within Japan. The survey includes a physical examination (height, weight, abdominal circumference, blood pressure, blood test), a

medical interview, and questions about exercise. The dietary survey includes meal classification for each family member, information about total food intake, and a lifestyle habits questionnaire (eating habits, exercise, rest, alcohol intake, smoking, dental health). The protocol for following the survey, which is undertaken by teams including physicians, registered dieticians, public health nurses and clinical laboratory technicians and clerks, are clearly set out in significant detail.

The regular undertaking of this survey means that detailed trends, broken down by region, can be tracked over time. For example, over the past 70 years meat intake has increased significantly while fish intake declined from the late 1990s; daily steps taken appear to have done down over the past two decades, salt intake has declined slightly, while the prevalence of underweight has increased amongst Japanese women (20-69 years) since the 1980s. This survey is a particularly powerful tool in understanding the health status of the Japanese population, and can help track the impact of policies targeting behavioural change.

Source: National Institute of Health and Nutrition (2018[94]), *National Institution of Health and Nutrition*, http://www.nibiohn.go.jp/eiken/.

1.7.2. Promoting health literacy around public health

Based on the Health Promotion Law (*Kenko Zoshin Hou*), stakeholders such as the government, prefectures, municipalities, and medical institutions are expected to cooperate to provide health education for promoting health literacy in Japan. The MHLW has created a website for patients and health workers, called '"Information site for evidence-based Japanese integrative Medicine' which focuses on promoting the importance of medical providers understanding the patient's level of health literacy as they approach building a relationship with the patient. Communication training for medical students was only systematically introduced from 2003.

For local governance, each municipality is responsible for promoting health education amongst citizens. For example in Chiba prefecture, besides civil lectures on preventive medicine, Chiba University Preventive Medicine Center and the municipalities have collaborated on a health project and research project based on health check data to build more effective health policies and healthier lives.

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) provides education on health knowledge for children from elementary school to high school (mostly 6-18 years old) for the purpose of promoting school health, including prevention of drug abuse and drinking, and smoking prevention education, prevention of infectious disease, and mental health awareness. For instance, preventive education for drug abuse is suggested to be performed in physical and health education class annually, supported by an intervention from an expert. This approach is understood to be widely followed, for example in Ibaraki prefecture, the implementation rate in the prefectural high school was 99% in 2010 (MEXT, 2012[95]).

However, a survey of health literacy in Japan suggested that 85% of the Japanese population has low health literacy (Moreira, 2018[96]). According to the EU-Q47 survey performed in European countries and in Japan, which is comprehensive measure of health literacy across countries, there is a possibility that health literacy in Japan is lower compared to the European countries, especially when it comes to finding a reliable information for making a decision (Nakayama et al., 2015[97]).

1.8. Workforce

1.8.1. Human resource in public health care

Public Health Centres are indispensable for carrying out health services under the municipal government. Under the Community Health Act, Public Health Centres (*hokenjo*) serve as a hub for academic activities for regional public health, for promoting evidence-based effective and efficient local public health measures that reflect local characteristics, and effective coordination with other related measures in the fields of health care, long-term care and welfare. Public Health Centres are staffed by doctors, dentists, pharmacists, health nurses, and midwives based on Local Health Law (*Chiiki Hoken Hou*). Depending on demands, Public Health Centres also have medical technicians such as nutritionists, statistical engineers, and clinical laboratory technicians. Public Health Centres usually employ a public health physician working in the community health field as a Director, although most of the health centres do not require any specific certificates (Japanese Association of Public Health Center Directors, 2016[39]). Indeed under the law (Article 5-(1) of the Community Health Act), in principle, the heads of public health centres must be medical doctors because the centres serve as a hub for regional public health and community medicine. In addition, they must be: (1) a person who have spent more than three years engaging in public health work; (2) a person who have completed the designated training programme at the National Institute of Public Health; or (3) a person who have approved by the heads of local municipalities who consider them having the same level of knowledge and skills as the persons described in the two items above. The National Institute of Public Health provides candidates with necessary trainings to become heads of Public Health Centres and offers training programs for employees (or those who have achieved the same level) in health-care business, environmental health, and other public health fields.

A wide range of skills is necessary to become public health specialists, including an understanding of infectious diseases, maternal and child health, lifestyle diseases/cancer/intractable diseases, mental health, environmental health (foods and the environmental issues), and medical and pharmaceutical affairs. In recent years, they also tasked with the implementation of various local measures to address health emergencies that require the knowledge of multiple disciplines to solve. In this process, public health specialists need to work closely with related organisations and stakeholders such as long-term care and welfare professionals and local residents. Public health is a compulsory subject for the national doctor's exams, and graduates can study public health in a handful of post graduate schools in Japan (MEXT, 2017[98]). Public Health Centres should have a doctor as a director who has training in public health, yet there is a shortage of certificated doctors. In Tokyo, although there are 130 public health doctors are working in 2015, Tokyo needed 50 more public health doctors. They make effort to have more doctors who want to work for public health sector such as local health centre or prefectural government by offering lectures and promotions (MHLW, 2016[99]). Updated general information about public health is found on websites maintained by medical associations such as the Japanese Society of Public Health, Japan Public Health Association and the Japanese Association of Public Health Center Directors. These Associations also hold regular conference and educational lectures for public health doctors and those who work for public health.

There are 30 000 occupational health doctors practically working as a clinician in Japan, although there are 90 000 occupational health doctors certificated in Japan. Trainings are offered at specific universities or through courses by the by Japan Medical Association

(The Occupational Health Promotion Foundation, 2018[100]). There are two licensures for occupational physician. One is issued by JMA, and a second licensure is issued by The Japan Society of Occupational Health.

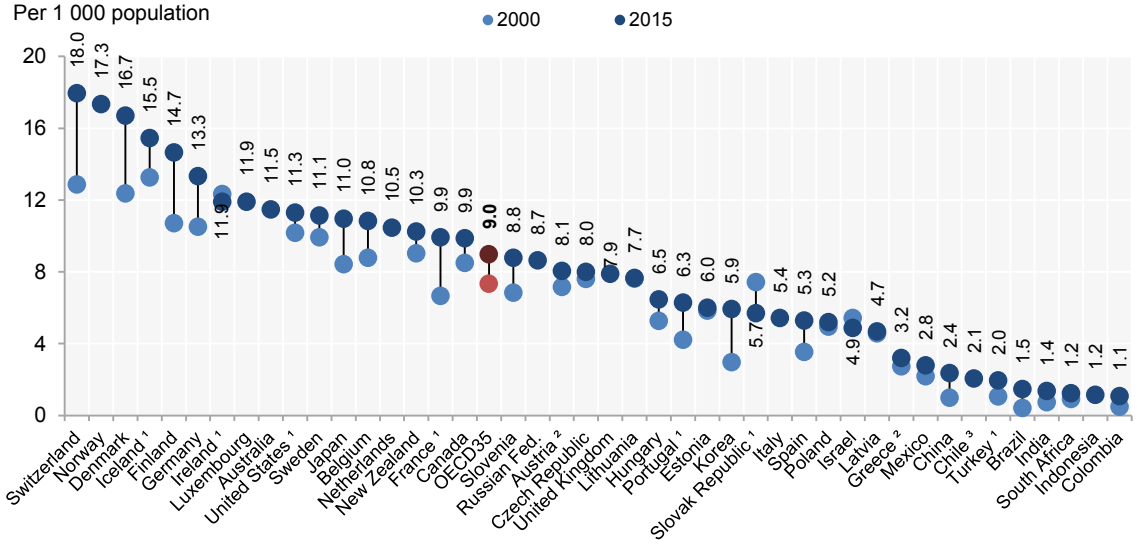
The number of full-time public health nurses in local government was 34 522 in 2016; 14.6% of which work in prefectural Public Health Centres, and the rest in municipal Public Health Centres (MHLW, 2017[101]). Public health nurses' licence in Japan is certified to those who pass both of the national examination of nursing and the public health nurse qualification. Public health nurses support public health implementation at government offices or public centres, industrial health offices, and school health offices with the wide range of tasks from health consults to health policies. Public health nurses must complete at least one year of necessary training at public health nurse training schools and need to pass the national exam for registered public health nurses. But the licenses for registered public health nurses are granted to persons who have passed the national examination for registered nurses.

Although. Additionally, although the number of nurses in Japan is increasing, the turnover rate is over 10% (Japanese Nursing Association, 2016[102]) it is seen as necessary to take measures to reduce the turnover rate. The MHLW has tried to grasp the exact number of practicing nurses in Japan by using a system by which nurses report their contact details when they leave jobs, and has sought to support retired nurses to go back to work by providing reinstatement training and employment information to them (MHLW, 2015[103]).

The MHLW plans to increase nurses with advanced skills for specific medical interventions (tokutei-koi-kennsyuu-syuuryou-sya), but they do not perform similar practices as expected in nurse practitioners in some OECD countries. The MHLW has developed a new system for nurses to be trained to perform specific medical interventions to respond to the long-term care needs in various clinical settings, including homecare. While in some OECD countries "nurse practitioners" are independent to perform specific medical procedures and may not be required to work under the supervision of a physician, in Japan nurses who have completed the appropriate training course are still required to perform their practice according to instructions from physicians.

Responses to public health emergencies, and disaster preparedness measures, are also important roles for the government and the Ministry of Health, Labour and Welfare. Specific human resource assessments and registration have been carried out and the detailed tasks for disaster scenarios are still under consideration (MHLW, 2016[104]) (see also Chapter 4).

Figure 1.9. Practising nurses per 1 000 population, 2000 and 2015 (or nearest year)



Source: OECD (2017[1]), *Health at a Glance 2017: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/health_glance-2017-en.

1.8.2. Opportunities and challenges given Japan's a-typical public health workforce

Unlike many in many OECD countries where primary care practitioners bear the bulk of responsibility for delivering public health education and services, Japan does not have a dedicated workforce with specific training in areas typically understood as 'primary care', nor do they have a strong gate-keeping function, or general practitioners. Instead, public health care and primary care-type functions, including health checks and screenings, disease management, and vaccinations, are delivered by a mix of semi-generalist/semi-specialists in the community, by Public Health specialists, by Occupational Physicians, by nurses and by public health nurses. From April 2018 a new system for the certification of new medical specialities, including general practitioners, was launched. At present, it is too early to assess the impact of this new certification on the Japanese medical workforce. However, for the moment Japan's somewhat a-typical health workforce presents both challenges and opportunities for public health. The contribution of unique workforce roles such as public health nurses in is a strength. The fact that employed persons should have regular (or semi-regular) contact with a dedicated occupational health physician could also be an advantage in terms of education, disease management, and helping to reduce health risk factors such as smoking or overweight.

The MHLW also appears to have ambitious plans around the use of physicians' assistants. Given that Japan has a relatively high number of nurses and a relatively low number of doctors this approach seems an effective approach.

However, the design of the Japanese health workforce could present some challenges in terms of delivering effective public health interventions. Notably, in theory the quality of service delivered by occupational physicians (Ops) could vary significantly. It is not clear that all OPs are delivering the most effective interventions for instance to reduce risk

factors, nor that their focus is consistently on health improvement so much as the delivery of occupational health checks.

The central government and the National Institute of Public Health offer various training programs. Local municipalities also provide training programs to nurture experts who advance their knowledge about public health. There are training programmes for public health nurses and office staff who work for local Public Health Institutions. There are 129 public health doctors in total working in Bureau of Social Welfare and Public in Tokyo prefecture including the prefectural government office and municipal Public Health Centres. (Bureau of Social Welfare and Public, 2017[105]). These workers receive training on public health organised by the MHLW, National Health Sciences Institute, National Centre of Mental and Nervous Centre, Tuberculosis Prevention Tuberculosis Research Institute, etc.

For public health nurses, the training programmes are organised by the MHLW and planned at public health centres, collaborating with educational or research institutions. Depending on the institution to which they belong, the content of the training might be different, yet it should cover all the area of the government, industry and medicine (MHLW, 2011[106]).

The certificate system for a social medicine specialist started in 2017 in Japan, organised by the Japan Board of Public Health and Social Medicine, but implementation has been postponed. The training consists of the basic programme for the learning knowledge, and practical learning in the field of the central and local government, industrial and environmental health, and medicine (Social Medicine Council, 2016[107]).

1.9. Conclusion

While Japan has the longest life expectancy at birth in the OECD, it is nonetheless an increasingly elderly society, with a low birth rate, and a burden of disease dominated by chronic conditions. Governance of the Japanese public health system is relatively fragmented, and in this landscape of multiple actors and stakeholders, the central government and the Ministry of Health, Labour and Welfare (MHLW) appears to have relatively weak levers through which to pursue public health goals. While the MHLW can set the strategic direction for the system, and has some influence over key actors in the system through a range of legislative requirements, delivery of public health actions and more detailed planning are to other system stakeholders. Across the different areas of public health care – including the delivery of Health Japan 21, and public health emergency planning and response –an global picture of how well the whole Japanese system is delivering on the objectives set by the MHLW is missing. At present it does not appear that the MHLW has a strong mechanism for establishing the extent to which public health actors are delivering on nationally set strategies, for example, on Health Japan 21 (Chapter 2), or on nationally expected public health functions, for example health checks delivered by employers or municipalities (Chapter 3). If Japan is to meet the ambitious national goals set in HJ21 then it is critical that all local level governments are putting in place effective strategies and actions.

In Japan it is recognised that while local governments are responsible for implementation, the national government plays a role of keeping public health service policies consistent and reducing gaps in the service provision across the country. However in some cases, it may also be that strategies set are too broad which leaves local levels of government to choose from a selection of different areas on which to focus activities. While this can be a

good way to allow local government to be responsive to local context and local needs, it may also contribute to an uneven package of public health activities across the country. While minimum expectations for local authorities and private actors are set in different areas of public health are set (through the various legislation for instance), it is not clear that there is a strong mechanism for checking that these minimum standards are set.

In addition, Japan may wish to look for ways to include a greater diversity of stakeholder voices in public health policy making and debate. In particular, voices from civil society and health service users did not appear to be influential in the Japanese system. Active inclusion of patients and service users' views in the both setting strategic policy goals for the health system and day-to-day decisions should be prioritised, and effective public-facing communication strategies would be a priority if Japan were to make changes to core prevention services, for instance health checks.

References

Anderson, C. et al. (2010), "Dietary Sources of Sodium in China, Japan, the United Kingdom, and the United States, Women and Men Aged 40 to 59 Years: The INTERMAP Study", *Journal of the American Dietetic Association*, Vol. 110/5, pp. 736-745, http://dx.doi.org/10.1016/j.jada.2010.02.007. [17]

Asakura, K. et al. (2016), "Sodium sources in the Japanese diet: difference between generations and sexes", *Public Health Nutrition*, Vol. 19/11, pp. 2011-2023, http://dx.doi.org/10.1017/S1368980015003249. [20]

Asakura, K. et al. (2014), "Estimation of sodium and potassium intakes assessed by two 24 h urine collections in healthy Japanese adults: a nationwide study", *British Journal of Nutrition*, Vol. 112/07, pp. 1195-1205, http://dx.doi.org/10.1017/S0007114514001779. [18]

ASK (2018), *Welcome to ASK's website!*, https://www.ask.or.jp/english (accessed on 22 May 2018). [85]

Baku-baku no kai (2018), *Live with a Ventilator*, https://www.bakubaku.org/ (accessed on 22 May 2018). [77]

Bureau of Social Welfare and Public (2017), *Tokyo Metropolitan Government Public Health Doctor Wanted Guide*, http://www.fukushihoken.metro.tokyo.jp/joho/soshiki/hoken/hoken/oshirase/faq.html (accessed on 22 May 2018). [105]

Cabinet Office, 2. (2018), *Japanese NPO*, https://www.npo-homepage.go.jp/about/toukei-info/ninshou-zyuri (accessed on 22 May 2018). [80]

Chao, D., H. Hashimoto and N. Kondo (2015), "Dynamic impact of social stratification and social influence on smoking prevalence by gender: An agent-based model", *Social Science & Medicine*, Vol. 147, pp. 280-287, http://dx.doi.org/10.1016/J.SOCSCIMED.2015.08.041. [11]

Distribution System Research Center (2007), "Manual for formulation of norms for sophistication of quality control in the wholesale market", http://www.maff.go.jp/j/shokusan/sijyo/info/pdf/manual.pdf. [48]

Finish Diabetes Association (2003), "Programme for the Prevention of Type 2 Diabetes in Finland", https://www.diabetes.fi/files/1108/Programme_for_the_Prevention_of_Type_2_Diabetes_in_Finland_2003-2010.pdf (accessed on 08 June 2018). [61]

Finnish National Institute for Health and Welfare (2016), *Health in All Policies - Health promotion - THL*, https://thl.fi/fi/web/health-promotion/health-in-all-policies (accessed on 14 June 2018). [64]

Food Safety Commission of Japan (2016), *What is the Food Safety Commission?*, https://www.fsc.go.jp/iinkai/ (accessed on 22 May 2018). [59]

Fujii, M., T. Oshio and S. Shimizutani (2014), "Self-rated Health Status of Japanese and Europeans in Later Life: Evidence from JSTAR and SHARE", *Japanese Economic Review*, Vol. 65/4, pp. 483-498, http://dx.doi.org/10.1111/jere.12029. [3]

Health and Global Policy Institue (2018), *About Health and Global Policy Institue（HGPI）*, https://hgpi.org/en/ (accessed on 22 May 2018). [75]

Honjo, K. and I. Kawachi (2000), "Effects of market liberalisation on smoking in Japan", *Tobacco Control*, Vol. 9, pp. 193-200, http://dx.doi.org/10.1136/tc.9.2.193. [12]

Ikegami, N. (2016), "Achieving Universal Health Coverage by Focusing on Primary Care in Japan: Lessons for Low- and Middle-Income Countries", *International Journal of Health Policy and Management*, Vol. 5/5, pp. 291-293, http://dx.doi.org/10.15171/ijhpm.2016.22. [35]

Japan Medical Association (2016), *Family Medical Training Program*, http://www.med.or.jp/doctor/kakari/ (accessed on 22 May 2018). [37]

Japanese Association of Public Health Center Directors (2016), *Number of Public Health Centers Installed*, http://www.phcd.jp/03/about/#donna (accessed on 22 May 2018). [39]

Japanese Nursing Association (2016), *Survey on 2016 Hospital Nursing Actual Condition*, http://dx.doi.org/10.9%、新卒看護職員離職率. [102]

Japanese Society for Dialysis Therapy (2017), "Current Status of Chronic Dialysis Therapy in Japan", https://docs.jsdt.or.jp/overview/index.html. [55]

Kanagawa Prefecture (2018), *Collaboration with WHO*, http://www.pref.kanagawa.jp/docs/mv4/cnt/f537393/p1104811.html (accessed on 22 May 2018). [68]

Kazawa, K. et al. (2015), "Efficacy of a disease management program focused on acquisition of self-management skills in pre-dialysis patients with diabetic nephropathy: 24 months follow-up", *Journal of Nephrology*, Vol. 28/3, pp. 329-338, http://dx.doi.org/10.1007/s40620-014-0144-2. [56]

Kodama, K. et al. (2013), "Ethnic differences in the relationship between insulin sensitivity and insulin response: A systematic review and meta-analysis", *Diabetes Care*, http://dx.doi.org/10.2337/dc12-1235. [14]

Kyoto prefecture (2015), "On the efforts of suicide strengthening month", http://www.pref.kyoto.jp/koho/kaiken/documents/27022702.pdf. [29]

Leppo, K. et al. (2013), "Health in All Policies", http://www.euro.who.int/__data/assets/pdf_file/0007/188809/Health-in-All-Policies-final.pdf (accessed on 14 June 2018). [63]

Matsuda, R. (2017), "Japan : International Health Care System Profiles", in *The Commonwealth Fund: International Health Care System Profiles*, The Commonwealth Fund, https://international.commonwealthfund.org/countries/japan/ (accessed on 23 January 2019). [66]

Melkas, T. (2013), "Health in all policies as a priority in Finnish health policy: A case study on national health policy development", *Scandinavian Journal of Public Health*, Vol. 41/11_suppl, pp. 3-28, http://dx.doi.org/10.1177/1403494812472296. [62]

MEXT (2017), *Professional Graduate School*, http://www.mext.go.jp/a_menu/koutou/senmonshoku/08060508.htm (accessed on 22 May 2018). [98]

MEXT (2012), "Drug Abuse Prevention Classroom Promotion Manual", http://www.mext.go.jp/component/a_menu/education/detail/__icsFiles/afieldfile/2018/03/08/1401907_3.pdf. [95]

MHLW (2018), "Current Public Long Term Care System", https://www.mhlw.go.jp/content/0000213177.pdf. [33]

MHLW (2018), *Food Hygiene Manager*, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000049348.html (accessed on 22 May 2018). [47]

MHLW (2018), "How to Pay for Immunization", http://www.mhlw.go.jp/stf/shingi/2r9852000000ts0v-att/2r9852000000tsiq.pdf. [43]

MHLW (2018), "Population dynamics in our country", http://www.mhlw.go.jp/toukei/list/dl/81-1a2.pdf. [28]

MHLW (2018), *Providing Medical Information*, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryou/iryouhoken/reseputo/index.html (accessed on 22 May 2018). [93]

MHLW (2018), *Seminars for Municipal Staffs*, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/hokabunya/shakaihoshou/seminar/index.html (accessed on 22 May 2018). [69]

MHLW (2018), *Specific Health Check-up*, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000161103.html (accessed on 22 May 2018). [54]

MHLW (2018), *The System of the MHLW*, http://www.mhlw.go.jp/kouseiroudoushou/shigoto/ (accessed on 22 May 2018). [57]

MHLW (2017), "Guidelines concerning efforts to provide incentives for personal prevention and health promotion", http://www.mhlw.go.jp/file/04-Houdouhappyou-12401000-Hokenkyoku-Soumuka/0000124570.pdf. [90]

MHLW (2017), *Measure for Suicide*, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/hukushi_kaigo/shougaishahukushi/jisatsu/ (accessed on 22 May 2018). [27]

MHLW (2017), "Medical / nursing care - Enriching the lives of consumers", https://www.kantei.go.jp/jp/singi/keizaisaisei/miraitoshikaigi/suishinkaigo_iryokaigo_dai5/siryou3.pdf. [91]

MHLW (2017), "Medical Plan", http://www.mhlw.go.jp/file/06-Seisakujouhou-10800000-Iseikyoku/0000159901.pdf (accessed on 01 June 2018). [67]

MHLW (2017), "Outline of current industrial physician system", http://www.mhlw.go.jp/file/05-Shingikai-12602000-Seisakutoukatsukan-Sanjikanshitsu_Roudouseisakutantou/0000166494.pdf. [26]

MHLW (2017), "Results of public health nurse activity area survey (area survey) Summary", http://www.mhlw.go.jp/toukei/saikin/hw/hoken/katsudou/09/dl/ryouikichousa_h29_houdou.pdf. [101]

MHLW (2017), *The National Health and Nutrition Survey in Japan, 2016.*, http://www.mhlw.go.jp/bunya/kenkou/eiyou/dl/h28-houkoku.pdf. [13]

MHLW (2017), "個人の予防・健康づくりに向けたインセンティブを提供する取り組み事例", http://www.mhlw.go.jp/file/04-Houdouhappyou-12401000-Hokenkyoku-Soumuka/0000124573.pdf. [92]

MHLW (2016), "About DHEAT (Disaster Health Emergency Assistance Team)", *MHLW*, http://www.mhlw.go.jp/file/05-Shingikai-10901000-Kenkoukyoku-Soumuka/0000131931.pdf (accessed on 02 June 2018). [104]

MHLW (2016), "AIDS Surveillance Committee, AIDS Occurrence Trend, 2016", http://api-net.jfap.or.jp/status/2016/16nenpo/h28gaiyo.pdf. [9]

MHLW (2016), "Efforts to secure public health physicians to secure public health physicians to secure public health physicians", http://www.mhlw.go.jp/file/06-Seisakujouhou-10900000-Kenkoukyoku/0000119115.pdf. [99]

MHLW (2016), "Outline of the results of the National Health and Nutrition Survey", http://www.nibiohn.go.jp/en/files/Section_of_the_National_Health_and_Nutrition_Survey/nhns2007.pdf. [10]

MHLW (2016), "The annual report of Tuberculosis Register Information Survey", http://www.mhlw.go.jp/file/06-Seisakujouhou-10900000-Kenkoukyoku/0000175603.pdf. [6]

MHLW (2016), "The survey of medical facilities", http://www.mhlw.go.jp/toukei/saikin/hw/iryosd/16/dl/02_01.pdf. [31]

MHLW (2015), "Demographic Atatistics, 2015". [4]

MHLW (2015), "Japan Vision Health care 2035 Proposal", http://www.mhlw.go.jp/seisakunitsuite/bunya/hokabunya/shakaihoshou/hokeniryou2035/. [79]

MHLW (2015), "Japanese Dietary Reference Intake 2015". [19]

MHLW (2015), *Notification System of Nursing License Holder*, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000095486.html (accessed on 22 May 2018). [103]

MHLW (2015), "Overview of National Health Care Costs in 2005", http://www.mhlw.go.jp/toukei/saikin/hw/k-iryohi/15/dl/data.pdf. [88]

MHLW (2015), *The Ministry of Health, Labor and Welfare Related Public Expenses Medical Institution List*, https://www.mhlw.go.jp/bunya/shakaihosho/iryouseido01/dl/info03l-k_h260509-08.pdf. [89]

MHLW (2014), *Food Poisoning*, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryou/shokuhin/syokuchu/index.html (accessed on 01 June 2018). [49]

MHLW (2012), "Basic policy for promoting comprehensive promotion of public health promotion", http://www.mhlw.go.jp/bunya/kenkou/dl/kenkounippon21_01.pdf. [53]

MHLW (2012), *Independent Administrative Agency*, http://www.mhlw.go.jp/kouseiroudoushou/shokanhoujin/dokuritsu/ (accessed on 22 May 2018). [40]

MHLW (2011), "New Nursing Staff Training Guideline", http://www.mhlw.go.jp/bunya/iryou/oshirase/dl/130308-3.pdf. [106]

MHLW (2010), "Recent Trends in Community Health". [38]

MHLW (2010), "Recommendations on measures to cooperate with volunteers and NPOs in the administrative field of the Ministry of Health, Labor and Welfare", http://www.mhlw.go.jp/stf2/shingi2/2r9852000000izeg-att/2r9852000000izip.pdf). [81]

MHLW (2010), "The summary of Medal Plan", http://www.mhlw.go.jp/stf/shingi/2r9852000000zc42-att/2r9852000000zc72.pdf. [32]

MHLW (2007), "Suicide Measure Outline", http://www.mhlw.go.jp/file/06-Seisakujouhou-12200000-Shakaiengokyokushougaihokenfukushibu/0000172329.pdf. [25]

MHLW (2006), *Prevention of Drinking Behavior and Related Problems*, http://www.mhlw.go.jp/topics/tobacco/houkoku/061122b.html (accessed on 22 May 2018). [83]

MHLW (2004), *Tobacco Control Concerned Ministries Meeting*, http://www.mhlw.go.jp/topics/tobacco/kaigi/secchi.html (accessed on 22 May 2018). [58]

MHLW (1948), *Medical Law*, http://www.mhlw.go.jp/topics/bukyoku/isei/shikarinsyo/gaiyou/kanren/iryo.html (accessed on 22 May 2018). [30]

MITI (2018), *Health Management Superior Corporate Accreditation System*, http://www.meti.go.jp/policy/mono_info_service/healthcare/kenkoukeiei_yuryouhouzin.html (accessed on 22 May 2018). [86]

Moreira, L. (2018), "Health literacy for people-centred care: Where do OECD countries stand?", *OECD Health Working Papers*, Vol. No. 107 /OECD Publishing, Paris, https://doi.org/10.1787/d8494d3a-en.. [96]

Nakayama, K. et al. (2015), "Comprehensive health literacy in Japan is lower than in Europe: A validated Japanese-language assessment of health literacy", *BMC Public Health*, http://dx.doi.org/10.1186/s12889-015-1835-x. [97]

National HPV Vaccination Program Register (2016), *Coverage Data - National HPV Vaccination Program Register*, http://www.hpvregister.org.au/research/coverage-data (accessed on 22 May 2018). [46]

National Institute of Health and Nutrition (2018), *National Institution of Health and Nutrition*, http://www.nibiohn.go.jp/eiken/ (accessed on 22 May 2018). [94]

National Institute of Health and Nutrition (2016), *Health Japan 21 Assessment*, National Institute of Health and Nutrition, http://www.nibiohn.go.jp/eiken/kenkounippon21/kenkounippon21/dete_detail_05.html#04_03 (accessed on 28 May 2018). [84]

National Institute of Infectious Diseases (2016), *Japanese Vaccination Schedule*, https://www.niid.go.jp/niid/ja/component/content/article/320-infectious-diseases/vaccine/2525-v-schedule.html (accessed on 22 May 2018). [42]

National Institute of Population and and Social Security Research (2017), "Japan's Future Population", http://www.ipss.go.jp/pp-zenkoku/j/zenkoku2017/pp29_ReportALL.pdf. [2]

NICE (2014), "Developing NICE guidelines: a guide for stakeholders and the public", https://www.nice.org.uk/Media/Default/About/what-we-do/our-programmes/developing-NICE-guidelines-information-for-stakeholders.pdf. [82]

Nikkei Economic News (2012), *Tuberculosis, 78 people are outbreaks Infection in Tokyo Hospital 10 people onset*, https://www.nikkei.com/article/DGXNASDG0903Z_Z00C12A7CC1000/ (accessed on 22 May 2018). [7]

OECD (2017), *Health at a Glance 2017: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/health_glance-2017-en. [1]

OECD (2017), *PaRIS: Patient-Reported Indicator Survey. The next generation of OECD health statistics.*, http://www.oecd.org/health/PaRIS.htm (accessed on 22 May 2018). [76]

OECD (2016), "Antimicrobial Resistance", http://www.oecd.org/health/antimicrobial-resistance.htm. [50]

OECD (2016), *Health expenditure and financing*, http://stats.oecd.org/index.aspx?r=598147 (accessed on 08 June 2018). [87]

OECD (2015), *OECD Reviews of Health Care Quality: Italy 2014: Raising Standards*, OECD Reviews of Health Care Quality, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264225428-en. [72]

OECD (2015), *OECD Reviews of Health Care Quality: Japan 2015: Raising Standards*, OECD Reviews of Health Care Quality, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264225817-en. [34]

OECD (2013), *OECD Reviews of Health Care Quality: Sweden 2013*, OECD Reviews of Health Care Quality, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264204799-en. [74]

Saaristo, V. (2017), *TEAviisari, a tool for benchmarking health promotion capacity building in Finland*, EuroHealthNet Magazine, http://www.eurohealthnet-magazine.eu/ehn-magazine-8/teaviisari-a-tool-for-benchmarking-health-promotion-capacity-building-in-finland/ (accessed on 17 October 2018). [70]

Saaristo, V. et al. (2018), "The comparative and objective measurement of health promotion capacity-building: from conceptual framework to operationalization", *Global Health Promotion*, p. 175797591876960, http://dx.doi.org/10.1177/1757975918769608. [71]

SALAR (2018), *About SALAR - SKL*, https://skl.se/tjanster/englishpages/aboutsalar.995.html. [73]

Social Medicine Council, 2. (2016), *Social Medicine Program*, http://shakai-senmon-i.umin.jp/standards.html#seibi (accessed on 22 May 2018). [107]

The Government of Japan (2016), *National Action Plan on Antimicrobial Resistance (AMR) 2016-2020*. [52]

The Japan Medical Association General Policy Research Organization (2014), "Survey on Japanese medical attitudes, The Japan Medical Association General Policy Research Organization", http://www.jmari.med.or.jp/download/WP331.pdf. [36]

The Ministry of Environment (2017), "Energy Countermeasure Special Account", http://www.env.go.jp/guide/budget/h29/h29-ann/b2_energy.pdf. [60]

The Ministry of Environment (2012), *Outline of the Air Pollution Control Law*, http://www.env.go.jp/air/osen/law/ (accessed on 22 May 2018). [23]

The National Federation of Mental Health and Welfare Party (2018), *Minna Net*, https://seishinhoken.jp/ (accessed on 22 May 2018). [78]

The Occupational Health Promotion Foundation (2018), *To Become an Industrial Physician*, http://www.zsisz.or.jp/insurance/naruniwa/ (accessed on 22 May 2018). [100]

Tokyo Metropolitan Welfare and Health Administration (2018), *Outline of Children's Chronic Specific Disease Medical Expenditure Subsidy Program*, http://www.fukushihoken.metro.tokyo.jp/kodomo/kosodate/josei/syoman/top.html (accessed on 22 May 2018). [24]

Walker, T. et al. (2017), "National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2016", *MMWR. Morbidity and Mortality Weekly Report*, Vol. 66/33, pp. 874-882, http://dx.doi.org/10.15585/mmwr.mm6633a2. [45]

WHO (2018), "WHO Recommendations for Routine Immunization - summary tables", *WHO*, http://www.who.int/immunization/policy/immunization_tables/en/ (accessed on 22 May 2018). [41]

WHO (2017), "Healthier Fairer Safer The Global Health Journey". [22]

WHO (2016), *Salt Reduction*, http://www.who.int/en/news-room/fact-sheets/detail/salt-reduction (accessed on 22 May 2018). [15]

WHO (2016), "Tuberculosis country profile of Japan", https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEXT%2FTBCountryProfile&ISO2=JP&LAN=EN&outtype=pdf. [5]

WHO (2015), *Finland curbs childhood obesity by integrating health in all policies*, World Health Organization, http://www.who.int/features/2015/finland-health-in-all-policies/en/ (accessed on 14 June 2018). [65]

WHO (2014), "7 million premature deaths annually linked to air pollution", *WHO*, http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/ (accessed on 22 May 2018). [21]

WHO (2014), "ANTIMICROBIAL RESISTANCE Global Report on Surveillance", http://apps.who.int/iris/bitstream/handle/10665/112642/9789241564748_eng.pdf?sequence=1. [51]

WHO (2012), *Guideline: Sodium intake for adults and children*, World Health Organization, Geneva, http://www.who.int/nutrition/publications/guidelines/sodium_intake_printversion.pdf. [16]

WHO (2007), "Human Papillomavirus and HPV Vaccines", *WHO*, http://www.who.int/bulletin/volumes/85/9/06-038414/en/ (accessed on 22 May 2018). [44]

World Health Organization (2015), *Global tuberculosis report 2015, 20th ed.*, World Health Organization, http://www.who.int/iris/handle/10665/191102. [8]

Chapter 2. Primary prevention and the Health Japan 21 strategy

To address the challenge of rising prevalence of non-communicable diseases (NCDs), Japan has increased the focus on primary prevention. The Health Japan 21 strategy provides a nation-wide framework to improve population health through interventions in workplaces, schools and local communities, focusing on diets, physical activity, smoking cessation and alcohol consumption. However, there exists a wide diversity in approach and focus among the isolate local initiatives, and there are few mechanisms to ensure quality or to disseminate successful practices. In addition, Japan should consider implementing population-level policies to support the impact of local interventions by creating a health promoting environment, such as banning smoking in public places, regulating food, tobacco and alcohol advertising, restricting alcohol sales, and labelling of tobacco, alcohol and food products with warning labels.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

2.1. Introduction

The rising prevalence of non-communicable diseases (NCDs) is increasing the burden on health systems throughout the world. While some risk factors are less prevalent in Japan, Japan too is seeing the impact of overweight, smoking, alcohol and other behaviours on the burden of disease. Moreover, considerable disparities between prefectures create an additional challenge.

To tackle these issues, Japan has increased its focus on primary prevention. The Health Japan 21 strategy provides a nation-wide framework to improve the health of the population through interventions in workplaces, schools and local communities. It sets targets for a wide range of indicators to increase accountability and monitor progress. Key areas of activity are healthy diets, physical activity, smoking cessation and alcohol consumption, but there exists a wide diversity in approach and focus among the separate local initiatives.

Yet while the reach of the Health Japan 21 strategy and the dedication of the local interventions are impressive, there remain areas where Japan can step up its action. In particular, population-level policies can support the impact of local interventions by creating a health promoting environment.

This chapter first explores the population health trends and challenges that Japan is facing. It then describes Japan's primary prevention strategy, with a focus on the Health Japan 21 strategy. Examples are given of the prevention programmes implemented by local communities, workplaces and schools. Finally, this chapter provides recommendations for further action that can be taken by Japan to create a health promoting environment through population-level policies.

2.2. Japan faces a range of public health challenges, including smoking, overweight and alcohol consumption

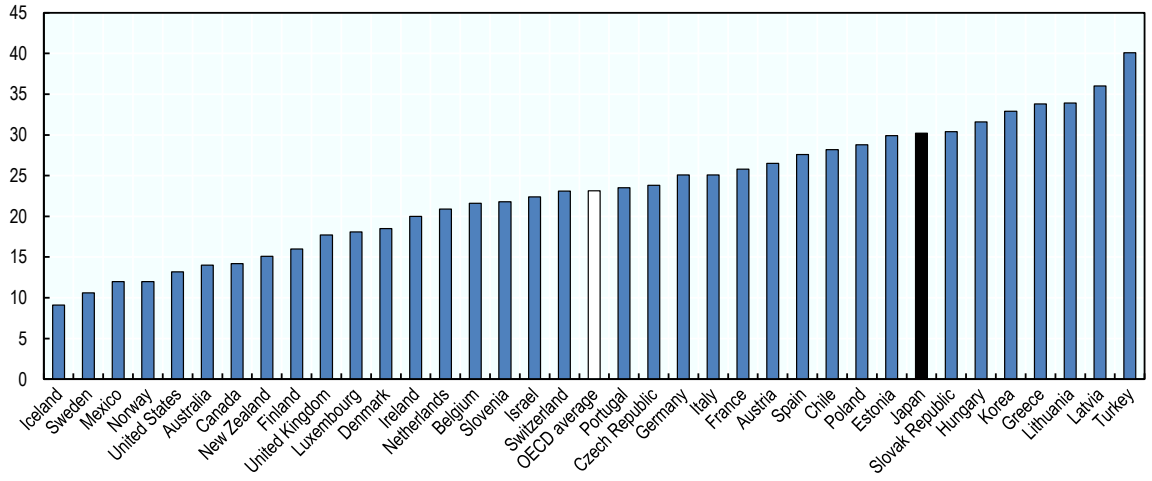
2.2.1. Changing lifestyles are having an impact on population health in Japan

Like many other OECD countries, the health care challenge that Japan is facing due to an aging population are compounded by changing lifestyles. These changes have an impact on the burden of disease, increasing the prevalence of conditions such as cancer, diabetes, chronic obstructive pulmonary disease (COPD), cardiovascular disease and dementia (see also chapter 1). Some of the most important risk factors contributing to this burden of disease are smoking, overweight and obesity, and alcohol consumption.

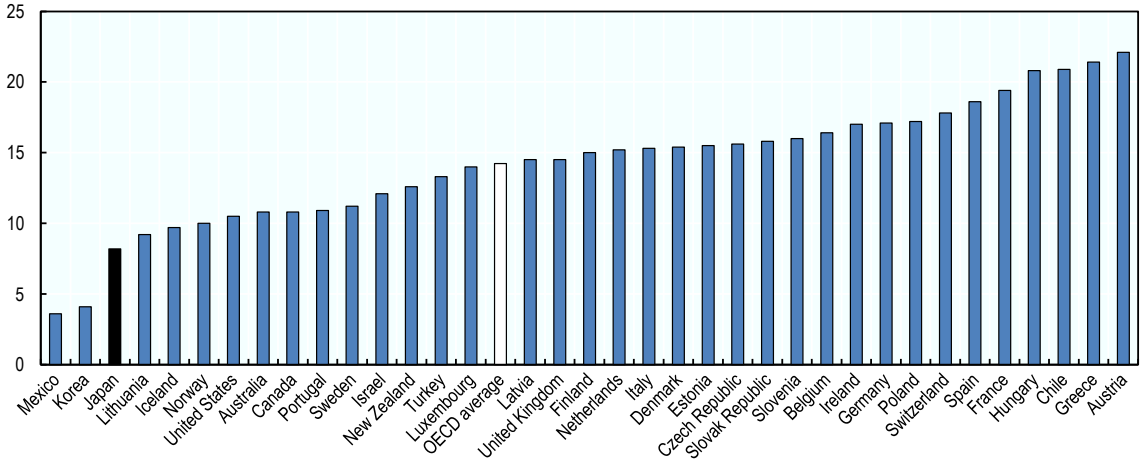
Smoking harms nearly every organ of the body, and causes many diseases including cancer, COPD, heart disease and stroke. Despite a downwards trend in smoking prevalence over the past 15 years, 30% of Japanese men smoke, which is higher than most OECD countries (see Figure 2.1 and Figure 2.2) (OECD, 2018[1]). However, only a small proportion of Japanese women smokes compared to other OECD countries. This rate has remained largely stable over the past years.

Figure 2.1. Prevalence of smoking in Japan compared to other OECD countries

Percentage of males over 15 who smoke daily (2017 or most recent)

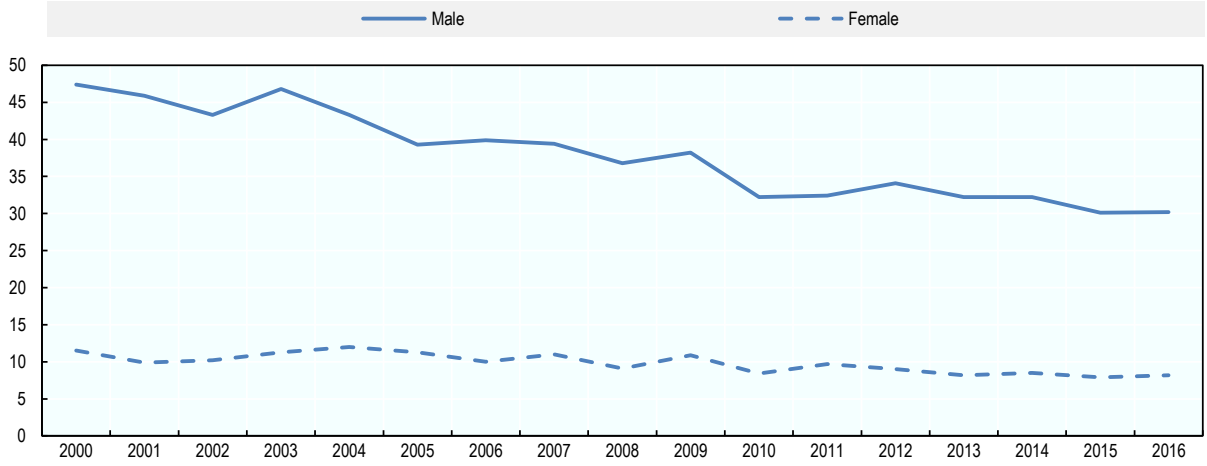


Percentage of females over 15 who smoke daily (2017 or most recent)



Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

Figure 2.2. Smoking prevalence in Japan over time

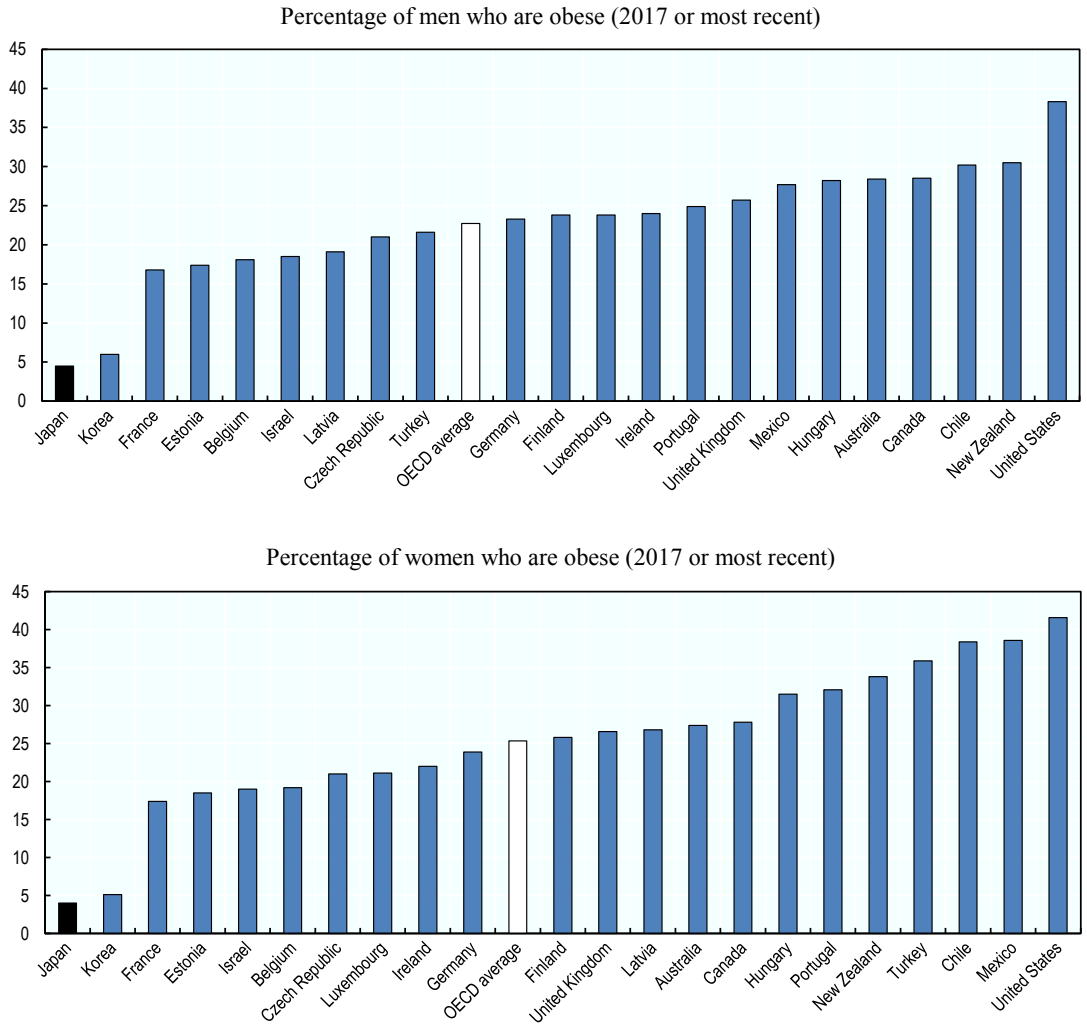


Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

In addition to differences by gender, smoking rates also differ across socio-economic classes. Studies have shown that people of both sexes in the highest income group are less likely to smoke that people in lower income groups (Fukuda, Nakamura and Takano, 2005[2]). However, while men in non-urban areas smoke more, women in urban areas are more likely to smoke than those living in non-urban areas.

Japan has a very low obesity prevalence compared to other OECD countries (see Figure 2.3). Only 4.5% of men and 4.0% of women are obese according to international standards (OECD, 2018[1]). However, the prevalence of obesity defined as having a BMI of 30 or more may not be an appropriate measure for the Japanese population. Studies have shown that at lower BMI Japanese and other Asian ethnicities have relatively high percentages of body fat, as well as a higher risk of diabetes and heart disease (WHO expert consultation, 2004[3]). For this reason, the Japan Society for the Study of Obesity (JASSO) defines obesity for Japanese as having a BMI of 25 or more.

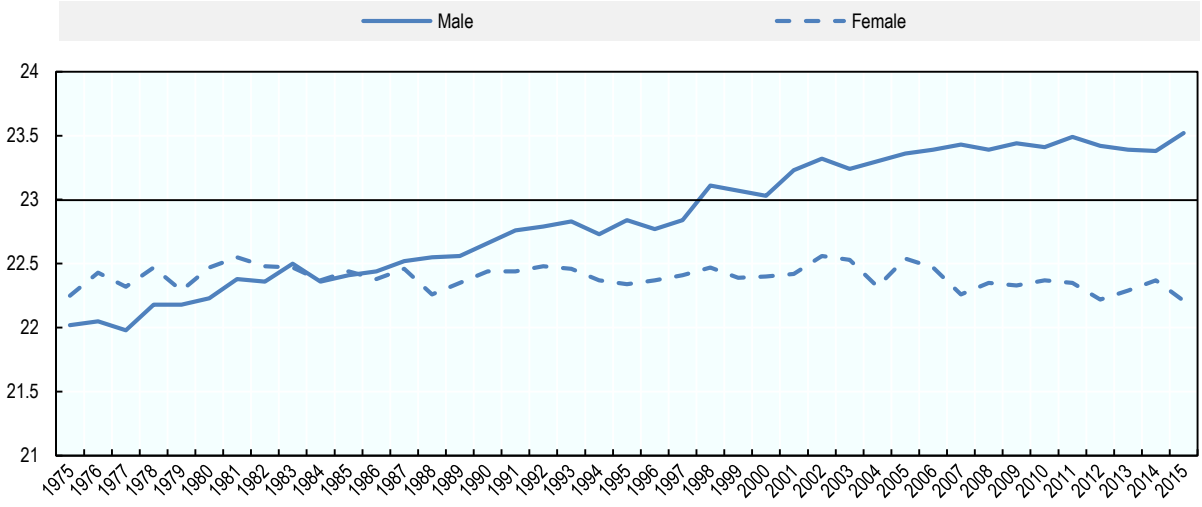
Figure 2.3. Prevalence of obesity in Japan compared to other OECD countries



Note: Only countries with a measured obesity prevalence, rather than self-reported, were included. These figures define obesity as a BMI of 30 or high.
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

Instead of only looking at obesity, it is recommended to also consider other BMI cut-offs as trigger points for public health action (WHO expert consultation, 2004[3]). A BMI higher than 23 is associated with an increased risk of type 2 diabetes and cardiovascular disease in Asian populations and is considered a trigger point for public health action. Data shows that over the last 40 years, the BMI of men has increased by 1.5 points, and the current average BMI is 23.5 in Japan. Notably, BMI of women has remained largely stable over that same time, at around 22.4.

Figure 2.4. Average BMI in Japan over time



Note: Increased risk at BMI=23 is based on the trigger point for public health action in Asian populations, WHO expert consultation (2004[3]).
Source: National Health and Nutrition Survey, via the Ministry of Health, Labour and Welfare (2017[4]), Health Japan 21 (the second term), http://www.nibiohn.go.jp/eiken/kenkounippon21/en/.

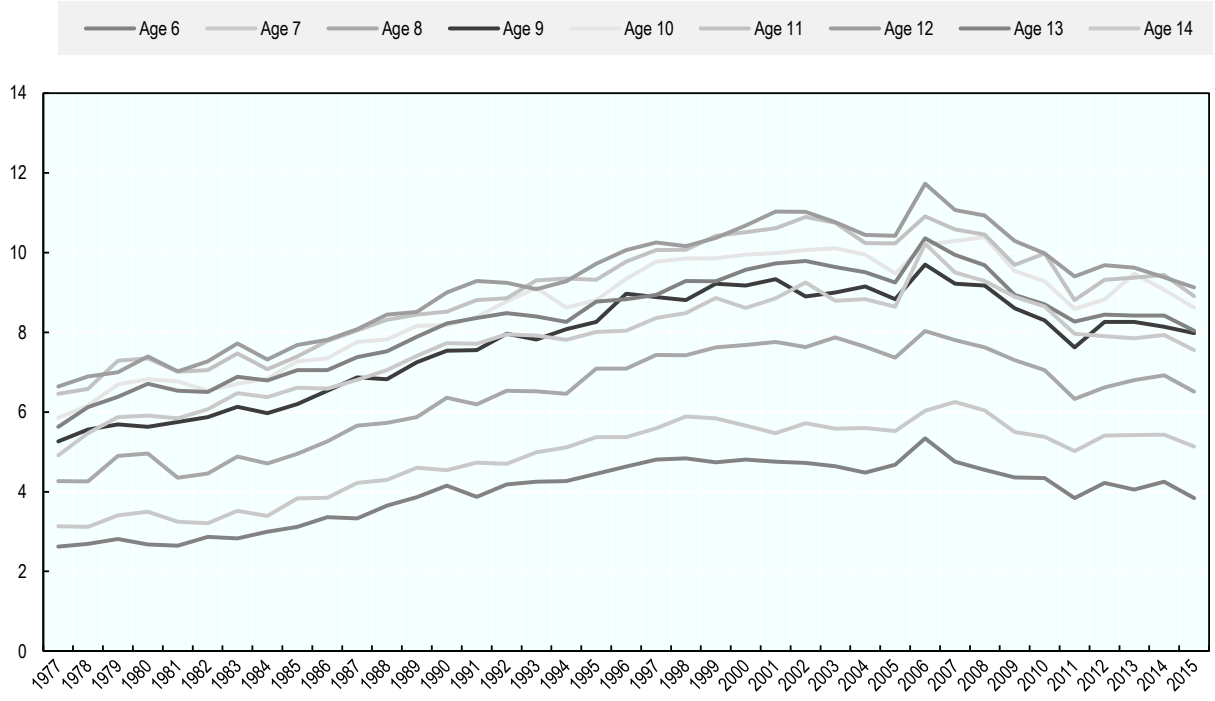
The prevalence of overweight is more common among older people in Japan. While only 11.3% of people aged 20 to 29 have a BMI of 25 or more, this percentage is 19.4% in 30-39 year olds and around 25% in people over 40 (e-Stat, 2014[5]). For women, the highest rate of overweight is for women over 70 years old, at 24.6%, For men, overweight is most prevalent in the age group 40-49, after which it decreases. However, it should be noted that this is a cross-sectional effect, and that studies comparing cohort results over time observed that BMI consistently increased with age (Funatogawa et al., 2009[6]).

Socioeconomic status also creates differences in the distribution of obesity: a study showed that adolescents in low- and middle-income households were more likely to be overweight that those in high-income households (Kachi, Otsuka and Kawada, 2015[7]). Another study looked at the impact of the 2008 economic downturn, and found that boys and girls from low-income households were at a higher risk of being overweight after the crisis (Ueda, Kondo and Fujiwara, 2015[8]).

While the prevalence of childhood obesity has decreased in recent years, it remains more prevalent than the decades before (see Figure 2.5). It is important to note however, that obesity in this case is measured as weighing over 20% more than a height-based reference weight. The JASSO does not use BMI to assess obesity in children who are still growing, according to the Clinical Guidelines for Pediatric Obesity 2017. This is a different approach than the BMI cut-off method that is generally used for adult and childhood obesity (de Onis et al., 2007[9]).

Figure 2.5. Childhood obesity in Japan over time

Percentage of children at least 20% over the recommended weight for their height, over time and by age group



Source: e-Stat (2015[10]), School Health Statistics Survey, https://www.e-stat.go.jp/dbview?sid=0003147100.

While overweight and obesity are becoming more common in Japanese society, social pressures to be thin have led to an increase in underweight among young women (Mori, Asakura and Sasaki, 2016[11]). Nearly 30% of Japanese women between the age 15 and 19 has a BMI below 18.5 (e-Stat, 2014[5]). However, similar to obesity, it is unclear whether this is the appropriate BMI cut-off value when it comes to harmful underweight.

Alcohol use is associated with an increased risk of liver disease, cancer, heart disease and mental health conditions. Japan consumes less alcohol than most OECD countries, 7.2 litres on average per capita (see Figure 2.6) (OECD, 2018[1]).

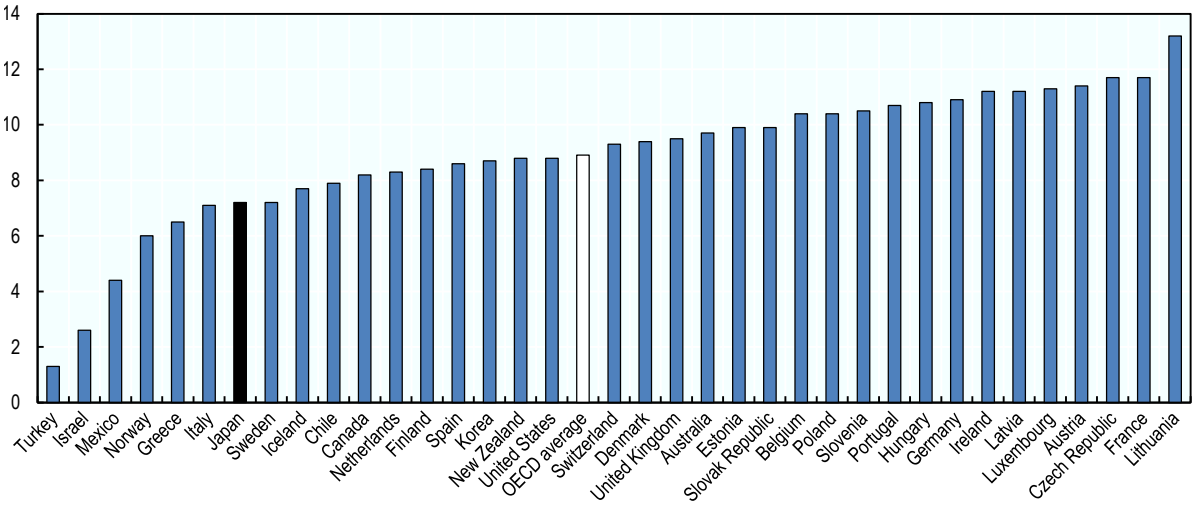
There is a considerable difference between men and women when it comes to alcohol consumption frequency: 28.9% of men drinks every day, compared to only 7.4% of women (Ministry of Health Labour and Welfare, 2017[4]). For men, daily consumption of alcohol becomes more prevalent with age, peaking at 38.5% of 60-69 year olds. There are also differences between men and women when it comes to harmful consumption: while 14.6% of men drank at harmful levels[1] in 2016, only 9.1% of women do (Ministry of Health Labour and Welfare, 2017[4]).

Notably, while in many countries alcohol use is more common in lower economic classes, a survey conducted by the Ministry of Health found that men with a lower income were less likely consume high levels of alcohol. Only 11.5% of men who made less than JPY 2 million (EUR 15 000) per year engaged in harmful drinking, compared to 17% of men earning between JPY 2 million and 6 million, and 15% of men who made more than JPY 6 million (EUR 45 000) (Ministry of Health, 2014[12]).

These differences between sexes and socio-economic classes may in part be driven by the important role that social drinking has in Japanese business and work culture.

Figure 2.6. Alcohol consumption in Japan compared to other OECD countries

Alcohol consumption, litres per capita per year (2017 or most recent)



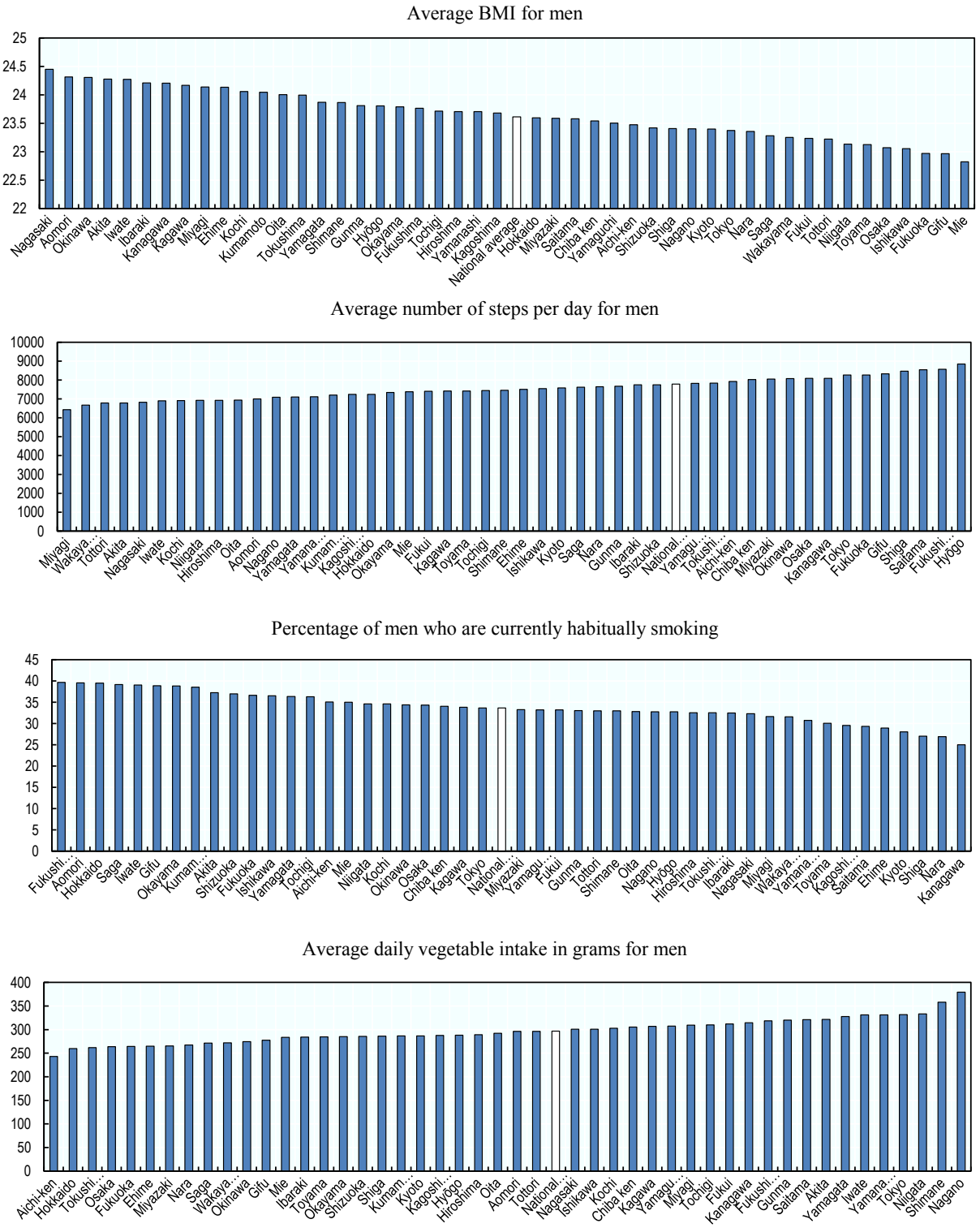
Source: OECD Health Statistics 2018, https://doi.org/10.1787/health-data-en.

2.2.2. There exist disparities in risk factors between prefectures

The 2012 National Health and Nutrition Survey focused on understanding regional disparities in risk factors and outcomes. Data from this survey shows that risk factors are distributed unevenly across the Japanese population (see Figure 2.7). While men in the Hyōgo prefecture take on average nearly 8 900 steps per day, in Miyagi this is only around 6 400. Nearly 40% of men in Fukushima smoke, compared to only 25% of men in the Kanagawa prefecture. The North experiences a higher mortality that the rest of the country. These differences can be an indication of regional variations in exposure to risks, lifestyles, other socioeconomic or poverty trends, or differences in local public health services (Kanchanachitra and Tangcharoensathien, 2017[13]).

As the health gaps between prefectures had widened over the last 25 years (Nomura et al., 2017[14]), the government has focused on reducing health inequalities as part of the Health Japan 21 strategy. As a result, differences in healthy life expectancy have reduced in recent years: between 2010 and 2016, the gap in healthy life expectancy between prefectures went from 2.79 years for men and 2.95 years for women to 2.00 and 2.70, respectively (Ministry of Health, 2018[15]).

Figure 2.7. Risk factor distribution by prefecture in 2012



Source: e-Stat (2014[5]), National Health and Nutrition Survey 2012, https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&lid=000001118468.

2.3. The Health Japan 21 strategy provides a framework for national, local, workplace-based and school-based health promotion interventions

2.3.1. The Health Japan 21 strategy functions as a framework for primary prevention in Japan

In 2003, Japan implemented the Health Promotion Act, as part of a larger health care reform. This Act provides a framework for primary prevention and overall public health improvement. It lays out the guidelines for the population-wide health checks (see also Chapter 3), implements the National Health and Nutrition Survey to monitor public health and evaluate interventions, and requires facility owners (including schools, hospitals, restaurants, public transport, stores and government offices) prevent passive or second-hand smoking.

The Health Promotion Act also provides a legal basis for the Health Japan 21 (HJ21) strategy, which had been initiated three years prior. The first term of this strategy ran from 2000 to 2012, and its aim was to promote health awareness activities and health promotion efforts, in order to prevent premature death, extend healthy life expectancy, and improve the quality of life.

As part of the first term of HJ21, prefectural governments were required to write and implement health promotion plans for their local population. To guide the development of these plans and measure their impact, 79 targets[2] were set in 9 areas (nutrition and diet; physical activity and exercise; rest and promotion of mental health; tobacco; alcohol; dental health; diabetes; circulatory disease; and cancer). These targets focused primarily on intermediary and final outcomes (e.g. decreased salt intake, increased daily steps taken, decreased complications of diabetes), but some process metrics around knowledge and awareness were included as well (e.g. increased use of food labels, increased willingness to diet, increased awareness of metabolic syndrome) (Ministry of Health, 2011[16]).

In the final evaluation of the strategy, it was found that 17% of targets were achieved while an additional 42% showed improvement (Ministry of Health, 2011[16]). The majority of achieved targets were in the area of dental health. Other targets that were achieved were increased awareness of metabolic syndrome, willingness to engage in physical activity, and decreased lack of sleep. However, the remaining targets did not all stay the same: 15% of the metric worsened. There were more diabetic complications, fewer people eating breakfast, fewer steps taken per day, and more stress, among others.

For HJ21's second term, which runs from 2013 to 2022, a new framework was developed containing 53 targets. While the new framework has a different structure – moving from a disease-based grouping to organisation by overall aim, such as improving risk factors or social engagement – many of the metrics remain the same. However, the updated framework has a greater focus on extending healthy life expectancy and reducing regional health inequalities, includes secondary prevention, and contains new metrics on creating a healthier social environment. The latter includes measures such as the number of corporations, civilian organisations and prefectures that have put in place health promoting measures, and volunteer participation in health promotion.

Yet while this list of tangible targets provides a measurable way to evaluate the strategy, it provides no prioritisation. The targets cover a very wide range of public health issues – with varying urgency and impact on population health – without prioritising them or ranking their relative importance.

Box 2.1. Health Japan 21 Second term – Targets

Note: specific quantitative targets were set for each metric, details of which can be found in Annex 2.A

Targets for achieving extension of healthy life expectancy and reduction of health disparities

1. Extension of healthy life expectancy (average period of time spent without limitation in daily activities)
2. Reduction of health disparities (gap among prefectures in above metric)

Targets for the prevention of onset and progression of life-style related diseases

Cancer

1. Reduction in age-adjusted mortality under age 75
2. Increase in participation rate of cancer screenings

Cardiovascular disease

1. Reduction in age-adjusted mortality rate of cerebrovascular disease (CVD) and ischemic heart disease (IHD)
2. Reduction in average systolic blood pressure
3. Reduction in percentage of adults with dyslipidaemia
4. Reduction in number of definite and at-risk people with metabolic syndrome
5. Increase in participation rates of specified health check-ups and guidance

Diabetes

1. Reduction in complications
2. Increase in percentage of patients who continue treatment
3. Decrease in percentage of individuals with elevated blood glucose levels
4. Prevent increase in number of diabetic persons
5. Reduction in number of definite and at-risk people with metabolic syndrome
6. Increase in participation rates of specified health check-ups and guidance

COPD

1. Increase recognition of COPD

Targets for maintenance and improvement of functions necessary for engaging in social life

Mental health

1. Reduction in suicide rate
2. Decrease in people suffering from mood disorders or anxiety disorders
3. Increase in occupational settings where interventions for mental health are available
4. Increase in number of paediatricians and child psychiatrists

Children's health

1. Increase in percentage of children who maintain healthy lifestyle (eating three meals a day and regular exercise)
2. Increase in percentage of children with ideal body weight (low birthweight and obesity)
3. Health of elderly people
4. Restraint of the increase in Long-Term Care Insurance service users
5. Increase in identification rate of high-risk elderly with low cognitive function
6. Increase in percentage of individuals who know about locomotive syndrome
7. Restraint of the increase in undernourished elderly
8. Decrease number of elderly with back or foot pain
9. Promotion of social participation

Targets for putting in place a social environment to support and protect health

1. Strengthening of community ties
2. Increase in percentage of individuals who are involved in health promotion activities
3. Increase in number of corporations that deal with health promotion and educational activities
4. Increase in number of civilian organisations that offer accessible opportunities for health promotion support or counselling
5. Increase in number of prefectures that identify problems and have intervention programs for those in need

Targets for improvement of everyday habits and social environment

Nutrition and dietary habits

1. Reduction in percentage of obese and underweight individuals
2. Increase in individuals who consume appropriate quality and quantity of food
3. Decrease in percentage of children who eat alone
4. Increase in number of food producers that supply food products low in salt and fat
5. Increase in percentage of specific food service facilities that plan, cook, and evaluate and improve nutritional content of menu based on the needs of clients

Physical activity and exercise

1. Increase in daily number of steps
2. Increase in percentage of individuals who regularly exercise
3. Increase in number of local governments that offer community development and environment to promote physical activity

Rest

1. Reduction in percentage of individuals who do not take rest through sufficient sleep
2. Reduction in percentage of employees who work 60 hours or more per week

Alcohol drinking

1. Reduction in percentage of individuals who consume alcohol over recommended limits
2. Eradication of underage drinking
3. Eradication of alcohol consumption among pregnant women

Tobacco smoking

1. Reduction in percentage of adult smoking rate
2. Eradication of underage smoking
3. Eradication of smoking during pregnancy
4. Reduction in percentage of individuals who are exposed to passive smoking at home, workplace, restaurants, governmental institutions, and medical institutions

Dental and Oral health

1. Increase in percentage of individuals in their 60s with good mastication
2. Prevention of tooth loss
3. Decrease in percentage of individuals with periodontal disease
4. Increase in number of children without dental caries
5. Increase in percentage of individuals who participated in dental check-up

Source: Ministry of Health Labour and Welfare (2017[14]), Health Japan 21 (the second term), http://www.nibiohn.go.jp/eiken/kenkounippon21/en/.

2.3.2. The primary role of the central government in HJ21 is setting and monitoring targets, and incentivising action

At the central level, the Ministry of Health, Labour and Welfare is the main actor in the HJ21 strategy. The Ministry leads on the legislative issues and sets the overall framework and targets. Other ministries also play a role, but only in specific elements of the strategy. Ministry of Economy, Trade and Industry oversees the Health and Productivity Management (HPM) programme, and the Ministry of Education runs the programmes in schools. Generally speaking, the role of these actors is to set targets and to create guidelines.

Local entities, including prefectures, municipalities, employers, and schools, are expected to implement actions to reach the targets. The prefectural governments write health promotion plans through which they set their own agendas within the overall framework, and tailor their approach to the specific characteristics of the local population and situation. Municipalities are the main actors responsible for implementation, through their health promotion plans. These plans re in tern aligned with the prefectural plans, but tailored to local circumstances. Similarly, employers and schools participate through workplace-based and school schemes.

To monitor the performance of local entities against the HJ21 targets, a range of data sources in used, including data from the National Health and Nutrition survey (see Box 1.6 in Chapter 1). Every year, this survey samples about 15 000 citizens to document their health and nutrition characteristics and behaviours. To correspond with the baseline, interim and final assessments of the second term of HJ21, expanded surveys were or will be conducted in 2012, 2016, and 2020, covering a larger number of districts and triple the

sample. However, this survey is too small for monitoring changes at the local level, and many municipalities conduct their own surveys, which vary in quality.

The approach of central oversight and local action allows interventions and programmes to be tailored to local circumstances. It means that local entities can focus on the topics that are the biggest issue in their population, and that they can use interventions that are tailored to the local situation and resources. However, there is no guarantee regarding the quality of each local plan. While the central government has put in place rewards for high-quality practices, there is no regulation, incentive structure or support to ensure a minimum quality level. In addition, the lack of prioritisation by the central government can also translate to the local level, if the framework is rigidly followed and not tailored to the local population.

To entice local schools, employers and other organisations to implement health promotion activities, the central government has put in place programmes that provide guidelines and reward action. One such programme is the Smart Life Project, run by the Ministry of Health, Labour and Welfare.

The Smart Life Project was started during the first term of HJ21 in 2011. It centres around 4 themes:

- Smart Walk: "Plus 10", promotes an additional 10 minutes of daily exercise, for example brisk walking during the commute, cleaning or gardening
- Smart Eat: "Plus one dish every day ", promotes including an additional plate (or 70g) of vegetables each day
- Smart Breath: "Eradication of tobacco smoke", focuses of smoking cessation
- Smart Check: "Regularly knowing your body condition", promotes the participation in medical check-ups and screening

The Ministry provides guidelines and information on each topic, as well as promotion materials. For example, the ActiveGuide leaflet offers suggestions on how to add 10 minutes of physical activity to your daily routine. Over 4 000 private companies, local organisations and governments participate by distributing information and providing interventions to the public and to their employees.

To encourage participation, the Ministry rewards the most inventive or successful interventions. In 2016, 44 companies, 39 organisations and 25 local governments received an excellence award. The highest prize went to the Kenko Waku Waku Mileage Programme. This programme provides mileage points to employees who form healthy habits such as eating breakfast and having no-alcohol days. The mileage points are accumulated over one year and can result in incentive payments to the employee of up to JPY 130 000 (EUR 1 000) (see Box 2.2) (SCSK Corporation, 2016[17]).

Similar to the Ministry of Health, Labour and Welfare encouraging health promotion through its Smart Life Project, the Ministry of Economy, Trade and Industry (METI) promotes Health and Productivity Management (HPM). HPM programmes consider the health of employees from a corporate management perspective and promote it strategically. Investment in employees' health as a corporate philosophy is thought to benefit the company as a whole by improving employees' vitality and productivity, thus enhancing the company's performance and improving its stock price.

To highlight best practices among companies that engage in HPM, the METI, together with the Tokyo Stock Exchange (TSE), established the Health & Productivity Stock

Selection in 2014 for TSE-listed enterprises. To make this selection, the METI conducts the Survey on Health and Productivity Management and assesses the responses based on five primary criteria: the positioning of health and productivity management in management philosophy and policies; the existence of frameworks for tackling health and productivity management issues; the establishment and implementation of systems for ensuring health-conscious management; the presence of measures for assessing and improving health and productivity management; and adherence to laws and regulations and risk management.

In 2016, the METI established the Certified Health and Productivity Management Organization Recognition Program for large organisations and small and medium-sized enterprises (SMEs) that are not TSE-listed. This recognition programme is administered by the Nippon Kenko Kaigi, an organisation collaborating with communities and workplaces to improve health.

In 2018, 26 companies from 26 industries were selected as the 2018 Health & Productivity Stock Selection (Ministry of Economy Trade and Industry, 2018[18]). The Nippon Kenko Kaigi recognised 541 organisations in the large enterprise category and 776 organisations in the SME category (Ministry of Economy Trade and Industry, 2018[19]).

The aim of the HPM recognition programmes is to highlight best practice in HPM and to provide public recognition for the HPM efforts of enterprises. To increase the uptake of HPM, the METI provides information on good practice, cooperates on local awards or recognition schemes with local governments and chambers of commerce, and works with financial institutions and local governments to provide incentives such as low-interest loans, especially for underperforming SMEs. However, the effectiveness of the programme is unclear, as no empirical evaluation exists.

2.3.3. Local communities are developing multisectoral health promotion plans

The targets for health promotion set at the central level are incorporated in prefectural and municipal health promotion plans. Local governments can choose specific focus areas depending on the local health status, and tailor their approach based on the available resources and stakeholders. The aim is to create innovative, multisectoral community-based interventions that bring together different local stakeholders.

One successful example is the Adachi Vegi-tabe Life project. In Adachi City in the Tokyo Prefecture, average vegetable intake was 100g below the recommended 350g in 2012. The Adachi Vegi-tabe Life ("tabe" referring to the Japanese word for "eat") project was established as part of the city's local health promotion plan under HJ21. The project aims to increase the consumption of vegetables in the local population, by building a supportive environment that encourages and facilitates vegetable consumption, and educating children on the importance of vegetables.

The focus on vegetable intake was chosen for four reasons. Firstly, interventions in this area were relatively acceptable to citizens with various background. Secondly, a pre-survey identified vegetable intake as sensitive to socioeconomic behavioural disparity. Thirdly, a diet high in vegetables could be used to promote overall health consciousness. Fourthly, a vegetable programme would involve several non-health sectors

Specific interventions included a healthy menu plan, through which 10% of all local restaurants now provide a small salad at the beginning of each meal, or "vegetable rich" meals with over 120g of vegetables. The government provided recipes for cooking with vegetables, and increased their availability at stores and markets. Working with the Local

Educational Board, children were educated in school on healthy eating and participated in the cooking of vegetable-rich meals. Support from a local organisation of agricultural producers meant that school lunch schemes had access to affordable fruit and vegetables.

The programme has had a considerable impact. Vegetable consumption in both children and adults increased – notably in both high and low education families. Men and women aged 30 ate 69.1g and 23.6g more vegetables per day, respectively, in 2016 compared to 2014.

In Yokohama City, part of the Kanagawa Prefecture, life expectancy is two years lower than for the top city in the prefecture. To address this, they developed a community health promotion plan that focused on increasing life expectancy by creating healthy behaviours and providing a supportive social environment. These guidelines were developed with the support of various stakeholders including the children bureau, the education committee, medical association, agriculture department, academics and civil society.

One element of this plan is the walking points scheme. This programme encourages participants to walk by providing them with pedometers, and offering prizes as a reward. Participants are allocated walking points based on the number of steps they take per day, which increase their chances of winning gift certificates to spend in one of 1 000 local participating shops.

So far, about 295 000 people out of a population of 3.7 million have enrolled in the scheme. The project is a public-private partnership with the support of the central government. The yearly cost is JPY 300 million (EUR 2.3 million), of which the Ministry of Health contributes JPY 10 million, and the Ministry of Education JPY 50 million.

While these interventions appear successful, and their design evidence-based, it is unclear whether similar examples are widely present across Japan or if the situation is more heterogeneous. It is important to ensure that all regions receive high-quality public health promotion. In addition, local capacity for planning, implementation and monitoring may not be available everywhere. The National Institute of Public Health offers a short training for those involved in monitoring local plans but this is a new task for local public servants and many lack the relevant skills.

2.3.4. Companies play an important part in prevention through workplace-based interventions, though their impact is difficult to measure

Employers play an important role in Japan's public health system. They are closely involved in the provision of the health checks (see also chapter 3), and they are incentivised by the central and local government to put in place workplace-based health promotion programmes.

Workplace-based programmes are carried out in both public and private organisations on a voluntary basis. The main focus of many of these interventions is on diet and physical activity, smoking and mental wellbeing (e.g. decrease of working hours and increase in leave). Participation in workplace-based programmes for employees is usually not compulsory but coverage is reported to be very high, with virtually all employees participating.

Interventions vary across different employers, for example based on the number of employees (with larger employers implementing more comprehensive interventions), the type of working environment (e.g. whether there is a canteen) and other factors. However, a general pattern can be discerned. The interventions are a mix of actions targeting people at

high risk for NCDs, and those that apply to the entire employee population. The former are typically based on the health check-up programme, called *Tokutei kenshin*, which identifies individuals at high risk who are then followed by health professionals and receive specific advice. This is covered by the health insurance programme to which they are affiliated.

At the employee population-level a range of intervention have been implemented to make the workplace a healthier environment. Interventions focusing on obesity include canteen menu labelling with calories, healthier food options in canteens, pedometers, discouraging the use of cars for short trips, and supporting the use of public transportation. To reduce smoking, some companies have restricted smoking on premises or banned smoking during working hours, and worked with insurers to provide educational material on quitting smoking. To increase physical inactivity, workplace-based interventions can provide standing desks, create places to stretch, decrease the number of printers so that employees have to walk more to get their printed material, and provide places for standing meetings.

To encourage employees to participate, some companies set targets and develop scoring systems (see also Box 2.2). For example, employees may earn points for walking a minimum number of steps, going a number of days without alcohol in a week, or reaching a certain BMI threshold. These points can then be converted into money, leave or other benefits. To encourage action and peer-support, some activities are conducted in teams, with additional benefits if all the members of the team reach a certain threshold.

The impact of these interventions is hard to measure on physiological dimensions (e.g. BMI) and reported evidence on the effectiveness of these interventions is mixed. Some companies report positive changes as well as savings in health care expenditure, physiological risk factors or reduction in absenteeism. But many others did not manage to identify any positive trend.

It is possible however that no effect is observed even if the intervention is effective. First, analyses are often crude and simply look at overall scores, without taking into account underlying trends (e.g. ageing of employees, new employees joining the company). Second, interventions need time to produce positive effects and the follow-up is often relatively shortly after the beginning of the intervention. Third, it may simply be that the effect of the intervention is watered down by an external environment that does not support healthy behaviours (e.g. exposure to second hand smoking not in workplace but in other environments).

In general, while workplace-based interventions can contribute to creating a health promoting environment, they have limitations. These actions are relatively easy to implement in the central offices and headquarters, but local offices are unlikely to be covered by the same services, particularly for actions entailing significant structural changes. Moreover, in the mid- and long-term, these programmes become routine and people lose interest. There is a need for continuous innovation and evaluation to ensure the programme remains appealing to employees and effective. To maintain interest in the programme, the interventions can be further tailored to specific individuals based on their risk factors or attitudes, or by increasing health literacy among employees.

From a public health point of view, workplace-based interventions only cover a limited share of the population, and only during working hours. Their impact on overall population health is therefore limited, and other interventions are needed to target children and elderly, and to improve the environment outside of work. Moreover, it is unclear how many workplaces have health promotion programmes.

Box 2.2. Example of a workplace-based intervention

The IT company SCSK has developed an extensive workplace-based programme to improve the health and wellbeing of its employees.

One element is the Mileage Program, through which employees collect mileage points for healthy habits, including having breakfast, walking 10 000 steps per day, brushing their teeth twice daily and smoking cessation. The mileage points are accumulated over one year, both for the individual and for teams, and can be exchanged for incentive payments. Bonus payments are awarded to employees who achieve improvements in their BMI, blood lipids and glucose level, blood pressure or liver function as measured during the health checks. In total, employees can earn up to JPY 130 000 (EUR 1 000).

In addition to this scheme, the company has also changed the physical environment to encourage healthy behaviour. Smoking at work was prohibited in 2013. A relaxing room is available where employees can receive massage at reasonable price, during office hours. In addition, several sports and cultural activities are offered, including football, tennis, golf and music.

To improve the mental wellbeing of employees and their families, the company has taken steps to improve working conditions. It has introduced policies increasing leave, teleworking, and supporting childcare. Every Wednesday is "no extra work day", when no overtime is worked and employees leave on time.

A limitation of the programme is that the results of the employees are self-reported, with no clear way of cross-checking. In addition, over time there has been stagnation in the results, and the company is reviewing the programme.

Source: SCSK Corporation (2016[17]), CSR Activities: Health and Productivity Management, https://www.scsk.jp/corp_en/csr/labor/health.html.

2.3.5. Nutritional education and healthy meals are a central part of the curriculum in Japanese schools

The Ministry of Education is in charge of school-based interventions to promote healthy lifestyles among children. School lunches are a central part of health promotion in Japanese schools. Japan has a long history of school lunches, with the 1954 School Lunch Act making them an official part of the education system (Tanaka and Miyoshi, 2012[20]). In 2014, 99% of elementary schools and 85% of junior high schools provided school meals, covering a total of nearly 10 million children (Yotova, 2016[21]). The average monthly fee per student is JPY 4 300-4 900 but there are subsidies for children whose parents cannot afford this (Asakura and Sasaki, 2017[22]).

The Ministry of Education has set specific nutritional standards for school lunches, requiring them to provide, amongst other, 33% of a child's daily energy, 50% of daily magnesium and 33% of daily zinc requirement, and limit fat to 25%-30% of total energy (Ministry of Education Culture Sports Science and Technology, 2013[23]). Based on these requirements, lunch staff and nutrition teachers develop detailed meal plans using fresh ingredients, in some cases with a focus on locally produced products.

A diet record study among students found that, compared to their weekend meals, school meals reduced deficiencies in almost all of 60 different nutrients (Asakura and Sasaki, 2017[22]). Another study found that while overall fruit and vegetable intake was lower in children with a lower socio-economic status (SES), fruit and vegetable intake from school lunch did not vary by SES – indicating that school lunches help reduce SES inequalities (Yamaguchi, Kondo and Hashimoto, 2018[24]). Moreover, the school lunch coverage rate in junior high schools at prefecture level could also be linked a lower prevalence of overweight and obesity among boys (Miyawaki, Lee and Kobayashi, 2018[25]). For girls no significant effects were found.

In addition to providing a healthy meal, school lunches also play an important part in food and nutrition education, or Shokuiku (see also Box 2.3). Shokuiku is an official part of the National Curriculum Standard, which sets the objectives for the material taught in schools. The 2008 School Lunch Act revision included nutritional education as a key aim of the school lunch programme (Tanaka and Miyoshi, 2012[20]). For example, students can learn about cooking and hygiene by helping to prepare the dishes, serving them and assisting in clean up. Teachers are encouraged to discuss the meal, its ingredients and their origins with their students (Ministry of Education, 2010[26]) (Tanaka and Miyoshi, 2012[20]).

Further education on nutrition and healthy eating in schools is provided by specially trained nutrition teachers (Ministry of Education,(n.d.)[27]). These teachers coordinate the food and nutrition education activities, including developing school lunch menus and related Shokuiku materials, teaching during lunchtime or in dedicated home economics classes, organising trips to local farms and other cross-curricular activities. In 2013, 22% of schools had a trained nutrition teacher (Yotova, 2016[21]).

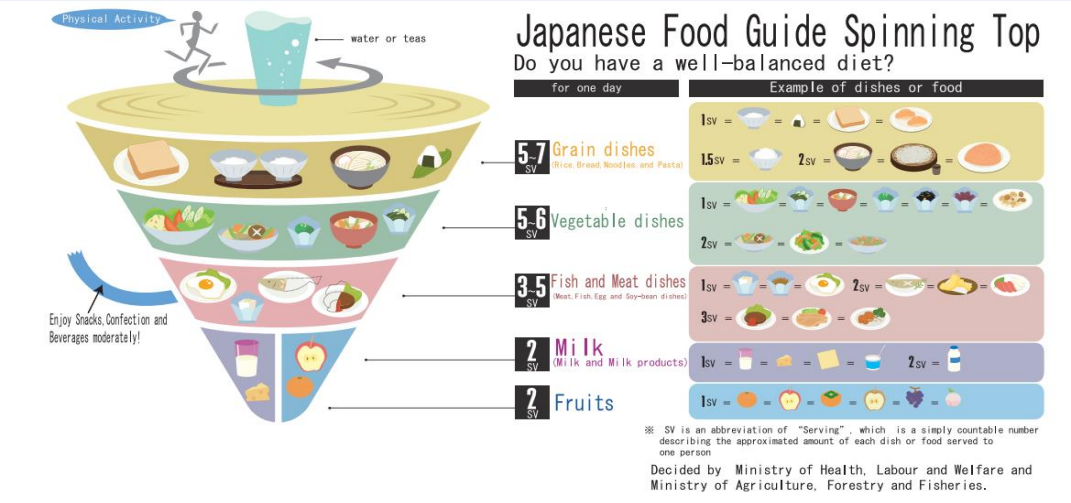
Box 2.3. Shokuiku

Food and nutrition education, or Shokuiku, is an important part of the Japanese school curriculum. However, it is not limited to school-aged children. The Basic Law on Shokuiku, implemented by the Cabinet Office in 2005, sets out a national movement to make nutritional education a part of every person's life.

To implement this national movement, a Basic Program for Shokuiku Promotion was developed. This lays out the responsibilities of a wide range of players, including schools, local governments and businesses: schools are required to make Shokuiku an integral part of the curriculum; farmers and fisheries are encouraged to collaborate with educators and provide opportunities for visits; food producers are asked to contribute by organising cooking classes or providing Shokuiku information in relation to their products. Similar to the HJ21 approach, prefectures, municipalities, towns and communities are encouraged to develop their own local Shokuiku promotion programmes.

To guide the content of Shokuiku, the Ministries of Education, Culture, Sports, Science and Technology (MEXT), of Health, Labour and Welfare (MHLW) and of Agriculture Forestry and Fisheries (MAFF) together implemented the new Dietary Guidelines for Japanese in 2016. The original guidelines consisted of 10 basic suggestions (e.g. "assess your daily eating" and "avoid too much fat and salt"). To make the guidelines more specific and easier to use, the Japanese Food Guide Spinning Top was developed: an inverted pyramid demonstrating the composition of a balanced diet.

Figure 2.8. Japanese Food Guide Spinning Top



Source: Ministry of Agriculture Forestry and Fisheries, Promotion of Shokuiku (Food and nutrition education), http://www.maff.go.jp/e/policies/tech_res/shokuiku.html; Yotova (2016[21]), 'Right' food, 'Responsible' citizens: State-promoted food education and a food dilemma in Japan, https://doi.org/10.1111/apv.12135.

To increase physical activity in children, schools are required to provide a minimum number of hours of physical education (PE) classes, as defined in the National Curriculum Standard. All students attend PE class about twice a week in the school term and learn sports skills and rules including traditional martial arts and dance (Tanaka et al., 2016[28]). The Ministry of Education also sets guidelines for school infrastructure and equipment for PE, as part of the very detailed school facilities requirements (Ministry of Education, 2018[29]).

Japan also has a long history of promoting walking to school. The School Education Act of 1953 requires that elementary schools are available within 4 kilometres of each child (Mori, Armada and Willcox, 2012[30]). Moreover, many municipal boards of education have made walking to school mandatory if the students live within a specified walking distance or time from school. Schools are encouraged to invest in safety management, such as organising group walking, inspecting and mapping safe routes, and patrolling by volunteers. A survey by the Ministry of Education in 2008 indicated that 95% of elementary school children and 69% of junior high school students regularly walked to school (Active Healthy Kids Japan, 2016[31]).

In addition to diet and physical activity, mental health issues are also addressed in Japanese schools. For example, psychiatrists or pediatricians are invited to classrooms as guest speakers, to educate the students during their Special Activities period, or "Tokkatsu".

2.4. Several population-level policies are in place to support the prevention strategy

The HJ21 strategy forms the basis of many local initiatives and programmes to improve population health. In addition to these activities, Japan has a number of population-level policies that contribute to creating a health-promoting environment.

2.4.1. To reduce smoking rates, Japan is trying to implement a ban on smoking in public places – but tobacco marketing is not yet being addresses

Smoking cessation is a part of the HJ21 framework and one of the four pillars of the Smart Life campaign, and there are examples of local programmes that promote cessation and provide support to smokers. In addition to these interventions targeted at individuals, population-level policies can play an important part to reduce the impact of tobacco on public health.

Japan is a signatory of the WHO Framework Convention on Tobacco Control (FCTC), and has implemented some of the Convention's recommended interventions on tobacco control, including taxes, health warning labelling, and public health campaigns. Currently, the total tax on cigarettes, at 63.1%, is slightly below the WHO recommended level of 75% (World Health Organization, 2017[32]) (World Health Organization, 2015[33]). However, the tobacco excise tax rate is set to increase with JPY 1 per cigarette in October 2018, 2020 and 2021, increasing the excise tax by 25% from 12.2 to JPY 15.2 per cigarette (Ministry of Finance, 2018[34]). This will bring the tax rate in line with recommended levels, though the exact level or taxation will depend on consumption tax and retail price.

Japan has recently implemented laws to reduce the impact of passive smoking, by restricting smoking in public places. In 2017, the Ministry of Health proposed a bill that would make all indoor public places smoke-free. Despite strong support from the general public, patient groups, academia, and health-care professionals, including the Japan Medical Association (Tsugawa et al., 2017[35]), the bill did not pass, even after amendments were suggested to exempt smaller establishments. Reasons cited for the bill's defeat were concerns for bar and restaurant revenue, the perceived small health impact of second-hand smoke, and the perception of punishing smokers.

A revised bill was accepted in Japan's National Diet in July 2018. This bill extends the exemption from establishments smaller than $30m^2$ to those smaller than $100m^2$ (though with a caveat that this is a temporary measure and regulation may become stricter in the future). These smaller establishments where smoking is not banned are required to post a sign warning stating that they allow smoking, and people under the age of 20 are not allowed to enter those establishments. The ban on public facilities was also relaxed in the revision: although smoking in indoor public places is banned, smoking in outdoor space on public premises is allowed as long as the necessary measures are taken to contain smoke. The measures will be fully enforced by April 2020, ahead of the 2020 Tokyo Olympic and Paralympic Games. Currently, there is already local regulation in place, for example a ban on smoking in public places in the Tokyo prefecture, and a ban on smoking in the street in certain areas of Tokyo and Kyoto.

Japan currently has no comprehensive ban on tobacco advertising, promotion and sponsorship, as recommended in the FTCT (World Health Organization, 2017[32]). There are voluntary restraints in place, set by the Tobacco Institute of Japan, a trade organisation with directors from all the major tobacco companies. These guidelines discourage the use of TV, radio, cinema, internet sites (unless it is technically possible to target adults only) and outdoor advertising (except at places were tobacco is sold); state

that advertisements cannot be appealing to minors, and that advertisements and packaging need to include health warnings (Tobacco Institute of Japan,(n.d.)[36]). However, the evidence suggests that partial and voluntary bans have little to no effect on smoking prevalence (World Health Organization, 2017[37]). Moreover, it is unclear whether these restrictions are being violated with recent e-cigarette advertising (see Box 2.4).

All tobacco products in Japan are required to carry a written health warning covering 30% of the package display area. While this is a commendable policy, it should be noted that it is less than the WHO recommendation of covering at least half of the package (World Health Organization, 2017[37]). In addition, Japan allows packages to carry marketing terms such as "low tar" or "light", provided they also include a statement that the health impacts are similar to other tobacco problems.

Box 2.4. E-cigarettes in Japan

E-cigarettes, or electronic nicotine delivery systems (ENDS), are devices that deliver nicotine through a nicotine-infused vapour, or by heating tobacco rather than burning it (WHO, 2015[38]). Compared to traditional burning cigarettes, e-cigarettes can act as a lower risk substitute – though the exact level of harm reduction is unknown (Wilson et al., 2017[39]). Several major tobacco companies are now also producing and selling e-cigarettes (Pisinger and Døssing, 2014[40]).

Japan is a major market for heat-not-burn e-cigarettes (Reuters, 2016[41]) (Bloomberg, 2018[42]). While in many other countries the most popular e-cigarettes use a nicotine-infused liquid, this is illegal to sell in Japan. Instead, in Japan e-cigarettes work by heating tobacco to create aerosols (though no smoke), or by vaporising a non-nicotine liquid, and passing this through a capsule containing granulated tobacco. It is estimated that tobacco-heating products reached around 20% of the country's entire tobacco market by the beginning of 2018 (Bloomberg, 2018[42]) (Financial Times, 2018[43]).

As these products are relatively new, their regulation remains largely unclear. As a result, e-cigarettes are widely marketed on television, through sponsorship and celebrity endorsement, on social networks and other websites. Moreover, these advertisements frequently include unsubstantiated or overstated claims of safety and cessation (World Health Organization, 2014[44]).

A marketing push has also been observed in Japan, where traditional tobacco companies are rushing to claim their share of the e-cigarette market (Financial Times, 2018[43]). One of these advertisements promotes e-cigarettes as a way for smokers and non-smokers to live together in harmony (Campaign Asia, 2018[45]). E-cigarettes are provided exemptions under the new ban on smoking in public places (The Japan Times, 2018[46]), and tobacco companies are using this as an opportunity to market their e-cigarette products in places where normal smoking is not allowed.

There are several reasons to introduce regulation on e-cigarettes. Firstly, while they are thought to be less harmful than traditional cigarettes, they are not harm-free (Pisinger and Døssing, 2014[40]). They may therefore be helpful to current smokers to reduce their risk, but they would increase the health risk to never-smokers and ex-smokers. The advertising of e-cigarettes has been shown to increase e-cigarette use susceptibility among non-smoking young adults (Pokhrel et al., 2018[47]). Secondly, smoking e-cigarettes looks similar to smoking normal cigarettes, and it can therefore renormalise all types of smoking (Wilson et al., 2017[39]) (World Health Organization, 2014[44]). Thirdly, there is evidence suggesting that second-hand exposure to e-cigarettes can have adverse health effects (Hess, Lachireddy and Capon, 2016[48]).

2.4.2. New food labelling regulation has been introduced to improve nutritional information

In 2015, Japan introduced the Food Labelling Act, which changed the requirements for nutrition labels on food products. The Act requires food producers to provide nutritional information, including energy, protein, fat, carbohydrate, and sodium (as salt equivalent), on processed foods and additives sold in containers (Consumer Affairs Agency, 2013[49]). This practice had previously been performed at the producers' discretion.

In addition, a new health claim category was established (USDA Foreign Agriculture Service, 2015[50]). A health claim is any statement about a relationship between food and health. In Japan, there are now three categories of health claims that can be printed on food product labels. "Foods for Specified Health Uses" are food products that can be labelled as achieving specified health effects. The government reviews and evaluates their safety and efficacy based on scientific evidence, and often clinical trials are required. "Foods with Nutrient Function Claims" are food products that contain a nutrient (for example a vitamin) with a preapproved nutrient function claim. These products can be labelled without submitting a notification or application to the government. The newest category is "Foods with Function Claims", which can be used on the labels of food products that maintain and promote health in individuals who are not suffering from disease. The producers of these products must bear the responsibilities for such claims, and submit information on the safety and effectiveness of the product to the Secretary-General of the Consumer Affairs Agency before the product is marketed. All of these labels must to be accompanied by a statement saying "Maintain a balanced diet including a staple food, a main dish and side dishes".

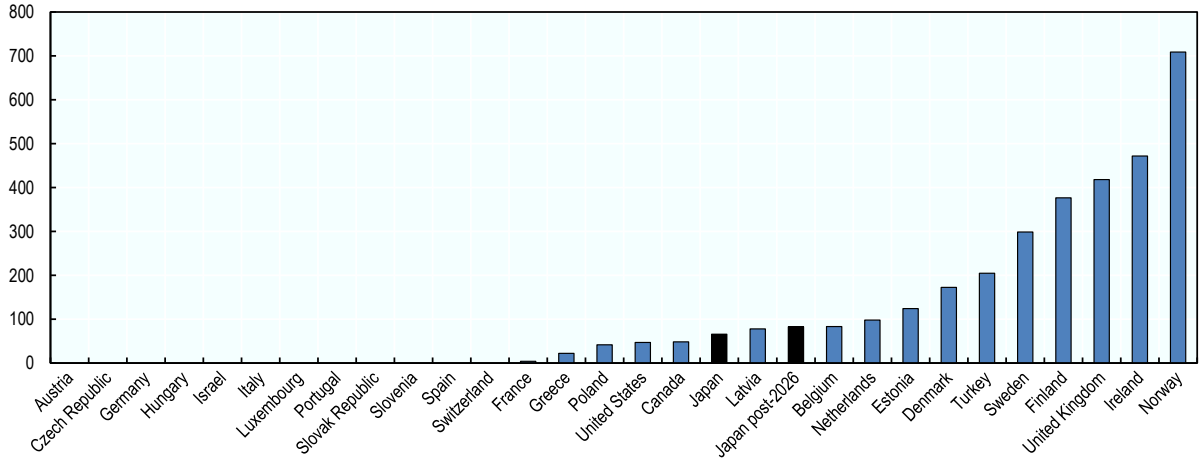
2.4.3. Japan is reforming its tax rate on alcohol products and has already implemented strict drink-driving regulation

Japan has implemented a number of population-level alcohol prevention policies, including taxation and a minimum age for alcohol consumption (set at 20 years) (Sassi, 2015[51]). The national alcohol tax law was reformed in 2017, setting out three changes over the next ten years (USDA Foreign Agricultural Service, 2018[52]). This staged approach will eventually equalise the tax rates for wine and sake (increasing tax rates for the former, reducing tax rates for the latter), as well as the tax rates for malt based beer and beer-flavoured liquors (decreasing the tax on the former and increase tax on the latter). One of the impacts of having the same rate of tax for alcohol products with a similar production process and consumption pattern is that it may prevent consumers from switching to a lower taxed product. However, the main reason for the change in tax rates is to improve fairness in tax burden among different alcohol types.

The impact of this reform on the overall taxation level of alcohol is variable by product. For a standard, high malt beer, the tax on a 35cl can will decrease from JPY 77.00 to JPY 54.25, while a standard 750ml bottle of wine will see its JPY 60 tax increase to JPY 75 (USDA Foreign Agricultural Service, 2018[52]). The tax on a 750ml bottle of sake, which is currently JPY 90, will be reduced to equal the rate of wine at JPY 75. However, these changes are relatively small compared to the international range of taxation rates (see Figure 2.9).

Figure 2.9. Japan's excise tax on wine compared to other OECD countries

Excise tax per hectolitre on still wine in USD, at 1 January 2016

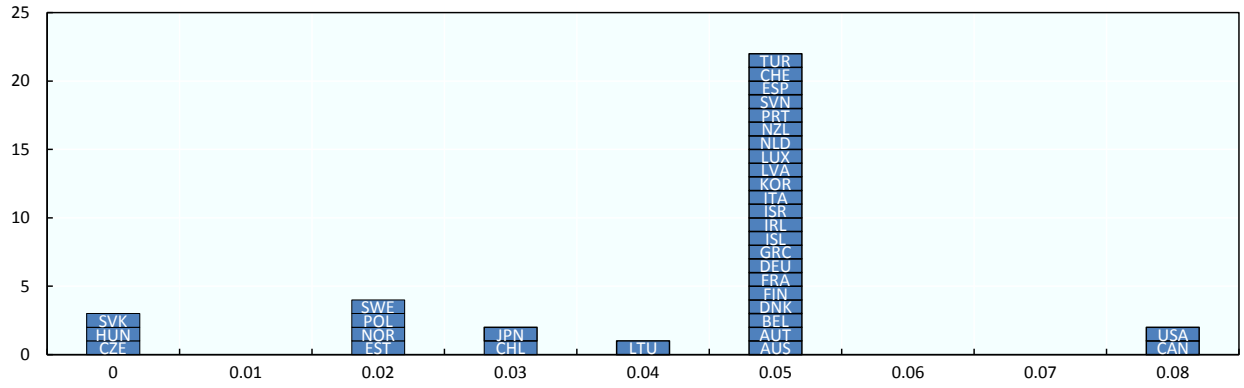


Source: OECD Tax Database, https://doi.org/10.1787/tax-data-en.

In 2013, the Basic Law on Measures Against Health Problems Caused by Alcohol Intake was enacted, which requires national and local government to implement measures to reduce the impact of alcohol consumption. However, there is little guidance or oversight as to what this action should entail. The Law also established a yearly Alcohol Problems Awareness week, to be held every November.

Japan has enforced strong policy actions to decrease the negative impact of harmful patterns of drinking on others. Since 2000, Japan has implemented successive reforms in its policies on drinking and driving, lowering the legal blood alcohol concentration limit to 0.3 mg/1 ml (compared to 0.5 mg/1 ml in most OECD countries, see Figure 2.10) and increasing the potential fine for drink-driving (Sassi, 2015[51]). People found to be driving while intoxicated can now be fined up to JPY 500 000 million or imprisoned for up to three years (Nagata et al., 2008[53]) (Desapriya et al., 2007[54]). The measures appear to have been successful: one study found that alcohol-related traffic fatalities per billion kilometres driven decreased by 38% in the post-law period (Nagata et al., 2008[53]).

Figure 2.10. National maximum legal blood alcohol concentration (%) for the general population, OECD countries and key partners



Source: World Health Organization (2018[55]), WHO Global Information System on Alcohol and Health, http://apps.who.int/gho/data/node.main.GISAH?lang=en.

2.5. There are a number of steps Japan can take to advance its primary prevention strategy

2.5.1. The HJ21 strategy is ambitious, but would benefit from clearer priorities

The HJ21 strategy sets out an ambitious framework to improve the health of the Japanese population. In 53 targets, it covers a wide range of risk factors, diseases, population groups and outcomes. By setting and monitoring these targets, Japan has ensured that its efforts in prevention are measurable and that the HJ21 strategy can be evaluated.

However, the large number of targets and areas covered means that there are no clear priorities set by the central government. Local governments and other organisations can focus on any of the wide range of issues in the framework. While this allows initiatives to adapt to local characteristics, it can also lead to a dispersion of energy and resources.

It could be preferable to identify a set of priorities where intervention is most needed and where effective interventions are available (World Health Organization, 2018[56]). The successes in these areas can then be used to stimulate further action and expand to a more comprehensive strategy.

2.5.2. Systems need to be put in place to ensure quality prevention programmes across the entire population

The bottom-up approach of the HJ21 strategy relies on local actors to design and implement prevention programmes. This may result in interventions of varying quality, creating patchy population coverage and decreasing the effectiveness of the overall strategy. In addition, it may exacerbate existing inequalities between prefectures. Japan should consider implementing mechanisms and systems to ensure all areas are provided with high-quality prevention programmes, and that successful interventions are disseminated nationally.

Currently, the main mechanism for the central government to encourage local prevention programmes is through awards. However, this focuses attention only on those organisations or local governments that are performing well. Japan could consider combine awards for high-quality interventions with other actions, for example the

creation of guidelines with suggested minimum requirements for actions, or the introduction of positive/negative incentives to ensure a minimum level of quality. Underperforming regions could also be provided with dedicated support, advice or funding. This would allow the Ministry to take a more proactive role, and ensure quality interventions are available in all regions and organisations.

In addition, local interventions which have been proven to be successful need to be expanded to other populations. Improving vertical communication between the central and local governments, and horizontal communication between local governments, could encourage the sharing of experiences and insights. To further facilitate the dissemination and uptake of best practices, the Ministry could set up a repository and actively share best practice examples (see Box 2.5).

Box 2.5. Approaches to facilitate the dissemination and uptake of best practice initiatives

Providing guidelines and case studies: *The EU Physical Activity Guidelines*

The dissemination of best practice can be supported by creating and publishing guidelines and case study reviews. The EU Working Group "Sport & Health" has published a report which sets guidelines for member states to implement policies to promote increased physical activity. The handbook includes examples of good practice from various countries, as well as general advice on practical issues such as setting targets, involving different sectors, allocating resources and communication. Overall, 41 guidelines are provided, such as "Public authorities should encourage health insurance schemes to become a main actor in the promotion of physical activity" and "[…] authorities at national, regional and local levels should plan and create appropriate infrastructure to allow citizens to cycle to school and to work" (EU Working Group Sport & Health, 2008[57])

Supporting individuals to drive innovation: *The NHS Innovation Accelerator*

The uptake of innovation requires committed individuals who can champion the initiative and drive it forward. To speed up the adoption of innovative practices across the National Health Service (NHS) in England, the NHS Innovation Accelerator was established in 2015. This organisation facilitates the systematic uptake of new initiatives across the health system by supporting individuals ("fellows") who have a high impact, evidence-based innovation. The fellows receive mentorship, bursaries, networking opportunities and workshops to help them disseminate and implement their innovation in the NHS (NHS Innovation Accelerator, 2017[58])

Peer support and collaboration through networking: *WHO European Healthy Cities Network*

Creating networking opportunities allows different initiatives to learn from each other and collaborate. To provide cities working to improve the health of their population with examples and experiences from other cities, the WHO has established the WHO Health Cities Network. This initiative brings together city officials and other municipal health leaders from different countries, who exchange ideas, lessons learned and practical solutions. Participants submit annual reports to contribute to a growing body of evidence. It also provides an opportunity for collaboration, through the Healthy City marketplace where cities can post opportunities and find partners for multi-city initiatives (World Health Organization, 2018[59]).

2.5.3. Additional population-level policies, following recommended best practice, can help create a health-promoting environment that supports the HJ21 achievements

The HJ21 framework, together with the Smart Life and the Certified HPM Organisations Recognition programme, have resulted in a wide range of local health promotion initiatives, in communities, workplaces and schools. However, there has been less focus on population-wide strategies to improve public health.

There are some example of population-based strategies implemented by local authorities and companies, for example the smoking ban in Tokyo's street. However, leaving these decisions to local governments or single entities is likely to result in a haphazard approach.

The relative absence of national, population-level interventions can have a detrimental effect on the creation of an environment conducive of a healthy lifestyle – a central aim of HJ21 – and may hinder the positive effects of interventions at the local level. Based on our analyses and international evidence, population-level interventions are cheap and highly cost-effective (and frequently cost-saving) (Chokshi and Farley, 2012[60]; Sassi, 2015[51]; World Health Organization, 2011[61]; World Health Organization, 2003[62]; World Health Organization, 2017[63]).

To strengthen Japan's primary prevention programme, and support healthier lifestyles and healthy aging, Japan could take a more robust approach to three main risk factors: smoking, diet, and alcohol consumption.

2.5.4. To achieve the HJ21 targets on tobacco, Japan could consider implementing population-level policies in line with international conventions.

Japan has implemented a number of tobacco policies in line with the FCTC, but there remain areas where action can be taken.

While it is encouraging that a bill on passive smoking has been passed, the exemptions to the smoking ban mean that only approximately 45% of eating and drinking establishments is covered by the ban (Ministry of Health Labour and Welfare, 2018[64]). In comparison, a ban on smoking in public places in the Tokyo prefecture, which will come into effect at the same time as the national ban, covers around 84% of restaurants (The Japan Times, 2018[65]). Japan should consider increasing the coverage of the ban, to ensure comprehensive protection from second-hand smoke.

In addition to the public health benefits, increasing the coverage of the ban may also contribute to its acceptability. In the Netherlands, an exemption was put in place for hospitality venues smaller than 70m^2 without employees in 2012 (Hummel et al., 2017[66]). However, this decision was later overturned, and a full ban came into force in 2014. A study looking at the social acceptability of indoors smoking found that the acceptability of smoking in bars remained higher than for other venues, and suggested that this is due to the disrupted implementation of the ban (Hummel et al., 2017[66]). In Switzerland, the regions can decide whether to tighten the national regulation, which allows smoking in bars and restaurants up to 80m^2. In the regions where comprehensive bans were implemented, the acceptance of the ban in both smokers and non-smokers increased after implementation, while in two regions with incomplete smoking bans the acceptance score decreased (Rajkumar et al., 2015[67]).

Japan only has a partial, voluntary tobacco marketing code, which was set by the industry. Partial bans are less effective as the tobacco industry is likely to change focus and reallocate marketing funding to permitted activities. Voluntary bans often focus on advertising by the manufacturers, ignoring the highly effective point-of-sale advertising in retail stores. Comprehensive advertising regulation needs to cover all types of marketing, including direct advertising in all types of mass media, online, promotions and sponsorship, and be strictly enforced (World Health Organization, 2017[37]).

All tobacco products in Japan are required to carry a written health warning, covering 30% of the package display area. To make these warning labels more effective, Japan could consider including graphics or images, and making them cover at least half of the package (World Health Organization, 2017[37]). Japan should also consider tightening regulation around the use of deceptive terms, such as "low tar" or "light". While these claims are prohibited in main countries and contrary to the FCTC, in Japan they are allowed provided they include a statement that the health impacts are similar to other tobacco problems. Japan could also consider other prevention policies that are in line with the FTCT, such as plain packaging (World Health Organization, 2008[68]) and banning flavoured cigarettes (World Health Organization, 2014[69]).

To achieve the targets set in HJ21 and reduce smoking prevalence from 19.5% in 2010 to 12% in 2020, Japan should consider implementing population-level measures in line with the FCTC, including comprehensive indoor smoking bans, regulation on tobacco product advertising, and effective labelling and packaging. While the opposition to such regulation is strong, recent successes in tobacco legislation in other OECD countries shows that this can be overcome (see Box 2.6).

Box 2.6. Recent successes in tobacco legislation

While tobacco legislation is often met with strong opposition from producers, there have been a number of recent litigation successes against this opposition:

- **Plain packaging**: Australia (2012), the United Kingdom (2016) and France (2016) all won legal challenges brought by tobacco companies against plain packaging proposals on the basis of intellectual property arguments. In Australia it was judged that there was no breach of property rights since neither the government or a third party profited; in France any infringement was considered justified by the public health objective; and in the United Kingdom the ban was considered not an expropriation of property rights but a curtailment of use, introduced for legitimate public interest reasons.
- **Display ban**: Norway's ban on displaying tobacco products at retail establishments was upheld in court in 2012 after a challenge from a tobacco producer, as the ban was judged to help denormalise tobacco use.

In other cases, pressures from NGOs and other civil groups have led to the enforcement of the FCTC:

- **Smoke-free places**: In 2013 the court in New Zealand upheld a challenge from the Cancer Society, which disagreed with an exception in the public places smoking ban for casinos. The court found that the reasoning behind the exception was flawed and ordered the Ministry to review its policy. In the Netherlands, the Dutch Non-Smokers Association CAN (Club of Active Non-Smokers) challenged

the exception for small cafés in court in 2014. The challenge was upheld as a violation of the FCTC.

Source: Tobacco Control Laws (2018[70]), Major Tobacco Control Litigation Victories https://www.tobaccocontrollaws.org/litigation/major_litigation_decisions.

2.5.5. Recent reform on food labelling could be expanded to promote healthier food choices in combination with other population-level policies

The introduction of the new Food Labelling Act is an important step to creating a health promoting environment, by enabling people to make informed and healthy choices. To take this even further, Japan could consider implementing front-of-pack labels. Evidence shows that easy-to-understand interpretative labels, printed clearly on the front of the package, prompt a greater response rate from consumers in terms of food and diet choices than detailed back-of-package nutrient lists (Cecchini and Warin, 2016[71]). In addition to informing consumers, labelling schemes have also been shown to encourage producers to reformulate their products (Thomson et al., 2016[72]; Vyth et al., 2010[73]). Different approaches to food labels can be taken (see Box 2.7). Labelling initiatives could also be expanded to include restaurants and other catering businesses.

Box 2.7. Front-of-package food labels

Labels to promote healthy food products

Many countries have introduced voluntary labelling schemes for producers of healthy or healthier products (World Cancer Research Fund International, 2017[74]) The label provides at-a-glance information for consumers, as well as an incentive for producers to formulate healthier products (Vyth et al., 2010[73]). It can apply to products that are considered healthy (e.g. where the nutrient content meets specific requirements) or healthier than other products of a similar type (e.g. products with a significant reduction in salt content).

One example is the "Keyhole" logo, which has been used since 2009 in Denmark, Norway and Sweden, and more recently in Iceland and Lithuania (OECD, 2017[75]). The criteria for food to be allowed to carry the logo are set by the national authorities, and favour food lower in fat, sugar or salt, or higher in healthy fat, fibre or wholegrain, compared to other food products in the same category (Swedish National Food Agency, 2013[76]). This allows consumers to select the healthiest option within a category, for example meat, oils or ready meals. Soft drinks, candy and cakes, or foods with artificial sweeteners, are not eligible for the label. The use of the logo by food producers is voluntary and free of charge.

Figure 2.11. The Keyhole logo

Source: Swedish National Food Agency (2013[76]), Nordic keyhole: Experience and challenges, http://www.who.int/nutrition/events/2013_FAO_WHO_workshop_frontofpack_nutritionlabelling_presentation_Sjolin.pdf.

Labels to warn for unhealthy food products

Some countries have introduced warning labels for foods high in salt, sugar, fat or calories. Contrary to the voluntary healthy food labels, these types of schemes need to be mandated. Finland introduced a mandatory label on foods high in salt in 1993, and has since continued to lower the cut-off limit for the label (Pietinen, 2009[77]). Different limits are set for specific food categories, such as bread, crisp bread, breakfast cereals and meat.

In 2016, Chile introduced a mandatory food labelling system that uses four black labels to indicate whether a certain foodstuff is high in calories, salt, sugar or fat (Figure 2.12) (Ramirez, Sternsdorff and Pastor, 2016[78]). The thresholds for the labels are universal rather than per food category. They are being introduced in a phased design, with increasingly strict targets set at 24 and 36 months after implementation.

Figure 2.12. Chile's food labels

Source: Chile Ministry of Health.

Labels to summarise the overall nutritional profile of food products

In addition to warning and endorsement labels, some countries have introduced front-of-pack labels that aim to describe the overall nutritional profile of a product in an easy-to-understand way. This can be done in a variety of ways. The United Kingdom introduced a "traffic light" system, where different nutrients are colour coded (Department of Health, 2016[79]). New Zealand and Australia use the Health Star Rating, which calculates an overall score (between 0.5 and 5 stars) based on the various nutrients in the product (Ministry for Primary Industries, 2017[80]). The French Nutriscore combines the two, by calculating an overall score (from A to E) which is reinforced by traffic light colours (Santé Publique France, 2017[81]). Participation in these schemes is voluntary.

Figure 2.13. Food labels describing overall nutrient profile

Source: Department of Health (2016[79]), Guide to creating a front of pack (FoP) nutrition label for pre-packed products sold through retail outlets, https://www.food.gov.uk/sites/default/files/multimedia/pdfs/pdf-ni/fop-guidance.pdf; Ministry for Primary Industries (2017[80]), How Health Star Ratings work, https://www.mpi.govt.nz/food-safety/whats-in-our-food/food-labelling/health-star-ratings/how-health-star-ratings-work/; Santé Publique France (2017[81]), Nutri-score: un nouveau logo nutritionnel apposé sur les produits alimentaires, http://santepubliquefrance.fr/Actualites/Nutri-score-un-nouveau-logo-nutritionnel-appose-sur-les-produits-alimentaires.

Japan could also implement policies that aim to improve diets by reducing consumption of unhealthy nutrients, for example sugar and trans-fat (World Health Organization, 2016[82]) (World Health Organization, 2018[83]). Both of these nutrients have been proven to contribute to the burden of chronic diseases, including cardiovascular diseases, obesity and diabetes (World Health Organization, 2018[83]) (Te Morenga, Mallard and Mann, 2012[84]) (Te Morenga et al., 2014[85]). OECD countries are increasingly using actions to limit consumption of specific nutrients, by regulating their use or making their use economically less attractive, and by providing information to the public through mass media campaigns and labelling.

Currently the Japanese government works with businesses on a voluntary basis to reduce trans-fat levels in food, but it could consider implementing legislative bans, as has been done in many other countries and is recommended by the WHO (World Health Organization, 2018[83]). Denmark for example banned industrially produced trans-fats in food in 2003, setting a precedent for the rest of the European Union (World Health Organization, 2018[86]).

Japan could also consider implementing regulation around the marketing of unhealthy foods and drinks. Children are especially perceptive to advertisement, and restrictions on the marketing of products high in fat, sugar or salt to this population group is recommended (World Health Organization, 2010[87]). A large number of countries have implanted restrictions on the type, medium, content or time of food advertising (World Cancer Research Fund International, 2017[88]).

2.5.6. To reduce alcohol consumption, Japan could consider implementing cost-effective interventions such as marketing regulation

While Japan has adopted some important population-level measures to reduce alcohol consumption and its impact on society, there are a number of other effective and common interventions, such as warning labels and restrictions on advertising, that have not yet been implemented.

Almost all OECD countries have implemented some form of alcohol advertising regulation, considered by the World Health Organization as a "best buy" intervention (World Health Organization, 2014[89]). Japan is a notable exception, with no restrictions on any form of alcohol marketing. In particular advertising to children, which has been proven to be highly effective in increasing alcohol use, should be banned (Sassi, 2015[51]; Burton et al., 2017[90]; World Health Organization, 2011[61]).

Similar to tobacco advertising restrictions, regulation on the marketing of alcohol should be comprehensive, and include social media, internet, product placement and sponsorship (see Box 2.8). The latter is particularly pertinent when it comes to sponsoring sports events – which are associated with health, vitality and youth. For this reason, Japan might reconsider having the Tokyo 2020 Olympic and Paralympic games sponsored by an alcohol producer. Experience with the French Loi Evin, which banned sports advertising and sponsorship by drinks companies, has shown that major tournaments and championships can survive without funding from alcohol sponsors (Gornall, 2014[91]).

Box 2.8. Examples of alcohol marketing restrictions in OECD countries

France: The Loi Évin, introduced in 1991, controls both the content of alcohol advertisement (e.g. it must carry a health warning, and some messages can only be informative and cannot be crafted to appeal to young people) and the media on which it appears (e.g. alcohol cannot be advertised at sports or cultural events, and beverages with more than 1.2% alcohol content cannot be advertised on television or in cinemas). A 2008 amendment prohibited the use of intrusive or interstitial advertising online. However, in 2016 the law was amended to specify that oenological information and promotion of a certain region or terroir did not fall under the restrictions.

New Zealand: The Code for Advertising and Promotion of Alcohol pays particular attention to advertising aimed at young people, prohibiting advertisements that use heroes or heroines, patterns, designs or cartoons that appeal to the young; television advertising of alcohol between the hours of 6am and 8:30pm; and point-of-sale advertising or sponsorship at events where more than 25% of the expected audience is minors.

Norway: The Norwegian Alcohol Act is considered among the strictest alcohol advertising regulations of OECD countries. It prohibits any form of mass communication on alcohol, including print, films, radio, television and signs. It also prohibits the distribution of printed material or samples.

Israel: In 2014, a new law took effect in Israel that considerably limits alcohol marketing. It consist of four elements: a total ban on outdoor, print and television advertising aimed at children and adolescents; a ban on using alcohol products as gifts or prizes; limitations on the appearance, structure and quantity of printed and internet advertisements; and an obligatory warning notice on alcohol products and advertisements.

Source: Sassi (2015[51]), *Tackling Harmful Alcohol Use: Economics and Public Health Policy* https://doi.org/10.1787/9789264181069-en; Advertising Standards Authority (2017[92]), Code for Advertising and Promotion of Alcohol, http://www.asa.co.nz/codes/codes/code-for-advertising-and-promotion-of-alcohol/.

Warning labels on alcohol containers are a common approach to educate the public on the health impacts of alcohol, and enable them to make healthy choices (World Health Organization, 2017[93]). In Japan, labels on alcoholic beverages need to carry information on the alcohol content of the drink, but there is no requirement to provide a health warning.

France was the first European country to introduce mandatory warning labels, to inform consumers about the risks associated with alcohol consumption (World Health Organization, 2017[93]). Since 2007, all alcoholic beverages are required to include on their label either a written health warning: "consumption of alcoholic drinks during pregnancy, even in small amounts, may have serious consequences on the child's health"; or a pictogram.

In addition to restricting advertising and labelling alcohol products, Japan could consider implementing restrictions on the sales and availability of alcohol. Contrary to many other countries, in Japan there is currently no legislation restricting the sale of alcohol: it can be sold at any time, to anyone (including to intoxicated persons) and anywhere (including at petrol stations) (World Health Organization, 2014[94]). There exists strong evidence that regulating the availability of alcohol for sale can reduce alcohol consumption and alcohol-related harm (World Health Organization, 2011[61]).

2.6. Conclusion

Japan's changing lifestyles are creating a new challenge for prevention policies. The Health Japan 21 strategy provides a comprehensive action plan to tackle unhealthy behaviours and risk factors. It is based on a long-term vision, and benefits from specific and measurable targets. Within this national framework, interventions are tailored to the local level by allowing prefectures and municipalities to develop their own plans. In addition, schools and workplaces play an important part in promoting healthy lifestyles.

However, there are certain limitations to the HJ21 framework. The large number of targets may result in a dispersion of energy and a lack of clear priorities. In addition, there is a risk of fragmentation by allowing every local government and organisation to develop their own approach. The reliance on targets and positive incentives in the form of competitions, and the lack of oversight or strict guidelines, means that there is no check on minimum quality.

To reduce the current disparities between regions, it is important to ensure high quality interventions in all municipalities. To achieve this, performance awards could be combined with other – firmer – actions, such as guidelines on minimum requirements, or incentives to ensure a minimum level of quality. In addition, the Ministry promote the sharing of best practice examples. Improving horizontal and vertical communication between the central and local governments could contribute to more coordination between approaches as well as increased accountability.

A wide range of school-, workplace- and community-based interventions have been implemented, the majority of which focus on improving diets and physical activity. The school lunches provide a unique opportunity to give children a healthy meal, while educating them on nutrition and diet. Multi-sectoral community programmes bring together different stakeholders to create a health-promoting environment. Nevertheless, these programmes focus on a small section of the population.

Population-level interventions could help Japan achieve its HJ21 targets on tobacco, diet and physical activity, and alcohol – but they currently play a minor role in the overall prevention strategy. To create a health-promoting environment, and support the progress being made at the local level, the Ministry could consider implementing population level interventions including banning smoking in public places, regulating food, tobacco and alcohol advertising, restricting alcohol sales, and labelling of tobacco, alcohol and food products with warning labels.

Actions on alcohol seem to be of lower priority compared to obesity and tobacco. It is laudable that the Tokyo 2020 Olympic and Paralympic Games are used as a driver of change in tobacco regulation, and a similar approach should be considered to alcohol. There are a number of actions Japan can take to ensure its achievements at the local level are supported by a health-promoting environment.

Notes

[1] Defined as people drinking over 40 g of alcohol per day for men and 20 g for women

[2] Note that this includes 21 cases where metrics were included in multiple areas; the total number of unique metrics was 58.

References

Active Healthy Kids Japan (2016), *The 2016 Japan Report Card on Physical Activity for Children and Youth*, http://activekids.main.jp/wphp/wp-content/uploads/2017/03/Long_Eng.pdf (accessed on 31 May 2018). [31]

Advertising Standards Authority (2017), *Code for Advertising and Promotion of Alcohol*, http://www.asa.co.nz/codes/codes/code-for-advertising-and-promotion-of-alcohol/ (accessed on 16 August 2017). [92]

Asakura, K. and S. Sasaki (2017), "School lunches in Japan: their contribution to healthier nutrient intake among elementary-school and junior high-school children", *Public Health Nutrition*, Vol. 20/09, pp. 1523-1533, http://dx.doi.org/10.1017/S1368980017000374. [22]

Bloomberg (2018), *BAT Hit by Heated-Tobacco Slowdown as Japan Growth Stalls*, https://www.bloomberg.com/news/articles/2018-06-12/bat-set-back-by-heated-tobacco-slowdown-as-japan-growth-stalls (accessed on 17 October 2018). [42]

Burton, R. et al. (2017), "A rapid evidence review of the effectiveness and cost-effectiveness of alcohol control policies: an English perspective", *The Lancet*, Vol. 389/10078, pp. 1558-1580, http://dx.doi.org/10.1016/S0140-6736(16)32420-5. [90]

Campaign Asia (2018), *BAT takes to TV to reframe the image of smoking*, https://www.campaignasia.com/video/bat-takes-to-tv-to-reframe-the-image-of-smoking/446931 (accessed on 17 October 2018). [45]

Cecchini, M. and L. Warin (2016), "Impact of food labelling systems on food choices and eating behaviours: a systematic review and meta-analysis of randomized studies", *Obesity Reviews*, Vol. 17/3, pp. 201-210, http://dx.doi.org/10.1111/obr.12364. [71]

Chokshi, D. and T. Farley (2012), "The Cost-Effectiveness of Environmental Approaches to Disease Prevention", *New England Journal of Medicine*, Vol. 367/4, pp. 295-297, http://dx.doi.org/10.1056/NEJMp1206268. [60]

Consumer Affairs Agency (2013), *Outline of Food Labeling Law*, http://www.caa.go.jp/policies/policy/food_labeling/food_labeling_act/pdf/130621_gaiyo.pdf (accessed on 17 May 2018). [49]

de Onis, M. et al. (2007), "Development of a WHO growth reference for school-aged children and adolescents.", *Bulletin of the World Health Organization*, Vol. 85/9, pp. 660-7, http://www.ncbi.nlm.nih.gov/pubmed/18026621 (accessed on 02 March 2018). [9]

Department of Health (2016), *Guide to creating a front of pack (FoP) nutrition label for pre-packed products sold through retail outlets*, https://www.food.gov.uk/sites/default/files/multimedia/pdfs/pdf-ni/fop-guidance.pdf (accessed on 05 July 2017). [79]

Desapriya, E. et al. (2007), "Impact of lowering the legal blood alcohol concentration limit to 0.03 on male, female and teenage drivers involved alcohol-related crashes in Japan", *International Journal of Injury Control and Safety Promotion*, Vol. 14/3, pp. 181-187, http://dx.doi.org/10.1080/17457300701440634. [54]

e-Stat (2015), *School Health Statistics Survey*, https://www.e-stat.go.jp/dbview?sid=0003147100 (accessed on 31 May 2018). [10]

e-Stat (2014), *National Health and Nutrition Survey 2012*, https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&lid=000001118468 (accessed on 27 March 2018). [5]

EU Working Group Sport & Health (2008), *EU Physical Activity Guidelines: Recommended Policy Actions in Support of Health-Enhancing Physical Activity*, http://ec.europa.eu/assets/eac/sport/library/policy_documents/eu-physical-activity-guidelines-2008_en.pdf (accessed on 18 May 2018). [57]

Financial Times (2018), *Japan Tobacco: securing the brand in a disrupted market*, https://www.ft.com/content/1794a9a2-4d44-11e8-8a8e-22951a2d8493 (accessed on 18 October 2018). [43]

Fukuda, Y., K. Nakamura and T. Takano (2005), "Socioeconomic Pattern of Smoking in Japan: Income Inequality and Gender and Age Differences", *Annals of Epidemiology*, Vol. 15/5, pp. 365-372, http://dx.doi.org/10.1016/J.ANNEPIDEM.2004.09.003. [2]

Funatogawa, I. et al. (2009), "Changes in body mass index by birth cohort in Japanese adults: results from the National Nutrition Survey of Japan 1956-2005.", *International journal of epidemiology*, Vol. 38/1, pp. 83-92, http://dx.doi.org/10.1093/ije/dyn182. [6]

Gornall, J. (2014), "Festival of football or alcohol", *BMJ*, Vol. 348, http://www.bmj.com/bmj/section-pdf/758570?path=/bmj/348/7962/Feature.full.pdf (accessed on 26 January 2018). [91]

Hess, I., K. Lachireddy and A. Capon (2016), "A systematic review of the health risks from passive exposure to electronic cigarette vapour", *Public Health Research & Practice*, Vol. 26/2, http://dx.doi.org/10.17061/phrp2621617. [48]

Hummel, K. et al. (2017), "Social Acceptance of Smoking Restrictions During 10 Years of Policy Implementation, Reversal, and Reenactment in the Netherlands: Findings From a National Population Survey", *Nicotine & Tobacco Research*, Vol. 19/2, pp. 231-238, http://dx.doi.org/10.1093/ntr/ntw169. [66]

Kachi, Y., T. Otsuka and T. Kawada (2015), "Socioeconomic Status and Overweight: A Population-Based Cross-Sectional Study of Japanese Children and Adolescents.", *Journal of epidemiology*, Vol. 25/7, pp. 463-9, http://dx.doi.org/10.2188/jea.JE20140108. [7]

Kanchanachitra, C. and V. Tangcharoensathien (2017), "Health inequality across prefectures in Japan", *The Lancet*, Vol. 390/10101, pp. 1471-1473, http://dx.doi.org/10.1016/S0140-6736(17)31792-0. [13]

Ministry for Primary Industries (2017), *How Health Star Ratings work*, https://www.mpi.govt.nz/food-safety/whats-in-our-food/food-labelling/health-star-ratings/how-health-star-ratings-work/ (accessed on 12 September 2017). [80]

Ministry of Economy Trade and Industry (2018), *Announcement of 26 Enterprises Selected for the 2018 Health and Productivity Stock Selection*, http://www.meti.go.jp/english/press/2018/0220_002.html (accessed on 27 August 2018). [18]

Ministry of Economy Trade and Industry (2018), *Announcement of Organizations Recognized under the 2018 Certified Health and Productivity Management Outstanding Organizations Recognition Program*, http://www.meti.go.jp/english/press/2018/0220_003.html (accessed on 27 August 2018). [19]

Ministry of Education (2018), *School Facility Improvement Guidelines*, http://www.mext.go.jp/a_menu/shisetu/seibi/main7_a12.htm (accessed on 28 August 2018). [29]

Ministry of Education (2010), *Guidance on food education - First revised edition*, http://www.mext.go.jp/a_menu/sports/syokuiku/1292952.htm (accessed on 22 March 2018). [26]

Ministry of Education((n.d.)), *Promotion of education at school*, http://www.mext.go.jp/a_menu/sports/syokuiku/index.htm (accessed on 22 March 2018). [27]

Ministry of Education Culture Sports Science and Technology (2013), *Partial revision of school lunch supplementary standard*, http://www.mext.go.jp/b_menu/hakusho/nc/1332086.htm (accessed on 17 May 2018). [23]

Ministry of Finance (2018), *Tax rate of tobacco etc*, https://www.mof.go.jp/tax_policy/summary/consumption/d09.htm (accessed on 12 June 2018). [34]

Ministry of Health (2018), *Health Japan 21 (Second) Promotion Technical Committee*, https://www.mhlw.go.jp/file/05-Shingikai-10601000-Daijinkanboukouseikagakuka-Kouseikagakuka/0000166296_7.pdf (accessed on 27 August 2018). [15]

Ministry of Health (2014), *Outline of National Health Nutrition Survey Results*, http://www.mhlw.go.jp/file/04-Houdouhappyou-10904750-Kenkoukyoku-Gantaisakukenkouzoushinka/0000117311.pdf (accessed on 17 May 2018). [12]

Ministry of Health (2011), *Health Japan 21: Final evaluation*, http://www.mhlw.go.jp/stf/houdou/2r9852000001r5gc-att/2r9852000001r5np.pdf (accessed on 16 May 2018). [16]

Ministry of Health Labour and Welfare (2018), *Passive smoking countermeasure*, https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000189195.html (accessed on 28 August 2018). [64]

Ministry of Health Labour and Welfare (2017), *Health Japan 21 (the second term)*, http://www.nibiohn.go.jp/eiken/kenkounippon21/en/ (accessed on 01 September 2017). [4]

Miyawaki, A., J. Lee and Y. Kobayashi (2018), "Impact of the school lunch program on overweight and obesity among junior high school students: a nationwide study in Japan", *Journal of Public Health*, http://dx.doi.org/10.1093/pubmed/fdy095. [25]

Mori, N., F. Armada and D. Willcox (2012), "Walking to school in Japan and childhood obesity prevention: new lessons from an old policy.", *American journal of public health*, Vol. 102/11, pp. 2068-73, http://dx.doi.org/10.2105/AJPH.2012.300913. [30]

Mori, N., K. Asakura and S. Sasaki (2016), "Differential dietary habits among 570 young underweight Japanese women with and without a desire for thinness: a comparison with normal weight counterparts", *Asia Pacific Journal of Clinical Nutrition*, Vol. 25/1, pp. 97-107, http://dx.doi.org/10.6133/APJCN.2016.25.2.04. [11]

Nagata, T. et al. (2008), "Effectiveness of a law to reduce alcohol-impaired driving in Japan.", *Injury prevention : journal of the International Society for Child and Adolescent Injury Prevention*, Vol. 14/1, pp. 19-23, http://dx.doi.org/10.1136/ip.2007.015719. [53]

NHS Innovation Accelerator (2017), *NHS Innovation Accelerator*, https://nhsaccelerator.com/ (accessed on 18 May 2018). [58]

Nomura, S. et al. (2017), "Population health and regional variations of disease burden in Japan, 1990–2015: a systematic subnational analysis for the Global Burden of Disease Study 2015", *The Lancet*, http://dx.doi.org/10.1016/S0140-6736(17)31544-1. [14]

OECD (2018), *OECD Health Statistics 2018*, https://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT. [1]

OECD (2017), *Obesity Update 2017*, http://www.oecd.org/health/health-systems/Obesity-Update-2017.pdf (accessed on 13 July 2017). [75]

Sassi, F. (ed.) (2015), *Tackling Harmful Alcohol Use: Economics and Public Health Policy*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264181069-en. [51]

Pietinen, P. (2009), *Finland´s experiences in salt reduction*, https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/ev20091021_pietinen_en.pdf (accessed on 16 August 2017). [77]

Pisinger, C. and M. Døssing (2014), "A systematic review of health effects of electronic cigarettes", *Preventive Medicine*, Vol. 69, pp. 248-260, http://dx.doi.org/10.1016/J.YPMED.2014.10.009. [40]

Pokhrel, P. et al. (2018), "E-cigarette Advertising Exposure, Explicit and Implicit Harm Perceptions, and E-cigarette Use Susceptibility Among Nonsmoking Young Adults", *Nicotine & Tobacco Research*, http://dx.doi.org/10.1093/ntr/nty030. [47]

Rajkumar, S. et al. (2015), "Evaluation of implementation, compliance and acceptance of partial smoking bans among hospitality workers before and after the Swiss Tobacco Control Act", *Journal of Public Health*, Vol. 37/1, pp. 89-96, http://dx.doi.org/10.1093/pubmed/fdu021. [67]

Ramirez, R., N. Sternsdorff and C. Pastor (2016), *Chile's Law on Food Labelling and Advertising: A Replicable Model for Latin America?*, LLorente & Cuenca, http://www.desarrollando-ideas.com/wp-content/uploads/sites/5/2016/05/160504_DI_report_food_chile_ENG.pdf (accessed on 05 July 2017). [78]

Reuters (2016), *Smoke without fire: Japan becomes test ground for real tobacco e-cigarette*, https://www.reuters.com/article/us-japan-tobacco-idUSKCN0WV0GQ (accessed on 18 October 2018). [41]

Santé Publique France (2017), *Nutri-score: un nouveau logo nutritionnel apposé sur les produits alimentaires*, http://santepubliquefrance.fr/Actualites/Nutri-score-un-nouveau-logo-nutritionnel-appose-sur-les-produits-alimentaires (accessed on 12 September 2017). [81]

SCSK Corporation (2016), *CSR Activities： Health and Productivity Management*, https://www.scsk.jp/corp_en/csr/labor/health.html (accessed on 21 March 2018). [17]

Swedish National Food Agency (2013), *Nordic keyhole: Experience and challenges*, http://www.who.int/nutrition/events/2013_FAO_WHO_workshop_frontofpack_nutritionlabelling_presentation_Sjolin.pdf (accessed on 12 September 2017). [76]

Tanaka, C. et al. (2016), "Results From Japan's 2016 Report Card on Physical Activity for Children and Youth", *Journal of Physical Activity and Health*, Vol. 13, pp. 189-194, http://dx.doi.org/10.1123/jpah.2016-0296. [28]

Tanaka, N. and M. Miyoshi (2012), "School lunch program for health promotion among children in Japan", *Asia Pac J Clin Nutr*, Vol. 21/1, pp. 155-158, http://apjcn.nhri.org.tw/server/APJCN/21/1/155.pdf (accessed on 22 March 2018). [20]

Te Morenga, L. et al. (2014), "Dietary sugars and cardiometabolic risk: systematic review and meta-analyses of randomized controlled trials of the effects on blood pressure and lipids", *The American Journal of Clinical Nutrition*, Vol. 100/1, pp. 65-79, http://dx.doi.org/10.3945/ajcn.113.081521. [85]

Te Morenga, L., S. Mallard and J. Mann (2012), "Dietary sugars and body weight: systematic review and meta-analyses of randomised controlled trials and cohort studies.", *BMJ*, Vol. 346, p. e7492, http://dx.doi.org/10.1136/BMJ.E7492. [84]

The Japan Times (2018), *Japan's watered-down smoking ban clears Diet*, https://www.japantimes.co.jp/news/2018/07/18/national/crime-legal/japans-watered-smoking-ban-clears-diet/#.W8dap2gzaUk (accessed on 17 October 2018). [46]

The Japan Times (2018), *Tokyo lawmakers approve anti-smoking ordinance as capital gears up for 2020 Olympics*, https://www.japantimes.co.jp/news/2018/06/27/national/tokyo-lawmakers-approve-anti-smoking-ordinance-capital-gears-2020-olympics/#.W4Qf_-gzaUk (accessed on 27 August 2018). [65]

Thomson, R. et al. (2016), "Tick front-of-pack label has a positive nutritional impact on foods sold in New Zealand", *Public Health Nutrition*, http://dx.doi.org/10.1017/S1368980016001208. [72]

Tobacco Control Laws (2018), *Major Tobacco Control Litigation Victories*, https://www.tobaccocontrollaws.org/litigation/major_litigation_decisions (accessed on 23 May 2018). [70]

Tobacco Institute of Japan((n.d.)), *Business related to voluntary standards*, http://www.tioj.or.jp/activity/self-standard.html (accessed on 23 March 2018). [36]

Tsugawa, Y. et al. (2017), "What can Japan learn from tobacco control in the UK?", *Lancet (London, England)*, Vol. 390/10098, pp. 933-934, http://dx.doi.org/10.1016/S0140-6736(17)32169-4. [35]

Ueda, P., N. Kondo and T. Fujiwara (2015), "The global economic crisis, household income and pre-adolescent overweight and underweight: a nationwide birth cohort study in Japan.", *International journal of obesity (2005)*, Vol. 39/9, pp. 1414-20, http://dx.doi.org/10.1038/ijo.2015.90. [8]

USDA Foreign Agricultural Service (2018), *Liquor Tax Reform Japan*, https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Liquor%20Tax%20Reform%20Japan_Tokyo%20ATO_Japan_4-9-2018.pdf (accessed on 31 May 2018). [52]

USDA Foreign Agriculture Service (2015), *Japan's New Health Claims Labeling System Creates Opportunities*, https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Japan%E2%80%99s%20New%20Health%20Claims%20Labeling%20System%20Creates%20Opportunities_Tokyo_Japan_8-3-2015.pdf (accessed on 03 April 2018). [50]

Vyth, E. et al. (2010), "Front-of-pack nutrition label stimulates healthier product development: a quantitative analysis", *International Journal of Behavioral Nutrition and Physical Activity 2010 7:1*, Vol. 362/1, pp. 590-9, http://dx.doi.org/10.1056/nejmoa0907355. [73]

WHO (2015), "Electronic cigarettes (e-cigarettes) or electronic nicotine delivery systems", *WHO*, https://www.who.int/tobacco/communications/statements/eletronic_cigarettes/en/ (accessed on 17 October 2018). [38]

WHO expert consultation (2004), "Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies", *Lancet*, Vol. 363, pp. 157-63, http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(03)15268-3.pdf (accessed on 01 September 2017). [3]

Wilson, N. et al. (2017), "Should e-cigarette use be included in indoor smoking bans?", *Bulletin of the World Health Organization*, Vol. 95/7, pp. 540-541, http://dx.doi.org/10.2471/BLT.16.186536. [39]

World Cancer Research Fund International (2017), *NOURISHING framewor: Restrict food advertising and other forms of commercial promotion*, https://www.wcrf-uk.org/sites/default/files/4_Restrict%20advertising_June%202017.pdf (accessed on 12 October 2017). [88]

World Cancer Research Fund International (2017), *NOURISHING framework - nutrition label standards and regulation on the use of claims and implied claims on food*, http://www.wcrf.org/sites/default/files/1_Nutrition%20labels_Feb_2017_v2.pdf (accessed on 05 July 2017). [74]

World Health Organization (2018), *Denmark, trans fat ban pioneer: lessons for other countries*, http://www.who.int/news-room/feature-stories/detail/denmark-trans-fat-ban-pioneer-lessons-for-other-countries (accessed on 29 May 2018). [86]

World Health Organization (2018), "Time to Deliver: Report of the WHO Independent High-Level Commission on Noncommunicable Diseases", http://apps.who.int/iris/bitstream/handle/10665/272710/9789241514163-eng.pdf?ua=1 (accessed on 04 June 2018). [56]

World Health Organization (2018), *WHO European Healthy Cities Network*, http://www.euro.who.int/en/health-topics/environment-and-health/urban-health/who-european-healthy-cities-network (accessed on 18 May 2018). [59]

World Health Organization (2018), *WHO Global Information System on Alcohol and Health*, http://apps.who.int/gho/data/node.main.GISAH?lang=en (accessed on 19 October 2018). [55]

World Health Organization (2018), *WHO plan to eliminate industrially-produced trans-fatty acids from global food supply*, http://www.who.int/news-room/detail/14-05-2018-who-plan-to-eliminate-industrially-produced-trans-fatty-acids-from-global-food-supply (accessed on 22 May 2018). [83]

World Health Organization (2017), *Alcohol labelling: A discussion document on policy options*, WHO Regional Office for Europe, Copenhagen, http://www.euro.who.int (accessed on 26 March 2018). [93]

World Health Organization (2017), *'Best buys' and other recommended interventions for the prevention and control of noncommunicable diseases*, http://apps.who.int/iris/bitstream/handle/10665/259232/WHO-NMH-NVI-17.9-eng.pdf?sequence=1 (accessed on 22 May 2018). [63]

World Health Organization (2017), "WHO report on the global tobacco epidemic", http://apps.who.int/iris/bitstream/handle/10665/255874/9789241512824-eng.pdf;jsessionid=72BB2CCD0678D714820885F8782AED22?sequence=1 (accessed on 23 March 2018). [37]

World Health Organization (2017), *WHO report on the global tobacco epidemic 2017 Country profile: Japan*, http://who.int/tobacco/surveillance/policy/country_profile/jpn.pdf?ua=1 (accessed on 01 September 2017). [32]

World Health Organization (2016), *WHO urges global action to curtail consumption and health impacts of sugary drinks*, http://www.who.int/mediacentre/news/releases/2016/curtail-sugary-drinks/en/ (accessed on 10 July 2017). [82]

World Health Organization (2015), *WHO report on the global tobacco epidemic: Raising taxes on tobacco*, http://www.who.int/tobacco (accessed on 18 May 2018). [33]

World Health Organization (2014), *Alcohol Country Profile: Japan*, http://www.who.int/substance_abuse/publications/global_alcohol_report/profiles/jpn.pdf?ua=1 (accessed on 01 September 2017). [94]

World Health Organization (2014), "Electronic nicotine delivery systems", http://dx.doi.org/10.1136/tobaccocontrol-2014-051670. [44]

World Health Organization (2014), *Global status report on alcohol and health 2014*, http://www.who.int/substance_abuse/publications/global_alcohol_report/msb_gsr_2014_1.pdf?ua=1 (accessed on 24 October 2017). [89]

World Health Organization (2014), "Partial guidelines for implementation of articles 9 and 10 of the WHO Framework Convention on Tobacco Control", http://www.who.int/fctc/guidelines/Guideliness_Articles_9_10_rev_240613.pdf (accessed on 22 May 2018). [69]

World Health Organization (2011), *Addressing the harmful use of alcohol : a guide to developing effective alcohol legislation*, http://www.wpro.who.int/publications/docs/Addressingtheharmfuluseofalcoholforupload.pdf (accessed on 24 October 2017). [61]

World Health Organization (2010), *Set of recommendations on the marketing of foods and non-alcoholic beverages to children*, http://apps.who.int/iris/bitstream/10665/44416/1/9789241500210_eng.pdf (accessed on 13 July 2017). [87]

World Health Organization (2008), *Guidelines for implementation of Article 11 of the WHO Framework Convention on Tobacco Control*, http://www.who.int/fctc/guidelines/article_11.pdf (accessed on 22 May 2018). [68]

World Health Organization (2003), *Which are the most effective and cost-effective interventions for tobacco control?*, http://www.euro.who.int/__data/assets/pdf_file/0004/74722/E82993.pdf (accessed on 22 May 2018). [62]

Yamaguchi, M., N. Kondo and H. Hashimoto (2018), "Universal school lunch programme closes a socioeconomic gap in fruit and vegetable intakes among school children in Japan.", *European journal of public health*, Vol. 28/4, pp. 636-641, http://dx.doi.org/10.1093/eurpub/cky041. [24]

Yotova, M. (2016), "'Right' food, 'Responsible' citizens: State-promoted food education and a food dilemma in Japan", *Asia Pacific Viewpoint*, Vol. 57/3, pp. 326-337, http://dx.doi.org/10.1111/apv.12135. [21]

Annex 2.A. Health Japan 21 Targets

Annex Table 2.1. Targets for achieving extension of healthy life expectancy and reduction of health disparities

Indicators	Current data	Target
1. Extension of healthy life expectancy (average period of time spent without limitation in daily activities)	Male 70.42 years Female 73.62 years (2010)	To extend healthy life expectancy more than the increase of life expectancy (2022)
2. Reduction of health disparities (gap among prefectures in average period of time spent without limitation in daily activities)	Male 2.79 years Female 2.95 years (2010)	Reduction in gap among prefectures (2022)

Source: Ministry of Health Labour and Welfare (2017[4]), Health Japan 21 (the second term), http://www.nibiohn.go.jp/eiken/kenkounippon21/en/.

Annex Table 2.2. Targets for the prevention of onset and progression of life-style related diseases

	Indicators	Current data	Target
Cancer	1. Reduction in age-adjusted mortality rate of cancer under age 75 (per 100 000)	84.3 (2010)	73.9 (2015)
	2. Increase in participation rate of cancer screenings	Gastric cancer Male 36.6% Female 28.3% Lung cancer Male 26.4% Female 23.0% Colorectal cancer Male 28.1% Female 23.9% Cervical cancer 37.7% Breast cancer 39.1% (2010)	50% (40% for gastric, lung, and colorectal cancer) (2016)
CVD	1. Reduction in age-adjusted mortality rate of cerebrovascular disease (CVD) and ischemic heart disease (IHD) (per 100 000)	CVD Male 49.5 Female 26.9 IHD Male 36.9 Female 15.3 (2010)	CVD Male 41.6 Female 24.7 IHD Male 31.8 Female 13.7 (2022)
	2. Improvement of hypertension (reduction in average systolic blood pressure)	Male 138 mmHg Female 133 mmHg (2010)	Male 134 mmHg Female 129 mmHg (2022)
	3. Reduction in percentage of adults with dyslipidemia	Those with total cholesterol over 240 mg/dl Male 13.8% Female 22.0% Those with LDL cholesterol over 160 mg/dl Male 8.3% Female 11.7% (2010)	Those with total cholesterol over 240mg/dl Male 10% Female 17% Those with LDL cholesterol over 160 mg/dl Male 6.2% Female 8.8% (2022)
	4. Reduction in number of definite and at-risk people with metabolic syndrome	14 000 000 (2008)	25% less than 2008 (2015)

	Indicators	Current data	Target
	5. Increase in participation rates of specified health checkups and specified health guidance	Specified health checkups 41.3% Specified health guidance 12.3% (2009)	Will be set based on the second term of medical cost adjustment plan starting in 2013 (2017)
Diabetes	1. Reduction in complications (number of patients newly introduced to dialysis due to diabetic nephropathy)	16 247 (2010)	15 000 (2022)
	2. Increase in percentage of patients who continue treatment	63.7% (2010)	75% (2022)
	3. Decrease in percentage of individuals with elevated blood glucose levels (HbA1c (NGSP)≧8.4%)	1.2% (2009)	1.0% (2022)
	4. Prevent increase in number of diabetic persons	8 900 000 (2007)	10 000 000 (2022)
	5. Reduction in number of definite and at-risk people with metabolic syndrome	14 000 000 (2008)	25% less than 2008 (2015)
	6. Increase in participation rates of specified health checkups and health guidance	Specified health checkups 41.3% Specified health guidance 12.3% (2009)	Will be set based on the second period of medical cost adjustment plan starting in 2013 (2017)
COPD	1. Increase recognition that COPD prevention is possible by stopping smoking since smoking is the major cause of COPD, and that early detection is important	25% (2011)	80% (2022)

Source: Ministry of Health Labour and Welfare (2017[4]), Health Japan 21 (the second term), http://www.nibiohn.go.jp/eiken/kenkounippon21/en/.

Annex Table 2.3. Targets for maintenance and improvement of functions necessary for engaging in social life

	Indicators	Current data	Target
Mental health	1. Reduction in suicide rate (per 100 000)	23.4 (2010)	Will be set based on modified suicide prevention plan
	2. Decrease in percentage of individuals who suffer from mood disorders or anxiety disorders	10.4% (2010)	9.4% (2022)
	3. Increase in percentage of occupational settings where interventions for mental health are available	33.6% (2007)	100% (2020)
	4. Increase in number of pediatricians and child psychiatrists per 100 000 children	Pediatricians: 94.4 (2010) Child psychiatrists: 10.6 (2009)	To increase (2014)
Children's health	*1. Increase in percentage of children who maintain healthy lifestyle (nutrition, dietary habits, physical activity)*		
	a. Increase in percentage of children who eat three meals a day	5th grade 89.4% (2010)	To reach 100% (2022)
	b. Increase in percentage of children who exercise regularly	(Ref) Three times a week or more 5th grade Male 61.5% Female 35.9% (2010)	To increase (2022)
	2. Increase in percentage of children with ideal body weight		
	a. Reduction in percentage of low birth weight infants	9.6% (2010)	To reduce (2014)

	Indicators	Current data	Target
	b. Reduction in percentage of children who tend to be obese	5th graders who are overweight or obese (2011) Male 4.60% Female 3.39%	To reduce (2014)
Health of elderly people	1. Restraint of the increase in Long-Term Care Insurance service users	4 520 000 (2012)	6 570 000 (2025)
	2. Increase in identification rate of high-risk elderly with low cognitive function	0.9% (2009)	10% (2022)
	3. Increase in percentage of individuals who know about locomotive syndrome	(Ref) 17.3% (2012)	80% (2022)
	4. Restraint of the increase in undernourished elderly (BMI under 20)	17.4% (2010)	22% (2022)
	5. Decrease number of elderly with back or foot pain (per 1 000)	Male 218 Female 291 (2010)	Male 200 Female 260 (2022)
	6. Promotion of social participation (employed or engaged in community activities)	Percentage of those who are involved in any form of community activities Male 64.0% Female 55.1% (2008)	80% (2022)

Source: Ministry of Health Labour and Welfare (2017[4]), Health Japan 21 (the second term), http://www.nibiohn.go.jp/eiken/kenkounippon21/en/.

Annex Table 2.4. Targets for putting in place a social environment to support and protect health

Indicators	Current data	Target
1. Strengthening of community ties	Percentage of those who consider that "There is a strong bond between the community and myself." 45.7% (2007)	65% (2022)
2. Increase in percentage of individuals who are involved in health promotion activities	Percentage of those volunteering health or medical service 3.0% (2006)	25% (2022)
3. Increase in number of corporations that deal with health promotion and educational activities	420 (2012)	3 000 (2022)
4. Increase in number of civilian organizations that offer accessible opportunities for health promotion support or counseling	Number of reported organizations 7 134 (2012)	15 000 (2022)
5. Increase in number of local governments that make efforts to solve health disparity issues (number of prefectures that identify problems and have intervention programs for those in need)	11 prefectures (2012)	47 prefectures (2022)

Source: Ministry of Health Labour and Welfare (2017[4]), Health Japan 21 (the second term), http://www.nibiohn.go.jp/eiken/kenkounippon21/en/.

Annex Table 2.5. Targets for improvement of everyday habits and social environment

	Indicators	Current data	Target
Nutrition and dietary habits	1. Increase in percentage of individuals maintaining ideal body weight (Reduction in percentage of obese individuals [BMI 25 and more] and underweight individuals [BMI less than 18.5])	Obese males in their 20s to 60s 31.2% Obese females in their 40s to 60s 22.2% Underweight females in their 20s 29.0% (2010)	Obese males in their 20s to 60s; 28% Obese females in their 40s to 60s; 19% Underweight females in their 20s 20% (2022)
	2. Increase in percentage of individuals who consume appropriate quality and quantity of food		
	a. Increase in percentage of individuals who eat balanced diet with staple food, main dish and side dish more than twice a day	68.1% (2011)	80% (2022)
	b. Decrease in mean salt intake	10.6 g (2010)	8 g (2022)
	c. Increase in consumption of vegetables and fruits	Mean daily intake of vegetables 282 g Individuals who consume fruit less than 100 g per day 61.4% (2010)	Mean daily intake of vegetables 350 g Individuals who consume fruit less than 100 g per day 30% (2022)
	3. Increase in dining with family regularly (decrease in percentage of children who eat alone)	Breakfast Elementary school student 15.3% Junior high school student 33.7% Dinner Elementary school student 2.2% Junior high school student 6.0% (2010)	To decrease (2022)
	4. Increase in number of corporations in food industry that supply food product low in salt and fat	Registered corporations 14 Registered restaurants 17 284 locations (2012)	Registered corporations 100 Registered restaurants 30 000 locations (2022)
	5. Increase in percentage of specific food service facilities that plan, cook, and evaluate and improve nutritional content of menu based on the needs of clients	(Ref) Facilities with registered/non-registered dietitians 70.5% (2010)	80% (2022)
Physical activity and exercise	1. Increase in daily number of steps	20-64 years old Male 7 841 steps Female 6 883 steps Over 65 years old Male 5 628 steps Female 4 584 steps (2010)	20-64 years old Male 9 000 steps Female 8 500 steps Over 65 years old Male 7 000 steps Female 6 000 steps (2022)
	2. Increase in percentage of individuals who regularly exercise	20-64 years old Male 26.3% Female 22.9% Over 65 years old Male 47.6% Female 37.6% (2010)	20-64 years old Male 36% Female 33% Over 65 years old Male 58% Female 48% (2022)
	3. Increase in number of local governments that offer community development and environment to promote physical activity	17 prefectures (2012)	47 prefectures (2022)
Rest	1. Reduction in percentage of individuals who do not take rest through sufficient sleep	18.4% (2009)	15% (2022)
	2. Reduction in percentage of employees who work 60 hours or more per week	9.3% (2011)	5.0% (2020)

	Indicators	Current data	Target
Alcohol drinking	1. Reduction in percentage of individuals who consume alcohol over recommended limits (male > 40 g, female > 20 g per day)	Male 15.3% Female 7.5% (2010)	Male 13% Female 6.4% (2022)
	2. Eradication of underage drinking	Third grade of junior high school Male 10.5% Female 11.7% Third grade of high school Male 21.7% Female 19.9% (2010)	0% (2022)
	3. Eradication of alcohol consumption among pregnant women	8.7% (2010)	0% (2014)
Tobacco smoking	1. Reduction in percentage of adult smoking rate (quit smoking among smokers who want to quit smoking)	19.5% (2010)	12% (2022)
	2. Eradication of underage smoking	First grade of junior high school Male 1.6% Female 0.9% Third grade of high school Male 8.6% Female 3.8% (2010)	0% (2022)
	3. Eradication of smoking during pregnancy	5.0% (2010)	0% (2014)
	4. Reduction in percentage of individuals who are exposed to passive smoking at home, workplace, restaurants, governmental institutions, and medical institutions	Governmental institutions 16.9% Medical institutions 13.3% (2008) Workplace 64% (2011) Home 10.7% Restaurants 50.1% (2010)	Governmental institutions 0% Medical institutions 0% (2022) Workplace--no secondhand smoke (2020) Home 3% Restaurants 15% (2022)
Dental and oral health	1. Maintenance and improvement of oral function (increase in percentage of individuals in their 60s with good mastication)	73.4% (2009)	80% (2022)
	2. Prevention of tooth loss		
	a. Increase in percentage of 80-year-old individuals with over 20 teeth remaining	25.0% (2005)	50% (2022)
	b. Increase in percentage of 60-year-old individuals with over 24 teeth remaining	60.2% (2005)	70% (2022)
	c. Increase in percentage of 40-year-old individuals with all teeth remaining	54.1% (2005)	75% (2022)
	3. Decrease in percentage of individuals with periodontal disease		
	a. Decrease in percentage of individuals in 20s with gingivitis	31.7% (2009)	25% (2022)
	b. Decrease in percentage of individuals in 40s with progressive periodontitis	37.3% (2005)	25% (2022)
	c. Decrease in percentage of individuals in 60s with progressive periodontitis	54.7% (2005)	45% (2022)
	4. Increase in number of children without dental caries		
	a. Increase in number of prefectures where over 80% of 3-year-old children have no dental caries	6 prefectures (2009)	23 prefectures (2022)
	b. Increase in number of prefectures where 12-year-old children have less than 1 dmft (decayed, missing, or filled tooth)	7 prefectures (2011)	28 prefectures (2022)
	5. Increase in percentage of individuals who participated in dental check-up during the past year	34.1% (2009)	28 prefectures (2022)

Source: Ministry of Health Labour and Welfare (2017[4]), Health Japan 21 (the second term), http://www.nibiohn.go.jp/eiken/kenkounippon21/en/.

Chapter 3. Health check-ups in Japan

In recent decades, Japan has increased its reliance on health check-ups and tries to improve population health through early detection of diseases. Based on health check-up results, Japan also aims to promote individual's effort to manage their own health condition by preventing the onset or severity of diseases through better lifestyles. Now, routine health check-ups are available to almost all segments of population throughout their life course. These secondary prevention strategies are unique in the OECD and their impact is not well understood partly due to its health information system. Considering the tight fiscal situation which is likely to continue due to population ageing, Japan needs to review its secondary prevention strategies and focus on developing and implementing effective and economically sound secondary prevention policies.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

3.1. Introduction

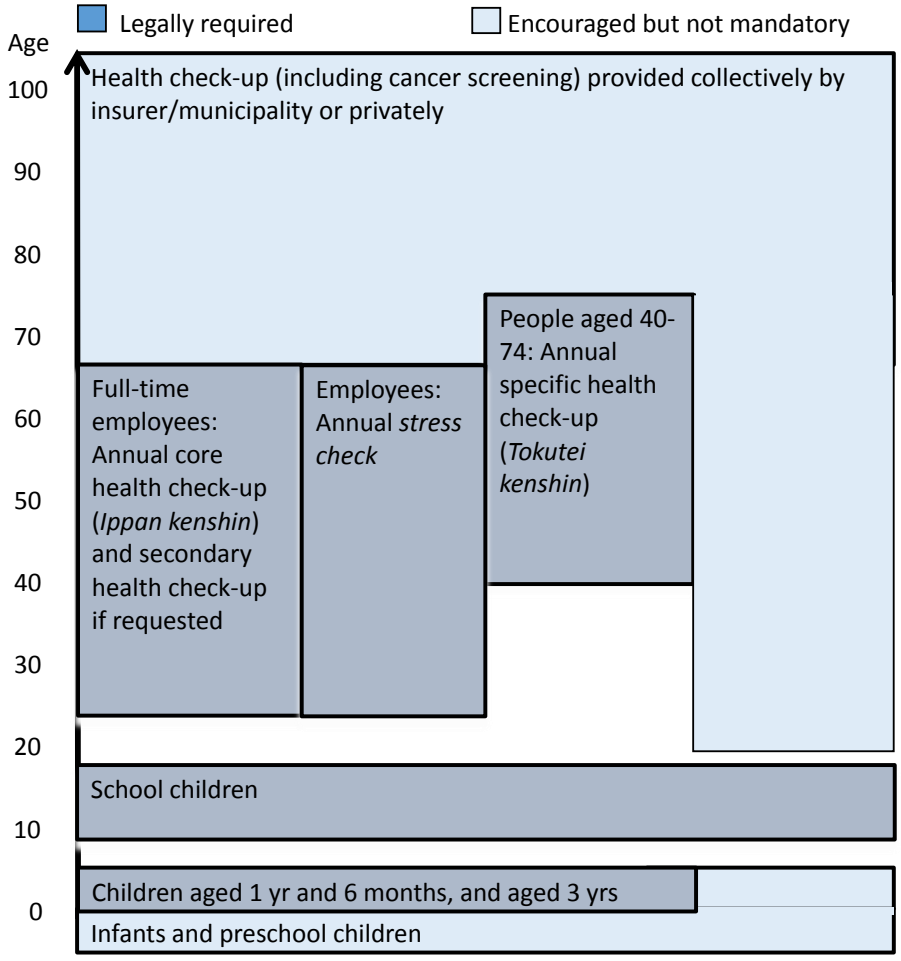
Japan relies significantly on population-based health check-ups and tries to improve population health through early detection of diseases. Based on health check-up results, Japan also aims to promote individuals' efforts to manage their own health condition(s) by preventing the onset or severity of diseases through better lifestyles. To illustrate its policy priority, for instance, in the central government's Smart Life Project, which aims to engage a wide range of stakeholders to take part in health promotion activities, a promotion of health check-up participation is one of the four key target areas.

Along with people's attention to hygiene and traditional diet which is balanced in nutrients, health check-ups are considered to have played an important role in improving the population health over the past decades(Ikeda at al., 2011), and this has led Japan to have a strong policy focus on developing population-based health check-ups and expanding their coverage.

The coverage of health check-up items and target population(s) have expanded over the past few decades, and routine health check-ups are now available to almost all segments of population throughout their life course. There are legally required health check-ups such as health check-ups for infants and preschool children, an annual health check-up for school children, an annual health check-up for full-time employees, annual stress test for employees, and an annual specific health check-up for people aged between 40 and 74 to prevent lifestyle-related diseases (Figure 3.1). There are also a number of other health check-ups and cancer screening which are not legally required but recommended to provide by municipality or insurer.

This chapter describes, firstly, the health check-ups which are legally required in Japan, and then goes on to describe health check-ups and cancer screening, which are encouraged but are not mandatory. Based on the international evidence, the last section lays out a set of recommendations to support Japan in further developing its secondary prevention policies.

Figure 3.1. Health check-ups are available routinely for almost all segment of population in Japan



3.2. Several health check-ups are legally required in Japan

3.2.1. Health check-ups for infants and preschool children have a long history in Japan

Japan started health check-ups for children aged three years old in 1961, and the health check-up for children aged one and a half years old was introduced in 1977. These check-ups are provided either collectively by the municipality or individually by commissioned health care providers. The municipal government is required to organise and fund these health check-ups and they are provided free of charge to these children. Health check-up items are standardised nationwide and the first health check-up includes physical measurement, assessment of nutritional status, oral health, and developmental problems related to physical and mental health and vaccination history. During the health check-up at age 3, vision, ear, nose and throat are also examined. To monitor child growth, additional health check-ups are available in most municipalities for infants aged 3-4 months and 9-10 months, and many municipalities also provide health check-ups for infants and preschool children in other age groups. Municipalities are also required to provide a free health check-up to children about half a year before entering primary

school (Ministry of Health, Labour and Welfare (MHLW), 2015a; MHLW,2015b; Japan Society of School Health, 2017). Beside health assessment and early detection of abnormality, these health check-ups for infants and preschool children also aim to provide educational/consultation opportunities for their parents, and to screen for child abuse/neglect.

In the similar vein, many other OECD countries provide free health check-ups for infants and preschool children. In some countries including Belgium, the Czech Republic, Estonia, Finland, Germany, Italy, Korea, the Netherlands, Norway, Portugal, Slovenia, Sweden and the United Kingdom (England), health care including health check-ups is provided free of charge to infants and preschool children (Ferré et al., 2014; Lai et al., 2013; Paris et al., 2016).

Access to health check-ups for preschool children is high in Japan, and nearly all infants and preschool children undergo health check-ups which are required legally. The uptake continued to increase in recent years and it reached 96.4% for 1.5-year old children and 95.1% for 3-year-old children in 2016 and they are equally high across municipalities (MHLW, 2018c).

Compared to other OECD countries, available data suggest that the overall health of infants and preschool children in Japan is relatively good and continues improving. Infant mortality rate has fallen rapidly from 30.7 per 1 000 live births in 1960, and in 2016 infant mortality was 2.0 per 1 000 live births, the lowest in the OECD after Iceland (1.7 (three year average between 2014 and 2016)) and Finland (1.9). Similarly, the number of under-five deaths was 40 per 1 000 live births in 1960, but went down to below 3 per 1 000 in 2016, one of the lowest in the OECD after Finland, Iceland, Luxembourg and Slovenia (all at around 2 per 1 000) (UN Inter-agency Group for child Mortality Estimation, 2017). It is believed that together with progress on medical technology, health check-ups for infants and preschool children have contributed to children's improved health outcomes (MHLW, 2014).

3.2.2. School children usually undergo an annual health check-up in Japan

At Japanese schools in the primary, lower secondary, upper secondary and tertiary levels, a health check-up is provided to students by professionals such as school doctors. Schools appoint these health professionals from those recommended by medical associations. According to the School Health and Safety Law's enforcement regulations, the check-up must be provided every year to students at the primary and lower secondary levels and to first-year students in upper secondary and tertiary levels (e-Gov, 2018). However, at least some upper secondary and tertiary educational institutions provide additional health check-ups to students in other years.

Legally required health check-ups for students include a standardised core set of health check-up items (Box 3.1). The municipal education board funds health check-ups provided to students who are newly entering a school but once they are enrolled, schools pay for the health check-ups provided to their students (e-Gov, 2018; MHLW, 2015). Additional health check-up items are sometimes available but the content of health check-ups for students is generally similar across educational institutions.

Box 3.1. The standardised health check-up items for students are provided across schools

Health check-up items for school children at the primary, lower and upper secondary levels include the following physical examinations, sample analyses and health consultations:

- Height and weight,
- Nutritional status,
- Diseases and abnormalities related to spine and chest,
- Vision and hearing test,
- Diseases and abnormalities related to eye,
- Diseases of ear, nose and throat, and skin,
- Diseases and abnormalities related to teeth and mouth,
- Tuberculosis (TB),
- Diseases and abnormalities related to heart,
- Urine, and
- Other diseases and abnormalities.

Since the health check-up must be undertaken within a limited time, preparation and collaboration between different professionals including teachers and health care providers is a key for its smooth operation.

For first-year students in tertiary education, most of the items above are examined but several items including vision and hearing test and urine test are not required.

In addition, educational institutions at upper secondary and tertiary levels need to provide a chest X-ray for TB to first-year students in view of controlling TB infection which is relatively high in Japan (15 per 100 000 population in Japan, higher than the OECD average of 12 per 100 000 population in 2017, see Chapters 1 and 4) (e-Gov, 2018).

Source: e-Gov (2018), *Education Health and Safety Act,* http://elaws.e-gov.go.jp/search/elawsSearch/elaws_search/lsg0500/detail?lawId=333M50000080018#B.

Students or their parents are notified of health check-up results and if the results suggest that students have any diseases or abnormalities, they are recommended to seek follow-up diagnosis and/or health care. For example, a detailed examination including a chest X-ray is recommended if students (other than first-year students at upper secondary and tertiary education levels, for which this examination is compulsory) are suspected to have TB based on the consultation during school health check-up (MEXT, 2011; MEXT, 2015). Health check-up results are kept either in written or electronic form at the school for five years, and they are not linked with other health care data such as health care claims and medical records. When a student transfers to another school, their results are sent from the principal of the previous school to the principal of a new school.

Although many school-based interventions are available across OECD countries (Chapter 2), health check-ups are not generally provided at school in the OECD (Sassi,

2010). Instead of a school health check-up, many OECD countries provide health check-ups in primary care settings or try to assure access to primary care to children with either no out-of-pocket payment (e.g. the Czech Republic, Estonia, Portugal, Slovenia, Sweden and England in the United Kingdom) or reduced out-of-pocket payment (e.g. Australia, New Zealand) (Paris et al., 2016). Nonetheless, a health check-up for school children is provided in a few other OECD countries such as Austria, Belgium, Denmark, Finland, Germany, the Netherlands and Norway. However, compared to Japan, most of these countries provide check-ups less frequently and the coverage of check-up items are narrower. For example, while a health check-up is also provided annually in Austria, it is provided less frequently in other countries such as Belgium (once in primary school and twice in secondary school in Flemish and French regions), Denmark (a minimum of two health check-ups for students in primary and secondary school) and the Netherlands (at age 5, 10 and 13). Some countries include a dental check as part of health check-ups as done in Japan, but several countries including Sweden, and Switzerland (in which basic health insurance does not generally cover dental care) provide only a dental check to students (Anell et al., 2012; Busse and Blümel, 2014; De Pietro et al., 2015; Gerkens and Merkur, 2010; Hofmarcher and Quentin, 2013; Kroneman et al., 2016; Olejaz et a., 2012; Paris et al., 2016; Ringard et al., 2013; Sigurgeirsdóttir et al., 2014; Vuorenkoski et al., 2008).

In Japan, the uptake of health check-ups among schoolchildren covers nearly 100% of educational institutions. The high uptake has been achieved through well-established, organised delivery, high public awareness and free access. School health check-ups provide equal opportunities for students across different socio-economic backgrounds to have contact with a health care professional which some of them may not otherwise have.

Over time, health outcomes of Japanese schoolchildren have improved but potential links with health check-ups are not known. For example, the probability of dying at age 5-14 years was 1.7 per 1 000 children in 1990 but reduced to 0.8 in 2016 in Japan, which is one of the lowest in the OECD after 0.5 in Denmark and Luxembourg, 0.6 in Norway, and 0.7 in France, Italy and Switzerland (UN Inter-agency Group for Child Mortality Estimation, 2017). Among children at age 12, the average number of decayed, missing and filled teeth was 4.3 in 1990 but it fell to 0.9 in 2015, also one of the lowest in the OECD after Denmark (0.4), Germany (0.5), Luxembourg (0.4) and Sweden (0.7) (OECD, 2017). However, since health check-up data are not systematically linked with health care claim data and a number of other health promotion activities take place at school (see Chapter 2), it is difficult to assess the extent to which health check-ups have contributed to improved health outcomes among school children in Japan.

3.2.3. Employers are required to provide a core health check-up annually to full-time employees

Under the Industrial Safety and Health Law in Japan, since 1972, employers have been obliged to provide a core health check-up (*Ippan kenshin*) to their full-time employees at the time of hiring and every year, for free, and these employees are also obliged to undergo this health check-up. This health check-up aims to prevent worsening of employee's health due to work, and based on check-up results, employers must find ways to improve working environment of the employees who are identified to have health issues (MHLW, 2013).

Full-time employees here refer to those who have an employment contract longer than one year or who are expected to work more than one year, and who work longer than

three quarters of average weekly working hours among regular employees within the same job category (MHLW Tokyo Labor Bureau, 2017). The MHLW recommends that employers also provide a core health check-up to part-time employees who work more than half of the weekly working time of full-time employees, but this is not legally required (MHLW, 2015c), so these employees often do not have access to such services.

The core health check-up needs to include a standardised set of health check-up items (Box 3.2). According to the Industrial Safety and Health Law, doctors can decide to exclude some of these items based on certain information collected during the medical consultation in the beginning of the core health check-up. For instance, a chest X-ray, which is used to detect TB and other chest diseases (MHLW, 2005) should be provided at age 20, 25, 30 and 35, but can be excluded in other years among full-time employees under 40, as long as the employee does not work at a place which is required to provide a regular examination of TB under the Infectious Disease Act, or the Pneumoconiosis Act (MHLW, 2013).

Box 3.2. The standard items for the core health check-up (*Ippan kenshin*) are set and used nationwide

The standard items for the core health check-up include the following:

- Medical consultation including medical history and working condition,
- Assessment of subjective and objective symptoms
- Height, weight, abdominal circumference, vision, hearing,
- Chest X-ray, sputum test,
- Blood pressure,
- Anaemia test (red blood cell, haemoglobin),
- Liver function (GOT, GPT, γ-GTP),
- Blood lipid (HDL cholesterol, LDL cholesterol, blood serum triglyceride),
- Glucose,
- Urinary sugar, uric protein, and
- Electrocardiogram

The standard set of health check-up items at the time of hiring is generally the same as that of the core health check-up.

Based on doctor's discretions, the following items can be excluded as part of a routine core health check-up for full-time employees: height, abdominal circumference, blood lipid (HDL cholesterol, LDL cholesterol, Creatinine), liver function (GOT, GPT, γ-GTP), anaemia test (red blood cell, haemoglobin), electrocardiogram and a chest X-ray. Specific criteria which are often related to age are laid out in guidelines for core health check-up and they need to be fulfilled to exclude the above-mentioned check-up items (MHLW, 2013a).

Source: MHLW (2013a), *Roudou anzen eisei hou ni motozuku kennkoushindan wo jisshi shimashou (Health check-ups based on occupational health and safety act)*, http://www.mhlw.go.jp/file/06-Seisakujouhou-11200000-Roudoukijunkyoku/0000103900.pdf.

In view of reducing worker's accidents and deaths related to cerebrovascular and cardiovascular diseases, which are one of main causes of deaths in Japan (Chapter 1), the core health check-up (*Ippan kenshin*) is used to provide a further health check-up specific to these diseases (*Niji kenkou shindan*). This secondary health check-up for cerebrovascular and cardiovascular diseases started in 2001 for full-time employees who are identified to have high levels of associated risk factors (e.g. blood pressure, glucose, blood lipid, and abdominal circumference or BMI) based on core health check-up results. The secondary health check-up is also available for employees based on the discretion of occupational health doctors (see Chapter 1). Since specific thresholds for risk factors are not set at a national level, different thresholds may be used across providers when making assessment on the worker's eligibility or need for the secondary health check-up. During the secondary health check-up, the following items are examined: blood lipid and glucose levels at the time of fasting, haemoglobin A1c, a stress electrocardiogram or an echocardiography, a carotid ultrasonography and microalbumin measurement. Based on the results of secondary health check-up, face-to-face health guidance focusing on nutrition, physical activities and lifestyles including smoking, drinking and sleeping can be provided by a doctor or nurse with the aim of reducing risk factors for cerebrovascular and cardiovascular diseases. Both the secondary health check-up and subsequent health guidance are provided free of charge upon request by employees, and the central government covers the entire cost (MHLW, 2018a).

For employees who work in hazardous conditions, employers need to provide an additional health check-up which is specific to the working environment, at the time of hiring and before the employee is assigned to start working in a hazardous environment, regardless of the employment contract type and the number of weekly working hours. Employers also need to provide this health check-up to all employees working in hazardous conditions every six months or more frequently to monitor their health conditions related to the working conditions.

Looking outside of Japan, only a few OECD countries, including Finland, France, Italy, Korea and Slovenia, require employers to provide health check-ups for their employees but the interval is longer and the eligible group is often more targeted in these countries compared to Japan. For instance, in France, since 2017, in order to rationalise the use of occupational health doctors whose number is decreasing, and to provide care effectively to workers at risk (Assemblée Nationale, 2016), a health check-up for employees has been provided with a maximal interval of five years (previously every two years). In France there is an exceptions for certain employees such as those with disability and those working night shifts – who are required to undergo health check-ups with the maximal interval of three years – and high-risk employees who usually need to be seen by an occupational health doctor for follow-up examination every four years (Gmeinder et al., 2017). In Korea, a health check-up is required every two years for employees aged 40 and over (Chu, 2017). In Finland and Italy, only employees working in high risk conditions undergo a routine health check-up (Albreht et al., 2016; Ferré, 2014; Vuorenkoski et al., 2008). For example, in Finland a targeted health check-up is provided between every year and every three years depending on the level of risks the worker is exposed to (Finnish Ministry of Justice, 2002).

In Japan, access to and uptake of a core health check-up is generally high but it varies by the size of enterprise and the type of employment contract. According to the latest data available, in 2012 91.9% of employers provided a core health check-up. However, the implementation rate of core health check-ups varies across employers. While all large enterprises with over 1 000 employees provided core health check-ups to their full-time

employees, 89.4% of employers with between 10 and 29 employees provided them to their full-time employees. For part-time workers who are eligible for a core health check-up, the implementation rate was over 90% among enterprises with over 1 000 employees while it was about 50% among enterprises with between 10 and 29 employees. On the employees' side, uptake is also generally high and 88.5% of all employees underwent core health check-ups. However, this uptake also varies by the size of employer and it is low among those working in small enterprises. The 11.5% of employees who did not undergo a core health check-up were mainly those who were not eligible for a core health check-up including part-time employees, dispatched workers and employees with temporary and daily contracts (MHLW, 2012). With regards to the secondary health check-up for cerebrovascular and cardiovascular diseases and subsequent health guidance, the share of employees who underwent them is not known but considered very low.

It has been suggested that the current share of employees who undergo a core health check-up is lower than that in 2012 because labour market dualism has been advancing in Japan. The share of employees with irregular employment contract has increased steadily and they accounts for 37.3% of employees in 2017, up from 33.5% ten years earlier (MHLW, 2018f). In the context in which employment patterns and contracts continue diversifying, employees who are not eligible to access core health check-ups may continue to increase.

Although core health check-ups have been implemented over the past 40 years and continue to evolve to reflect medical progress, their impact on the health of workers is still not well understood. It is understood that core health check-ups do not always lead to early health care interventions among workers with identified health issues. Results of core health check-ups are not linked with health care claims data, so it is still difficult to undertake a comprehensive impact assessment. However, according to the latest data available, in 2012, over one third of full-time employees who were considered to be in need of follow-up examinations and/or health care based on core health check-up results did not actually go on to seek the care they needed. The tendency towards not seeking follow-up care is more pronounced among young workers, while the share of workers who actually sought follow-up care was over 70% among the employed aged 60 and over who were identified to be in need of care based on the results of a core health check-up. The share of those in need of follow-up care who actually sought care was about half among the employed aged between 20 and 29 (MHLW, 2012). Although core health check-ups aim to prevent worsening of employee's health due to work, it is not clear that the results always steer workers towards appropriate follow-up and/or early early treatment.

3.2.4. Employment-based insurers needs to provide an annual stress test to employees

Mental health is one of the important health concerns in Japan (see Chapters 1 and 2). In 2016, 59.5% of people working in enterprises with more than 10 regular employees reported feeling significant stress in relation to their current work or their professional life. Among workers excluding dispatched workers, 0.4% had a sick leave longer than one month due to mental ill-health and 0.2% quit their job due to mental ill-health (MHLW, 2016a). In recent years, the number of requests for a compensation for work-related accidents due to mental ill-health has been increasing (MHLW, 2017a).

In order to prevent mental illnesses and reduce their burden among employees in Japan, employers with more than 50 employees are obliged to evaluate the stress level of their workers (*stress check*) once a year without out-of-pocket payment. Before the national rollout, the test was first introduced by the National Federation of Industrial Health Organization in Japan to its affiliated employers, and the central government then implemented this initiative nationwide in 2015. This stress test measures employees' mental health through an online questionnaire which was developed based on the questionnaire designed by the National Institute of Occupational Safety and Health in the United States. The questionnaire aims to make employees aware of their stress level so that they can try to prevent mental health problems, and also aims to prompt employers to improve the work environment based on *stress check* results. This test needs to be provided not only to full-time employees but also to other employees with shorter working hours, although dispatched workers and temporary workers with a short employment contract are excluded. If the results of *stress check* suggest a high level of stress, an employee can request to undergo an associated medical consultation.

The nationwide implementation of annual stress test is unique in the OECD. In order to tackle mental health issues at work, a number of other OECD countries also oblige employers to evaluate, prevent and control psychosocial risks at work. However, in these countries, pressure from employee representatives and high absenteeism has often prompt employers to take action to handle psychosocial workplace risks and job strain (OECD, 2015a). However, in Japan, each of the employees working for employers with more than 50 employees has an opportunity to flag a case of job strain through stress test, so it is possible that many more cases with psychosocial risks and job strain can be recognised in Japan than in other countries.

The implementation and uptake of stress test are high in Japan, although there are some variations. In 2017, on average, 82.9% of employers provided *stress check* and on average, about 78% of employees underwent the test. The implementation rate of the *stress check* was lower among small enterprises; 99.5% of large enterprises provided a *stress check* in 2017, but a share of employers with between 50 and 99 employees provided the test was 78.9% even though it is obligatory for them to provide annual stress tests. The uptake of the *stress check* is equally high (almost 80%) across employers with different sizes (MHLW, 2017b), suggesting a high demand for evaluating mental health and good accessibility to the online *stress check* among workers across different employers in Japan.

It is still early to evaluate the effectiveness of the *stress check*, but available data suggest that it has sometimes been used to change the working environment in view of improving mental health of workers. In order to protect employees' privacy, results of *stress checks* are not shared with employers unless requested by employee. Analyses of these data by a third party are encouraged, and these data are analysed at an aggregated level to assure privacy protection without identifying a specific employee with mental health issues. Among employers who conducted a *stress check*, 78.3% had the results analysed by a third party in 2017, a substantial increase from 43.8% a year before (MHLW, 2017b; MHLW, 2017c). It is possible that these employers who had their data analysed are also more willing to improve working conditions for the employees than other employers, but in 2016, 69.2% of employers reported to have used these analytical findings. They are usually used to review division of work among employees, and human resource structure and allocation, to provide trainings or training information to managers, and to undertake further investigations and discussions at the occupational health committee (MHLW, 2017c).

However, a *stress check* does not generally lead workers who are identified to have mental ill-health to seek associated mental health care. The share of employees who requested to undergo an associated medical consultation which is provided after *stress check* is very small (0.6%) (MHLW, 2017b). This may be due to the information-sharing rule that are applied to this medical consultation; if an employee requests to seek an associated medical consultation, the doctor who provided this medical consultation submits an assessment report to the employer, and if the report includes suggestions to modify the specific employee's working environment, the employer needs to respect them. Hence, if employees do not wish their employers and managers to know about their mental health issue or consider it unnecessary to have their own working environment changed, they do not request to undergo the associated medical consultation.

As early intervention and effective treatment are important for mental illnesse (McDaid et al, 2017), it is worrying that almost all employees with mental health issues do not follow this consultation, but instead of this associated consultation, it is possible that at least some of them seek mental health care provided elsewhere as this way, their employers and managers will not usually notice their use of mental health care. Within the current health information system, however, it is not possible to know the share of those who sought mental health care elsewhere among those who were identified to have a high stress level through *stress check*.

3.2.5. The specific health check-up to tackle lifestyle-related diseases is provided annually to people aged 40-74

In view of reducing the prevalence of lifestyle-related diseases including cancer, cardiovascular diseases and diabetes, which account for a high disease burden (Chapter 1), Japan introduced the specific health check-up (*Tokutei kenshin*) to the population aged between 40 and 74 in 2008. The specific health check-up also aims to provide opportunities for individuals in this age group to re-evaluate and improve their lifestyle. All insurers in the Japanese health system (Box 3.4) are obliged to provide a specific health check-up to people in this age group every year as they are considered to have higher risks of developing lifestyle-related diseases. Insurers need to provide a nationwide standard set of health check-up items as shown in Box 3.3. The employees aged between 40 and 74 who undergo a core health check-up (*Ippan kenshin*) do not need to duplicate the examination of the same health check-up items.

Based on the check-up results, specific health guidance (*Tokutei hoken shidou*) is provided to those who are identified as having high risk of developing lifestyle-related diseases. Depending on the level of risk factors, there are two types of specific health guidance. For both types, during the first consultation (either an individual interview for more than 20 minutes or a group interview with less than 8 people for over 80 minutes), health care professionals including a doctor, nurse and nutritionist provide an advice for improving lifestyle, and subsequently an action plan is developed for each participant together with a doctor, public health nurse and dietitian. Individual participants' progress is monitored either by a face-to-face interview, telephone interview or by e-mail. The difference between the two types of health guidance includes the monitoring interval and the content of the action plan (Box 3.3) (MHLW, 2018b).

Box 3.3. Specific health check-up items and criteria for specific health guidance are standardised nationwide

The specific health check-up, *Tokutei kenshin*, which targets people aged between 40 and 74, consists of a medical consultation which collects information including medical history and smoking habits, and examinations of the items below (Table 3.1). The standard set of core health check-up items for full-time employees usually includes most of the items required by specific health check-ups, so instead of conducting the same examinations twice, relevant results from core health check-up (*Ippan kenshin*) are usually used for their specific health check-up.

Table 3.1. Specific health check-up items

.	Items
Medical consultation	
Physical measurement	BMI, abdominal circumference, physical examination
Blood pressure and urine	blood pressure (contraction and diastolic phases), urinary sugar and uric protein
Blood test	Neutral fat, HDL cholesterol, LDL cholesterol Glucose or HbA1c Liver function (GOT, GPT, γ-GTP)
Other examinations if doctor considers necessary	Creatinine, electrocardiogram, fundus examination, anaemia test (red blood cell, haemoglobin, hematocrit)

Source: MHLW (2018b), *Hyoujuntekina kenshin hoken shidou programme – heisei 30 nendo ban (Standard health check-up and health guidance programme – 2018)*, http://www.mhlw.go.jp/file/06-Seisakujouhou-10900000-Kenkoukyoku/00_3.pdf.

People with risks of developing lifestyle-related diseases are invited to undergo one of the two types of specific health guidance. The criteria included in Table 3.2 are used to identify these people. People with high risks of developing lifestyle-related diseases are invited to an intensive health guidance (*sekkyokuteki shien*). During the first consultation, an action plan to improve lifestyle habits is developed for each participant. Based on this plan, each participant is monitored on his/her lifestyle changes and regular health counselling is provided to promote healthy lifestyle using different means, such as face-to-face individual or group consultation, and telephone or e-mail consultation. After a number of monitoring and counselling, the final assessment on each participant's progress is made and this usually takes place after six months since the development of action plan. On the other hand, people with lower risks of developing lifestyle-related diseases are asked to participate in motivational health guidance (*doukizuke shien*). Again during the first consultation an action plan is developed for each participant. The participant follows this plan on their own and the progress is assessed after six months. In order to take account of the concerns over quality of life, the elderly receive motivational health guidance instead of intensive health guidance even if they have high risks of developing lifestyle-related diseases.

Table 3.2. Eligibility criteria for specific health guidance

Abdominal circumference/BMI	Number of following risks: Blood glucose (Glu ≥100mg/dl when fasting, HbA1c≥5.6% (NGSP)) Fat (Neutral fat≥150mg/dl or HDL< 40mg/dl), Blood pressure (≥130mmHg (contraction phase) and ≥85mmHg (diastolic phase))	Smoking	40-64 yrs old	65-74 yrs old
Abdominal circumference ≥85 cm (men) ≥90cm (women)	More than two		Intensive health guidance	Motivational health guidance
	One	Yes	Intensive health guidance	Motivational health guidance
		No	Motivational health guidance	Motivational health guidance
Abdominal circumference <85 cm (men) >90cm (women) and BMI≥25	Three		Intensive health guidance	Motivational health guidance
	Two	Yes	Intensive health guidance	Motivational health guidance
		No	Motivational health guidance	Motivational health guidance
	One		Motivational health guidance	Motivational health guidance

Source: MHLW (2018b), *Hyoujuntekina kenshin hoken shidou programme – heisei 30 nendo ban (Standard health check-up and health guidance programme – 2018)*, http://www.mhlw.go.jp/file/06-Seisakujouhou-10900000-Kenkoukyoku/00_3.pdf.

Several OECD countries have health check-ups for chronic conditions but compared to Japan, they are more targeted, the interval of health check-ups is less frequent and they are sometimes provided by health care professionals other than doctors. In Australia, for example, primary health physician can provide health assessment for people who are at risk of developing a chronic disease. This assessment is provided to people aged between 45 and 49 once if they have at least one risk factor (lifestyle habits or a family history) for developing a chronic disease such as type 2 diabetes or heart disease. The assessment is also provided to people aged 75 and over with an interval of 12 months or longer (The Department of Health, 2014; The Department of Health, 2016). In Estonia, health check-ups and guidance are provided by family nurses for people aged between 40 and 60 with hypertension or diabetes (Lai, 2013), and in 2007, Korea introduced the National Screening Program for Transitional Ages, targeting people at age 40 and 66 (Kim et al., 2012). In England, the NHS Health Check was introduced for people aged between 40 and 74 in 2009 and an invitation letter is sent every five years to those who do not already have diabetes, heart disease, or kidney disease or have not had a stroke, in order to screen them for the risk of developing chronic conditions including heart disease, stroke, kidney disease, type 2 diabetes, or dementia (available only for those above 65 and above). This check-up is often undertaken by a nurse or health care assistant (Gmeinder et al., 2017; NHS, 2017).

Although increasing, the uptake of specific health check-ups in Japan is much lower than the national target of 70% and varies across insurers and between genders. The uptake has increased from 39% in the introduction year of 2008 but in 2016 it was still 51.4%. While uptake was as high as 76.7% for Mutual Aid Associations for civil servants and 75.2% for insurance associations of large companies, uptake was low at 36.6% on average across municipality-based insurance schemes. Uptake among those insured by insurance associations of small and medium-size enterprises is also low at 47.4%, although this may

be underreported due to challenges in transferring data. Uptake is also low among women aged between 40 and 64 compared to men in the same age group but the gender trend is reversed among those aged 65 and over (MHLW, 2016b).

According to the data collected through specific health check-ups, the prevalence of lifestyle-related diseases has decreased among participants, particularly among female participants in recent years. The share of people with risk factors for developing lifestyle-related diseases has declined from 19.9% of participants in the introduction year of 2008 to 17.0% in 2016. In 2016, the share of those who were identified as being at risk of developing lifestyle-related diseases was high among men in their 40s and early 50s (almost 30%) while the share was much lower among women across age groups (below 10%) (MHLW, 2016c). Specific health check-ups have been monitored in Japan based on the data collected but these data alone are not enough to evaluate the effectiveness in reducing the lifestyle-related diseases among the target population. For example, the prevalence of lifestyle-related diseases among non-participants is not known, and it may be possible that the uptake of specific health check-ups is low among people with high risks of developing lifestyle-related disease.

Box 3.4. Health insurers in the Japan health system

In Japan, there are over 3 000 employment- and municipality-based health insurance schemes and each individual is covered by one of these publicly funded insurance schemes.

People who are employed with a full-time employment contract at a company and their dependents are generally covered by employment-based health insurance. There are numerous forms of employment-based insurance. Large enterprises sometimes have their own insurance association, or form an insurance association together at the sector or industry levels. These insurance associations are called Society-Managed Health Insurance (*Kenpo kumiai*) and they are usually part of the National Federation of Health Insurance Societies (*Kenporen*) which covers about 30 million insured people. On the other hand, many small and medium-size enterprises are part of the Japan Health Insurance Association (*Kyoukai Kenpo*) which has about 39 million insured people. Public servants at the central and local governments are part of Mutual Aid Associations.

In addition, the National health insurance which is organised at the municipality level (*Kokuho*) covers those who are not covered by employment-based insurance. Individuals covered by municipality-based insurance include those who are self-employed, not employed, retired aged below 74 and working with irregular employment contract. Disadvantaged people who receive livelihood subsidies are also covered by this insurance without paying premiums. Prior to 2008, the elderly aged 75 and over were also covered by the municipality-based insurance, but since 2008 the health insurance fund has been organised at the prefectural level in order to have a separate financing mechanism to pay for the growing health care spending among the elderly, and this insurance fund receives financial support from different health insurance schemes and tax transfer.

Individuals can also enrol with private health insurance on a voluntary basis. Private health insurance is either complementary to the publicly funded health insurance which are described above, by covering all or part of the residual costs not otherwise reimbursed, or supplementary by covering additional services such as a private room at hospital not at all covered by the publicly funded scheme.

With regards to specific health guidance, the completion rate is very low. Although increased from 7.7% in 2008, only 18.8% of those who were invited to follow specific health guidance based on specific health check-up results completed it in 2016. Among the people covered by municipality-based insurance, the completion rate is higher among those covered by smaller municipalities' insurance, but among those covered by employment-based insurance, it is higher among those covered by insurance for larger enterprises and civil servants. Between the two types of health guidance, completion was lower among those who needed to follow intensive health guidance (7.9%) compared to others who needed to undergo motivational health guidance (10.9%). Disaggregated by age group, the completion rate of specific health guidance was lower among the young (15.6% among those between 40 and 44 compared to 28.1% among those aged between 70 and 74) (MHLW, 2016b).

Some evidence shows that the specific health guidance had some positive impact on lifestyle changes among participants, at least for a short term. A study following participants who completed specific health guidance in 2008 for five years found that their abdominal circumference, weight, blood glucose level, and neutral fat levels generally improved. For example, among those who participated in specific health guidance in 2008, over the following five years neutral fat fell between 29.55mg/dl and 36.23mg/dl for male participants and between 26.27mg/dl and 31.79mg/dl for female participants, and blood pressure (contraction phase) fell between 0.63mmHg and 2.13mmHg for male participants and between 2.65mmHg and 3.24mmHg for female participants. All participants also had a reduction of abdominal circumference and weight over the five years. However, the level of blood glucose did not decreased among all participants and after 5 years the level for male participants ranged between 0.01% lower and 0.11%, higher than the blood glucose level in 2008, and blood glucose levels for female participants ranged between 0.04% lower and 0.08% higher than the initial level (MHLW, 2016d). It may be possible that those who completed specific health guidance in the introduction year were highly motivated to change their lifestyles, and it is not clear whether such findings can be generalised for participants who completed specific health guidance in recent years.

Recently, the prevalence of diabetes has been decreasing, but the association of this trend with specific health check-ups and guidance is not clear. According to the National Health and Nutrition Survey, the share of people who were suspected of having diabetes (refers to people who reported to be under diabetes treatment or to have a high measured level of HbA1c (above 6.5%)) and potentially developing diabetes (refers to people with a high measured level of HbA1c equal to or higher than 6.0% and below 6.5%) has declined from 25.6% in 2007, a year before the introduction of specific health check-up and guidance, to 24.2% in 2016, despite the continuing population ageing (MHLW, 2017d). However, since the data cannot be analysed separately for those who had undergone specific health check-up and guidance and those who did not, the impact of specific health check-up and guidance is not known.

While evidence on effectiveness is still limited, in recent years Japan has intensified efforts to increase the uptake of specific health check-up and guidance. Financial incentives have been made available to insurers. In Japan, the elderly health insurance scheme receives financial support from other health insurance schemes (see Box 3.4). Since 2013, financial incentives have been given based on the level of uptake of specific health check-up and guidance among the insured; while those with low uptake are required to give more financial support to the elderly health insurance, those with high uptake pay less. In addition, in 2018, the financial penalty was expanded to encourage

Society-Managed Health Insurance Associations and Mutual Aid Associations with low uptake to improve uptake (MHLW, 2017e). Moreover, to facilitate and improve access to specific health guidance, since 2017, instead of face-to-face consultation, a tele-consultation has been allowed as the first consultation of health guidance, and starting in 2018 the first consultation can be provided on the same day as when a specific health check-up is provided to those who are likely to need specific health guidance even if all check-up results are not yet available. Some requirements for lifestyle change were also modified and beside current health status, progress over time is being monitored in order to provide more personalised specific health guidance and to improve its effectiveness.

3.3. Provision of other health check-ups including cancer screening is also encouraged

3.3.1. Additional health check-ups delivered by municipality vary across regions

The MHLW recommends that regional governments provide additional health check-ups, beyond those for infants and preschool children and specific health check-ups which they are required to provide. It is recommended that municipalities provide additional health check-up items to their residents younger than 74 and the health insurance organised at the prefectural level (see Box 3.4), and municipalities are encouraged to provide a health check-up to the residents older than 75. The MHLW also recommends a check-up for osteoporosis for women aged 40, 45, 50, 55, 60, 65 and 70, an examination for periodontal disease for people aged 40, 50, 60 and 70, and tests for hepatitis B and C for those aged 40 and over (MHLW, 2015b). The majority of municipalities provided check-ups for periodontal disease (64.5%) and osteoporosis (62.3%) in 2016 (MHLW, 2018c). The MHLW also recommends that municipalities provide cancer screening; this is described in detail in the next section (Section 3.3.2).

The central government also recommends that municipality and municipality-based insurance provide additional health check-ups. In order to improve the health of residents, as laid out in regional health promotion plan (Chapter 2), municipalities can introduce different public health interventions and many of them consider health check-ups as important public health intervention in their regions. Across municipalities, the content and specific target population of health check-ups for younger people varies depending on different factors including specific population needs and financial situations. For example, Arakawa, one of 23 cities in the Tokyo prefecture, has a health check-up for lifestyle-related diseases among those aged between 35 and 39, which also includes a mental health check-up (Box 3.5; Arakawa City, 2018). In Adachi, another ward in Tokyo, a health check-up combined with health promotion is available for those aged between 18 and 40 who do not have the opportunity to access health check-up otherwise (Adachi city, 2018). However, across regions, health check-up items for people aged 75 and over are similar to the specific health check-up (*Tokutei kenshin*) and check-up items are fixed nationwide (MHLW, 2015b).

Box 3.5. Health check-ups for the insured aged 35-39 in Arakawa City, Tokyo prefecture

Arakawa City has specific health promotion and prevention activities for residents aged between 35 and 39. These include a medical interview, a health check-up including a mental health check, stomach cancer screening, blood pressure, blood test, lung capacity test (for smokers) and clinical examination. About a month after the health check-up, the results are explained to the participants and during this consultation, a public health nurse and a nutritionist provide health education as needed, and a group work is also provided if the results show a need for health guidance. Furthermore, those who are considered to be in need of follow-up health care will have an individual consultation with a doctor (Arakawa City, 2018).

Source: Arakawa City (2018), *Kokoro to karada to kimochi no keep: 35 kara 39 sai kenshin no goannai (Information on health check-ups for people aged between 35 and 39)*, http://www.city.arakawa.tokyo.jp/kenko/hokeneisei/seijinkenshin/3539kensin.html.

For some of the health check-ups organised regionally, subsidies are available to municipalities. The central government provides subsidies for examinations for periodontal disease, osteoporosis and hepatitis. The health check-up for the elderly aged 75 and above is subsidised by the central and regional governments. However, health check-ups for residents aged between 40 and 74, which are provided in addition to legally required specific health check-up and specific health guidance, are usually funded by municipality and municipality-based insurance, although can also receive subsidies from the central government upon request. Reflecting the differences in fiscal conditions, the out-of-pocket payment for regionally organised health check-ups differs across municipalities (MHLW, 2015b).

At the national level, monitoring and evaluation of these additional health check-ups organised by municipality is limited. For example, the uptake of these services by municipality is not known at the national level. It is likely that the uptake varies across regions because out-of-pocket payments and the organisation of these health check-ups vary (e.g. they can be provided at the designated facility such as a city hall by contracted health care professionals, at public health centres on fixed dates or at contracted health care facilities). The effectiveness of these additional health check-ups is also unknown, as the existing health information system does not allow such evaluation as these data cannot be linked with other data such as health care claim data.

3.3.2. Japan does not have nationally organised cancer screening programmes and cancer screening coverage is low

Cancer is the leading burden of disease in Japan (Chapter 1), and the MHLW recommends that municipalities provide screening for stomach, colorectal, lung, breast and cervical cancer. Employment-based insurers can voluntarily include cancer screening as part of their health check-ups for their insured and sometimes for their insured dependents.

The national guideline for cancer screening lays out recommendations on the method, target age and interval for the above-mentioned five cancers. For stomach cancer, a photofluorography or endoscopy is recommended to people aged 50 and over every two years, while colorectal cancer screening based on faecal occult blood test is recommended to people aged 40 and over every year. For lung cancer, a chest X-ray is recommended to

people aged 40 and over annually, and sputum cytology is also recommended to smokers aged 50 and over with more than 600 cigarettes smoked in lifetime. Furthermore, mammography is recommended to women aged 40 and over every two years. As for cervical cancer, Pap smear is recommended to women aged 20 and over every two years, and colposcopy is also recommended for this target group if considered necessary (MHLW, 2018d; MHLW, 2018e). However, these guidelines are sometimes different from the international guidelines (Box 3.6).

Box 3.6. Cancer screening guidelines in Japan do not completely align with international recommendations

Japanese guidelines for cancer screening deviate from international practices. The target group for cancer screening is not always in accordance with those used in many OECD countries. While many OECD countries use age 69 as the upper limit for screening programmes for breast, cervical and colorectal cancer, there is no upper age limit in Japan (Table 3.3). In addition, while the majority of OECD countries provide cervical cancer screening every three years, the interval is less frequent in Japan (every two years). For lung cancer, which is recommended in the Japanese national guideline based on the evidence from case control studies in the country, international recommendations are not available (OECD, 2013a; OECD, 2018a; MHLW, 2018d). However, studies in the United States have recently found the effectiveness of low-dose CT scans for lung cancer detection and recommend a low-dose CT scan annually to target population (US Center for Disease Control and Prevention, 2018).

Table 3.3. Target age in breast cancer screening programmes, 2016/17

Nationwide population-based		Population-based but not nationwide		Non-population-based
Wider age range (20 years+)	Narrower age range	Wider age range (20 years+)	Narrower age range	Wider age range (20 years+)
Australia (50-69), Belgium (50-69), Denmark (50-69), Finland (50-69), France (50-74), Germany (50-69), Hungary (45-65), Iceland (40-69), Israel (51-74), Korea (40+), Latvia (50-69), Lithuania (50-69), Luxembourg (50-69), Netherlands (50-75), New Zealand (45-69), Norway (50-69), Poland (50-69), Portugal (45-69), Slovenia (50-69),Spain (50-69), Sweden (50-69)	England (53-69), Estonia (50-65), Ireland (50-64 but 50-69 by 2021), Northern Ireland (53-70), Wales (53-70)	Canada (50-69), Czech Republic (45+), Italy (50-69), Japan (40+), Mexico (50-69), Switzerland (50-70) Turkey (40-69)	Chile (50-64),	Greece (40+), Slovak Republic (40-69) and United States (40 or 50+)

Note: Data in parenthesis refers to the target age group for breast cancer screening in then respective country.
Source: OECD (2018a), *OECD Health Statistics,* http://dx.doi.org/10.1787/health-data-en.

Given the high disease burden, Japan has stomach cancer screening, which is not common across OECD countries, but the recommended protocol for this screening is different from international recommendations. The International Agency for Research on Cancer (IARC), the specialised cancer agency of the WHO, recommends that countries with high burden of stomach cancer explore an introduction of population-based *H. pylori* screening and treatment while considering local contexts such as health priorities and cost-effectiveness (IARC *Helicobacter pylori* Working Group, 2014). In 2018, the incidence rate for stomach cancer in Japan was one of the highest (12.4 per 100 000 persons) in the OECD followed by Korea (39.6), Chile (17.8) and Lithuania (13.3) (IARC, 2018). In Japan and Korea population-based stomach cancer screening is

available. In Japan, stomach cancer screening focuses on biennial screening either by photofluorography or endoscopy to people aged 50 and over while therapeutic regimens for the eradication of *H. pylori* is covered by the health insurance for patients with gastric or duodenal ulcer who are infected with *H. pylori* (MHLW, 2013b; MHLW, 2018d). In Korea, nationwide stomach cancer screening using either upper gastrointestinal series or endoscopy is available every two years for men and women aged 40 or over (Choi et al., 2015).

Source: OECD (2013a), *Cancer Care: Assuring Quality to Improve Survival, OECD Health Policy Studies*, http://dx.doi.org/10.1787/9789264181052-en; OECD (2018a), *OECD Health Statistics*, http://dx.doi.org/10.1787/health-data-en; MHLW (2018d), *Gan kenshin (Cancer screening)*, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000059490.html; US Center for Disease Control and Prevention (2018), *What Screening Tests are There for Lung Cancer*, https://www.cdc.gov/cancer/lung/basic_info/screening.htm; IARC Helicobacter pylori Working Group (2014*), "Helicobacter pylori Eradication as a Strategy for Preventing Gastric Cancer"*; IARC (2018), *"Colorectal cancer screening"*; MHLW (2013b), *Yakujihou no shounin to yakka shuusai no process (Process on pharmaceutical product assessment and pricing)*, http://www.mhlw.go.jp/file.jsp?id=146639&name=2r9852000002wkg5_2.pdf; Choi, K. S., et al (2015), "Effect of endoscopy screening on stage at gastric cancer diagnosis: results of the National Cancer Screening Programme in Korea", https://doi.org/10.1038/bjc.2014.608.

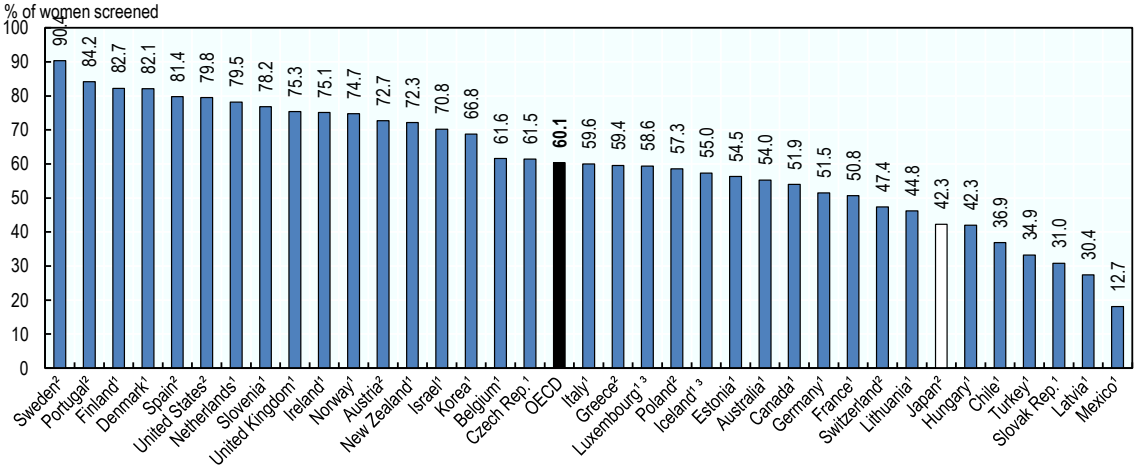
Unlike many OECD countries which have free nationwide screening programmes for breast, cervical and colorectal cancer (OECD, 2013; European Commission, 2017), standardised nationwide cancer screening programmes do not exist in Japan. While many municipalities organise cancer screening programmes based on the Health Promotion Act, employment-based insurers do not always provide cancer screening. In addition, both municipalities and employment-based insurers often do not follow the cancer screening recommendations set at the national level, and the target population and screening intervals are often different from the national recommendations. In addition, different screening methods are sometimes used (e.g. ultrasonography for breast cancer screening and a chest CT scan for lung cancer) and screening is often provided for cancers other than the five mentioned earlier, and for example, PSA for prostate cancer screening and cytological diagnosis for uterine body cancer are sometimes provided. In 2015, 85% of municipalities reported providing screening for cancers other than the five recommended in the guideline (MHLW, 2016e).

Depending on the municipality and employment-based insurance, out-of-pocket payment for cancer screening varies. The cost of municipality-organised screening for five cancers is subsidised by the central government but due to fiscal situations, the out-of-pocket payment is different across municipalities. Similarly, based on their financial situation employment-based insurers either fully or partly cover the out-of-pocket payment for cancer screening provided by their contracted provider, and given differences in cost-sharing rules and variations in the actual cost of screening, the out-of-pocket payment for cancer screening is also different across employment-based insurers (MHLW, 2018e).

In the OECD, countries with free nationwide organised screening programmes have high cancer screening coverage, while coverage in countries without national programmes – including Japan – is low. Based on survey data, in 2016, 42.3% of women aged between 50 and 69 had a mammography in the past two years in Japan, about 18% lower than the OECD average of 60.1% (Figure 3.2). Similarly, for cervical cancer, although the screening rate had increased by almost 20 percentage points over the past decade, less than half of women aged between 20 and 69 (42.4%) had a Pap smear in the past two

years in Japan, while 60.7% of target women had Pap smear in the past three years on average across OECD countries. It is likely that the population coverage of cervical cancer screening would be higher if the screening coverage in Japan also took into account a three year period, rather than the current two year figure. Nonetheless, cervical cancer screening coverage needs to continue increasing in Japan particularly because Japan relies mainly on screening to tackle cervical cancer while other OECD countries also have a national programme on HPV vaccination, in many cases alongside a national screening programme (ECDC, 2012; Chapter 1).

Figure 3.2. Mammography screening in women aged 50-69 within the past two years, 2016 (or nearest years)



1. Programme. 2. Survey. 3. Three-year average.
Source: OECD (2018a), *OECD Health Statistics*, http://dx.doi.org/10.1787/health-data-en.

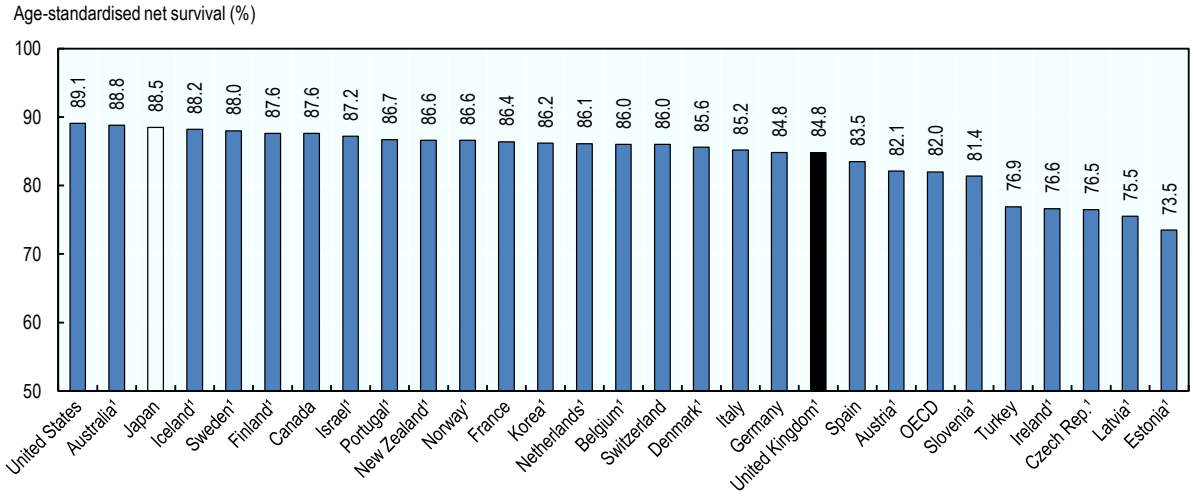
In Japan, the screening rate for lung, stomach and colorectal cancers was around the similar level as that for breast and cervical cancers, but it is higher among men than among women. According to the National Livelihood survey, in 2016, 51.0% of men and 41.6% of women both aged between 40 and 69, had had a lung cancer screening in the past year. As for stomach cancer, the screening rate was 46.4% among men and 35.6% among women and for colorectal cancer the screening rate was 44.5% for men and 38.5% for women in the past year (MHLW, 2017d). Screening rates for these cancers are not available for other countries; lung and stomach cancer screening is not common in the OECD, and countries apply different screening methods for colorectal cancer, making it difficult to collect internationally comparable data from countries.

There are large variations in cancer screening coverage in Japan, possibly reflecting differences in out-of-pocket payment, invitation, delivery, organisation and resourcing strategies and public awareness in relation to cancer screening. For example, in 2016, among large municipalities, Maebashi city had a highest screening coverage across different cancers (18.6% for stomach cancer, 17.4% for lung cancer, 16.4% for colorectal cancer, 26.1% for cervical cancer and 28.9% for breast cancer). The coverage, however, was low in Otsu City for stomach cancer (1.7%), Sapporo City and Kawagoe City for lung cancer (1.2%), Kyoto City for colorectal cancer (2.7%), Iwaki City and Kawagoe City for cervical cancer (7.8%) and Miyazaki City for breast cancer (6.6%). Across municipalities, cancer screening coverage is generally higher for breast and cervical

cancer (about 10% and over) than for stomach, lung and colorectal cancer (MHLW, 2018c). It should be noted that the coverage of municipality-based cancer screening is calculated using all residents in specific age groups as target population even if at least some residents are eligible to undergo cancer screening organised by employment-based insurance and do not need to be part of their target population, so these screening coverage data are likely to be underreported. Regional variations need to be interpreted with care by taking into account of differences in the coverage of employment-based cancer screening across regions.

Despite the relatively low screening coverage in general, cancer survival estimates are high in Japan compared to other OECD countries. Based on the internationally comparable data from 16 registries covering 41% of the Japanese population, five-year net survival for breast cancer was 89.4%, the highest after the United States and Australia in the OECD among people diagnosed between 2010 and 2014 (Figure 3.3). As for cervical cancer, five-year net survival was 71.4%, the highest in the OECD after Norway at 73.3%, and the difference with Norwegian estimate was not statistically significant (OECD, 2018a). Similarly for colon cancer, net survival was high. For rectal cancer, net survival (64.8%) was higher than the OECD average (61.0%) but not as high as in the best performing countries such as Korea and Australia with net survival above 70% (OECD, 2018a; Allemani et al., 2018).

Figure 3.3. Breast cancer five-year net survival, 2010-2014



Note: 1. Data with 100% coverage of the national population.
Source: OECD (2018a), *OECD Health Statistics,* http://dx.doi.org/10.1787/health-data-en.

The survival estimate is also high among cancer patients for which many OECD countries do not have screening programmes (Box 3.6). Five-year net survival estimates for patients with stomach cancer are the second highest in the OECD after Korea and have improved fast from 50.5% among those diagnosed between 2000 and 2004, to 60.3% among those diagnosed between 2010 and 2014. Several studies show that stomach cancer screening has contributed to the mortality reduction (Mizoue et al., 2003; Miyamoto et al., 2007). Furthermore, five-year net survival for lung cancer is the highest in the OECD at 32.9% among those diagnosed between 2010 and 2014 (Allemani et al., 2018).

However, the factors contributing to the good cancer care outcomes are not well known because the cancer registry in Japan is not complete enough to undertake such an assessment. While many OECD countries have established a national cancer registry over recent decades and use the registry data to monitor the quality of cancer screening, to provide feedback on the quality of screening to providers, and to improve the screening programmes (Box 3.7), the information system for cancer care in Japan is still fragmented. In Japan, the data collected through municipality-based screening is monitored and indicators such as recall rate, the share of those who had follow-up detailed examinations, detection rate, and positive predictive values are reported by municipalities (Saito, 2018). However, this monitoring effort only includes people who underwent municipality-based screening programmes, but not others who underwent cancer screening provided and covered by employment-based insurance or who had cancer screening voluntarily at health care facilities. By increasing the coverage of providers, regional cancer registries have been developed, and in 2016, the national cancer registry was started, expanding data coverage across providers and regions. Yet, it is still challenging to assess the effectiveness of cancer screening and also cancer care comprehensively in Japan.

Box 3.7. Cancer registries across OECD countries and their use

Many OECD countries have established national cancer registries in recent decades. For example, Finland has a well-established national cancer registry and all providers are obliged to report to the registry. In Sweden, each cancer centre has its own quality registry, covering 20 different cancers, and the National Cancer Registry in the National Board of Health and Welfare oversees the national trend and regional differences in cancer control, using data across all oncology centres. To illustrate another example, Korea has the Central Cancer Registry, a hospital-based nationwide cancer registry, covering the entire population (OECD, 2013a).

A national cancer registry is essential for efficient management of screening programmes. It can identify the people who have and have not participated in the screening programmes, those who are monitored outside of the programme due to their previous diagnosis of cancer and/or genetic predisposition to specific cancer and those who do not consent to undergo screening. An established cancer registry allows sending personalised invitations and reminders to the target population and these personalised and targeted communication strategies are considered important for increasing the screening coverage (OECD, 2019).

In view of conducting more detailed assessments, including of the effectiveness of cancer screening, an increasing number of OECD countries collect stage information. Stage at diagnosis is collected in a number of countries including the Czech Republic, Denmark, Ireland, Korea, the Netherlands, Norway, Slovenia, Sweden, Switzerland and the United States. In the Czech Republic, and Sweden, stage information is collected by using tumour node metastasis (TNM) classifications. Danish Cancer Registry also collects stage information based on TNM and surveillance, epidemiology and end results (SEER) classifications while in Norway, cancer registry collects stage information by TNM classification for colorectal, ovarian and breast cancers and by SEER high-level classification for the other cancers. These data can be explored periodically to assess the

effectiveness of existing cancer screening protocols such as target group, screening interval and/or methods and effectiveness of screening across populations with different background.

Cancer registries in several countries also collect treatment and outcome data, allowing even more in-depth analyses on the effectiveness of cancer care interventions. For instance, in Slovenia and Sweden, registries have been collecting treatment and outcome data, including remission and relapse while in Switzerland, treatment and outcome data are available in some cantonal registries. Furthermore, in the United States, 17 SEER registries routinely collect data on first course of treatment, and active follow-up for vital status, besides patient demographics, primary tumour site, tumour morphology and extent of disease.

Several countries also use cancer registry data for quality assurance of cancer care. For instance, a comprehensive quality assurance mechanism, which allows providing feedback to providers, has been developed in Israel for breast cancer. Every entry in the cancer detection centre is registered in a centralised electronic database. The database contains screening information from all providers, and over 90% of diagnosis test results for individuals who had a mammography. Data including detection rates, recall rates, further examination rates, and staging information, and negative/positive test result rates are provided to all providers every year so that they can compare their performance relative to the national average and to other providers in the country. Using the database, every care pathway is monitored, and providers receive a report in case of an irregular pathway (OECD, 2013a).

Source: OECD (2013a), *Cancer Care: Assuring Quality to Improve Survival*, http://dx.doi.org/10.1787/9789264181052-en; OECD (2019), *OECD Public Health Reviews: Chile: A Healthier Tomorrow*, https://doi.org/10.1787/9789264309593-en.

3.3.3. The coverage of additional health check-up items varies across employment-based insurers

MHLW recommends employer-based insurance to provide additional health check-ups. Recommendations are slightly different between Society-Managed Health Insurance (*Kenpo kumiai* or *Kenpo*) and Japan Health Insurance Association (*Kyoukai Kenpo*), but basically the provision of more health check-up items is recommended. For example, recommendations include health check-ups for lifestyle-related diseases at least once every five years for employees and their dependents aged between 30 and 40 who are covered by the Society-Managed Health Insurance. Recommendations for Japan Health Insurance Association include the provision of additional health check-ups for the insured aged between 40 and 50 (MHLW, 2015). In general, a wider coverage of health check-up items is considered favourably as this is seen as the level to which employers care about the welfare of their employees. Insurers with good financial conditions try to cover additional health check-up items, but across insurers, the coverage of additional health check-up items varies substantially. Moreover, the uptake and effectiveness of these health check-ups are not known because of the fragmented nature of data holdings at the provider levels.

3.3.4. Many other health check-ups are available privately

Individuals can freely choose to undergo health check-ups from amongst the many check-ups offered outside of publicly funded health care. Many health care providers provide such health check-up services (*ningen dock*). The content of these health check-up items provided varies substantially, but they often include cancer screening. Some hospitals provide health check-ups which last more than a day, and the cost varies widely across types of health check-ups and providers. For full-time employees, the cost of such health check-up is sometimes covered by their insurance, particularly among those insured by the Society-Managed Health Insurance. Some private health insurance also reimburses part of the out-of-pocket payment paid by the insuree if their contract includes such coverage. Information on these additional check-ups, covered either by publicly funded insurance or privately, is stored and managed in a fragmented manner at the provider level, so the uptake and its effectiveness is not known.

For these health check-ups, there is no quality assurance mechanism, such as regulations on the coverage and frequency, unlike the legally required health check-ups (Box 3.8). Hence, these additional services may even increase health risks through high exposure to radiation, over-diagnosis and over-treatment, or add unnecessary stress, for example, through false negative and positive results (Box 3.9). Information on such risks is not available, for example in the form of guidelines, to guide insurers and municipalities in making coverage decisions, support providers in providing evidence-based health check-ups, and also support individuals in deciding which health check-up to choose.

Box 3.8. The quality assurance mechanisms have been established for health check-ups which are required to provide legally

The quality assurance mechanism has been developed for health-check-ups which are legally required in Japan, namely health check-ups for preschool children, school children, full-time employees and adults aged between 40 and 74. For these health check-ups, the coverage of health check-up items and methods of delivering them are reviewed regularly by experts at working group meetings designated for each of these check-ups, and national guidelines are updated and circulated among providers so that the quality of these services is standardised.

For example, as part of quality assurance of specific health check-ups and guidance, based on the national guideline, the National Institute of Public Health (NIPH) has developed learning and support materials and makes these materials available online for providers of specific health check-ups, and provides training on the specific health check-up and guidance to managers at the prefectural governments, and insurers at the national or prefectural level. Three-day training is available for trainers at the prefecture level so that they can train managers at municipality governments to plan, organise and evaluate specific health check-ups at the local level. Two-day training is also available for those engaged in evaluating specific health check-ups and guidance at the prefectural level so that they can train and support those responsible for monitoring and evaluation of specific health check-ups and guidance at the municipality or insurer's level. Those who underwent training provided by the NIPH provide training to providers of specific health check-ups at the prefectural and municipal levels and NIPH staff sometimes provides training to them in order to assure that the quality of specific

health check-ups and health guidance provided by various health care providers is high and standardised.

In addition, the National Federation of Industrial Health Organization makes further efforts to assure the quality of core health check-ups for full-time employees. The National Federation evaluates samples of blood and urine laboratory test, X-ray examination and ultrasonography for testing precision provided by participating providers, and these results are reported publically. If they wish, providers of health check-ups can ask the National Federation of Industrial Health Organization to conduct comprehensive performance assessment of multiple dimensions including human resource, equipment, facility, technical aspects of health check-ups, data management and follow-up protocols after a health check-up, and certifies them based on the assessment results. In addition, the Federation provides training to professionals providing health check-ups including doctors, public health nurses, nurses, clinical laboratory technicians and radiology technicians providing health check-ups.

Quality assurance procedures are available for most health check-ups which municipalities are recommended to provide. To assure quality, national guidelines have been developed and updated for health check-up items recommended to provide at the municipality level including osteoporosis, periodontal disease, tests for hepatitis and health check-ups for the elderly aged 75 and over.

Additional efforts have been made to improve the quality of certain health check-ups. Recently, the government tries to incentivise insurers to attain higher health outcomes through specific health check-up, and the outcome measures such as a reduction of people with diabetes and people with risks of developing lifestyle-related diseases are used to monitor the effectiveness of specific health check-ups. But more can be done. For example, within the national monitoring system, these outcomes could be reported at the insurance level and used to provide feedback to each insurer.

Box 3.9. Potential harms associated with secondary prevention

While the benefits of health check-ups are often emphasised in Japan, there are also potential risks associated with health check-ups. Hurley (2014) lists several common instances of over-diagnosis in secondary prevention including dual energy X-ray absorptiometry to measure bone mineral density and cancer screening such as cervical smear test, CA-125 antigen for ovarian cancer screening, prostate specific antigen screening, and mammography. Other studies also suggest certain degrees of over-diagnosis through breast cancer screening with mammography (Gøtzsche and Jørgensen, 2013; Independent UK Panel on Breast Cancer Screening, 2012) and prostate cancer (Loeb et al., 2014), while studies also found some benefits in prolonging life or reducing mortality due to cancer. Recently, a low-dose computed tomography (CT) scan was found to be associated with a reduction of lung cancer mortality in the National Lung Screening Trial (NLST) in the United States (National Lung Screening Trial Research Team, 2011), but there are also evidence of over-diagnosis (Patz et al., 2014). With regards to CT scans, a study shows that their radiation doses can increase the risk of developing harmful cancer (Berrington de González et al., 2009).

Source: Hurley, R. (2014), "Can Doctors Reduce Harmful Medical Overuse Worldwide?", http://dx.doi.org/10.1136/bmj.g4289; Gøtzsche, P.C. and K. Jørgensen (2013), "Screening for Breast Cancer with Mammography", http://dx.doi.org/10.1002/14651858.CD001877.pub5; National Lung Screening Trial Research Team (2011), "Reduced Lung-Cancer Mortality with Low-Dose Computed Tomographic Screening", http://dx.doi.org/10.1056/NEJMoa1102873; Patz, E. et al. (2014), "Overdiagnosis in Low-Dose Computed Tomography Screening for Lung Cancer", http://dx.doi.org10.1001/jamainternmed.2013.12738; Berrington de González, A. et al. (2009), "Projected Cancer Risks from Computed Tomographic Scans Performed in the United States in 2007", http://dx.doi.org/10.1001/archinternmed.2009.440.

3.4. Japan needs to review its secondary prevention strategies and focus on implementing effective and economically sound secondary prevention policies

3.4.1. Japan ought to review all health check-ups together and develop secondary prevention policies based on national and international evidence

Considering the tight fiscal situation, which is likely to continue due to population ageing and an increasing burden of lifestyle-related diseases, there is a mounting pressure for the Japanese government to allocate resources across different policy options and use them effectively and efficiently. Compared to OECD peers, the volume and range of health check-ups in Japan is unusually high, and it is not clear that all tests are adding value to the system in terms of both the health of the population and financing through cost-saving. Additionally, among adults, given the concentration of tests on the working-age population it seems sensible to suspect that Japanese full-time workers are being tested far more frequently and extensively than necessary, while those not in employment or those with part-time employment contracts may be overlooked.

In order to support decisions for adequate resource allocation across secondary prevention policies, Japan may wish to review all health check-ups and cancer screening together to assess whether all tests are necessary and effective. The risk of duplicative tests, waste, over-diagnosis and even unnecessary exposure to harm (e.g. through x-ray radiation) should be assessed. Generally, each health check-up has been evaluated separately through consultations of its own working group, which is often made up mainly of

providers. This comprehensive review, however, could be undertaken across all health check-ups and cancer screening, to assess priorities in Japanese secondary prevention strategies and the role of secondary prevention in the health system more broadly, and to streamline different initiatives while maximising their overall impact. This comprehensive review could include an assessment of health check-ups which are provided legally and recommended, and also those which are provided voluntarily by municipalities, insurers and providers. In order to design secondary prevention policies in a people-centred manner, this review could also benefit from an involvement of a wide range of stakeholders including financing agencies and users.

It is important to develop policies based on the studies undertaken on the Japanese population to respond to its unique epidemiological, socio-economic and health system challenges, but policy developments and evidence from other OECD countries could also be used to further complement any analysis carried out in Japan. For example, a number of studies conducted in other countries suggest that population-based routine general health check-ups were not effective. A systematic review of 16 studies conducted in Denmark, Sweden, the United Kingdom and the United States found that general health check-ups did not reduce morbidity or mortality among adults while they increased the number of newly diagnosed cases. This systematic review also highlighted the problems such as false-positive result, which causes anxiety and leads to unnecessary follow-up tests, over-diagnosis and overtreatment, suggesting that a general health check-up could be harmful (Krogsbøll et al., 2012). Some argued that studies in the review were too old, based on examples between the 1960s and 1990s, and the effectiveness of contemporary health check-ups may be different due to progress in medical technologies (Lauritzen et al., 2014). Nonetheless, based on these findings, Denmark put an implementation of health check-ups on hold (Krogsbøll et al., 2013).

In addition, several studies suggest that population-based health check-ups may potentially increase health inequality. As found among Japanese participants to health check-ups (Box 3.10), a study in Germany found that those with high risk factors and low socio-economic background are less likely to participate in population-based health check-ups than others, and the study suggested a need to develop a targeted health check-up (Hoebel et al., 2014). A systematic review of studies conducted in different OECD countries also found that uptake is low among those with clinical need and higher risk factors, suggesting that population-based health check-ups may in fact increase health inequality and a tailored and targeted approach is needed (Dryden et al., 2012). Possibly reflecting this and similar evidence, only very few OECD countries provide general routine health check-ups. In these countries, however, the intervals of health check-ups tend to be less frequent and the target population is narrower, compared to the Japanese health check-ups.

Box 3.10. Characteristics of Japanese adults who undergo health check-ups

In Japan, the uptake of health check-ups is statistically lower among those with unhealthy lifestyles and risk factors such as smoking, lack of exercise and high blood pressure than those with healthier lifestyles and conditions. Uptake is also significantly lower among the low income. For example, while 42.9% of men in low-income households did not undergo a health check-up in the previous year, only 16.1% of men in the high-income households did not undergo a health check-up in the past year (National Institutes of Biomedical Innovation, Health and Nutrition, 2017).

Source: National Institutes of Biomedical Innovation, Health and Nutrition (2017), *The National Health and Nutrition Survey Japan 2014*, Daiichi Shuppan, Tokyo.

In Japan, this international practice and evidence could be used together with national evidence to carefully review pros and cons of secondary prevention strategies around the Japanese health check-up system in a cohesive and comprehensive fashion. Some evidence supports the effectiveness of targeted secondary prevention strategies in the Japanese context (Box 3.11), and the assessment of these initiatives is likely to contribute to further developments of secondary prevention strategies in Japan.

Box 3.11. Targeted secondary prevention strategies may be effective in Japan but more evidence is needed

At present, through its *Data Health*, the Japanese government encourages insurers to develop primary and secondary prevention activities based on the analysis of data to address health challenges of the insured. In this context, a number of health insurers have taken a targeted approach in reaching out to the insured at risk, for example by inviting people with abnormal health check-up results who had not sought health care to receive care or providing them additional health guidance based on online, e-mail or face-to-face consultations with health professionals such as public health nurses. One study conducted at the insurance level found that its targeted programmes including health guidance to provide follow-up care among people who were identified to have a high blood glucose level through a core health check-up prevented many of them from starting dialysis treatment, reduced their health care use, and health care spending of the participants was reduced by 20% between 2014 and 2015 (Uchida Yoko Health Insurance Association, 2018). It is not known whether the study included the cost of targeted programmes when calculating the change in health care cost. Analyses based on scientifically sound methods are still limited in this area, so the assessment of other similar initiatives can also shed light on the impact and feasibility of targeted secondary prevention strategies in the Japanese context.

In addition, in 2016, the national guideline on the prevention of diabetes risks was developed, which also supports a targeted approach in reaching out to people at risk of developing diabetes and assuring access to high quality care through collaboration among health care professionals at the municipality level (MHLW, 2016f). Such initiatives conducted in different municipalities could also be evaluated to assess the relative strengths and weaknesses between population-based and targeted secondary prevention strategies in Japan.

Source: Uchida Yoko Health Insurance Association (2018), *Uchida Yoko Health Insurance Association no challenge*; MHLW (2016f), *Tounyoubyousei jinshou jushouka yobou programme no sakutei ni tsuite (Development of programme on diabetic renal disease prevention)*, http://www.mhlw.go.jp/stf/houdou/0000121935.html.

In the Japanese system, each health check-up has its own governance structure, financing rules, delivery system, human resource strategies, and quality assurance mechanism including training. In this context, if a comprehensive review suggested redesigning secondary prevention policies, implications of changing policies would need to be assessed in these different domains to develop pathways for smooth transitions from current secondary prevention policies.

3.4.2. Cancer screening could be strengthened with a standardised, national approach

Across countries, a number of studies found the benefit of national screening programmes in detecting cancer at an early stage and reducing preventable deaths, particularly for breast, cervical and colorectal cancers (Hakama and Hristova, 1997; Kadiyala and Strumpf, 2011). Some studies (Brown and Fintor, 1993; De Koning, 2000; Giordano et al., 2012) have concluded that the benefit is substantial for breast cancer in terms of mortality reduction and cost-effectiveness, and a number of studies also show that the benefits outweigh potential harms (Marmot et al., 2013; IARC, 2015). Positive findings for cervical and colorectal cancer screening in terms of incidence and mortality rates have also been found across countries (Devesa et al., 1989; Coleman et al., 1993; IARC, 2005; IARC, 2018).

Internationally established recommendations suggest that cancer screening should be offered if it is proven to reduce mortality, cost-effectiveness is acceptable, high quality is assured and the public is informed of its benefits and potential harms (European Union, 2003). Based on national and international findings on effectiveness and cost-effectiveness of cancer screening and also national efforts to assure quality of cancer screening and build public awareness, the majority of OECD countries have introduced free nationwide screening programmes for breast, cervical and colorectal cancer in recent years (OECD, 2013; European Commission, 2017). For instance, France used to have breast cancer screening programmes with different target age across regions, but since 2004, France has rolled out a nationwide screening programme targeting women aged between 50 and 74 (OECD, 2018a).

As done in other OECD countries, to effectively tackle cancer – the leading burden of disease – an evidence-based nationwide standardised approach needs be followed in Japan. Despite the availability of guidelines, however, cancer screening in Japan is organised by a multitude of insurers, municipalities and providers with different target ages, intervals and methods and is not nationally standardised. Differences in cancer screening protocols by municipalities, insurers and providers could confuse the public, instead of building awareness of cancer screening, because individuals may need to follow different screening requirements when they change their insurance or move residences. Hence, Japan should look to improve the compliance to the national guidelines across municipalities, insurers and providers.

Japan could also learn from countries with highly developed cancer registries and utilise the data collected through the national cancer registry to improve and assure quality of cancer screening. A growing number of OECD countries use cancer registry data to monitor the quality of cancer screening, to provide feedback on the quality of screening to providers and to improve the screening programmes based on analyses such as cost-effectiveness studies. Using data, which are becoming increasingly available following the start of national cancer registry in 2016, Japan could conduct more comprehensive assessment of its cancer screening including cost-effectiveness studies, for instance for lung cancer, which is uncommon in the OECD.

Furthermore, public awareness needs to be built around standardised cancer screening protocols including target age and screening intervals, and the public also need to be informed of benefits and potential harms of cancer screening so that they can make decisions on their participation.

3.4.3. Economic evaluation of health check-ups needs be undertaken to develop economically sound secondary prevention policies

As population ageing puts continuing pressure on the financial sustainability of health system, it is important to identify policy priorities based on economic evaluations which include cost-effectiveness analysis, cost-utility analysis and cost-benefit analysis (Drummond et al., 2005). However, the existing health information system does not appear to capture the cost of all health check-ups at the national level (Box 3.12), making it difficult to conduct economic assessment of health check-ups at the national level in Japan.

Nevertheless, some attempts have been made to assess changes in the health care cost in relation to secondary prevention interventions in Japan. Using specific health check-up data linked with health care claim data, the MHLW has evaluated the difference in the health care cost between participants of intensive health guidance and non-participants who were invited to intensive health guidance due to high risk factors based on specific health check-up results. The study found that the health care spending of participants (excluding the cost for specific health check-up and guidance and inpatient care) was about JPY 6 000 lower than non-participants, in the following year (MHLW, 2016d). As mentioned earlier (Box 3.11), some health insurers also evaluate the change in the health care cost after certain targeted policies.

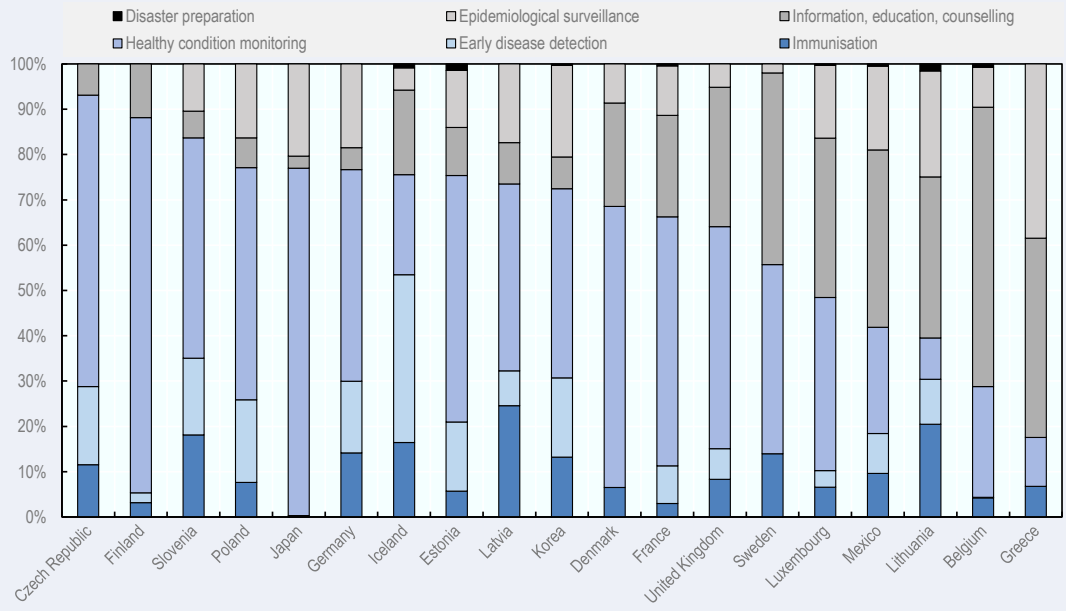
However, an economic implication needs to be undertaken for the entire range of health check-ups and ought to be considered more systematically for developing economically sound secondary prevention policies in Japan. Future studies, for example, could include the cost of secondary prevention strategies, and evaluate the changes in spending over time among participants of secondary prevention programmes, compared to non-participants, to assess medium-term economic implications of health check-ups even in a smaller scale if it is not possible to conduct such study at the national level.

International evidence and debates over economic evaluation of health check-ups could be used to assess and further develop Japanese policies. Generally, studies undertaken in other OECD countries suggest unfavourable economic evaluation for population-based or routine health check-ups. A study in Austria where a population-based annual health check-up is provided for free for people aged 18 and over, found that their health check-ups generally increases the cost without improving health outcomes, and this study suggests that a targeted approach may be cost-saving (Hackle et al. 2015). There is some evidence that even targeted health check-ups are not cost-effective. England stratifies individuals based on information such as family history, risk factors and diagnosis results, and invite individuals aged between 40 and 74 with higher risks to a health check-up organised at the primary care setting. However, debates over the cost-effectiveness of this relatively targeted health check-up, which was introduced in 2009, are still ongoing (O'Dowd, 2014).

Box 3.12. The total cost of Japanese health check-ups and cancer screening is not well known

Spending for early disease detection and healthy condition monitoring accounts for a larger share of spending on prevention in Japan than in other OECD countries. Within the System of Health Account, healthy condition monitoring refers to the active monitoring of healthy conditions and are not focused on specific diseases and this can target specific conditions (e.g. pregnancy), specific age groups (e.g. children) or specific health domains, such as dental and general health check-ups). On the other hand, early disease detection refers to an active search for a specific disease (e.g. breast cancer, cervical cancer, HIV/AIDS) early in its course, before symptoms appear and can include screening, diagnostic tests and medical examinations. In 2015, per capita spending on healthy condition monitoring in Japan was USD PPP 85, which was almost twice as high as the OECD average of USD PPP 45 but lower than Finland (USD PPP 121) and Norway (USD PPP102). On the other hand, per capita spending on early disease detection was USD PPP 0.2, substantially lower than the OECD average of USD PPP 8 (OECD, 2018a). Spending for both prevention activities together in Japan was more than 60% higher than the OECD average (Figure 3.4).

Figure 3.4. Prevention spending by service type, 2016 (or nearest years)



Source: OECD (2018a), *OECD Health Statistics,* http://dx.doi.org/10.1787/health-data-en

However, these data for Japan are possibly underestimated due to difficulties in identifying the amount of spending on certain health check-ups and cancer screening. For instance, the information provided to the OECD suggests that it is not possible to identify the cost of several health check-ups for employees (e.g. core health check-ups, *stress check* for workers, and health check-ups not required legally including cancer screening) at the national level, so the employment-based benefit package for employees is used as a proxy instead. In addition, the cost of health check-ups and tests provided at the municipality level are not included in these spending data except for specific health check-ups.

3.4.4. The public could play a role in developing secondary prevention policies and designing their strategies

In Japan, the role of the public is relatively limited in developing secondary prevention policies and designing their strategies. A number of working groups have been established to update the content of health check-ups and cancer screening at the national level but these groups are usually composed of scientific experts with medical background, health care professionals and sometimes payers, but representatives from the public are not usually invited to such consultations. However, public involvement may be useful in Japan when reviewing its health check-ups and cancer screening and developing secondary prevention strategies.

Representatives who are aware of diverse views within the public could contribute to designing secondary prevention policies which are more effective in reaching out to people with high risks. In Japan, certain population groups are not convinced of the need to undergo routine health check-ups. The uptake of health check-ups is generally low among younger populations and according to the National Livelihood Survey conducted in 2016, 32.7% of people aged 20 and above did not undergo any health check-up in the previous year. Main reasons for non-participation include: they could access health care whenever they needed to, they did not find time, and/or they found it cumbersome/costly. About 10% of non-participants also felt unnecessary to undergo a health check-up every year (MHLW, 2017d). A certain share of people also skipped these check-up services because they were worried about these examinations and/or their results (MHLW, 2017b). Opinions of both participants and non-participants would be useful for evaluating and further developing secondary prevention strategies in Japan particularly to make sure that people with high risks are not left behind.

Involving the public would also promote the legitimacy, transparency and accountability of the evaluation process itself, and could increase trust in the health system (van Thiel and Stolk, 2013; Barasa et al., 2015; Auraaen et al., 2016). Due to the fiscal constraints which are likely to continue, further assessment of health check-ups may result in recommendations for a reduced availability of health check-ups, a limited coverage of health check-up items or more targeted health check-ups in the future. As more health check-ups and wider coverage of check-up items are believed to be better in Japan, it will be challenging to get the public support for such changes. That said, it is likely to be even more challenging if such decisions are made without any public consultations.

Public consultation would be also valuable for improving the delivery of each health check-up, cancer screening, and related communication strategies. Some efforts have been already made; citizens' comments are sought for the regional health promotion plan (see Chapters 1 and 2) which usually includes health check-ups as priority policy areas, and public comments have been taken into account to improve the delivery of health check-ups. For example, based on the public's comments, the number of days made available for health check-ups and cancer screening was increased in some municipalities. More effort needs be made to design the communication strategies based on the public input because Japanese secondary prevention policies envisage that the public themselves play a role in managing their own health.

3.4.5. The health information system needs to be developed further for better monitoring and evaluation

The health check-ups generated a wealth of potentially very valuable health information, which could be used both for better managing population health, designing and targeting more effective public health interventions, and for research. A strong health information system has the potential to be the backbone for monitoring and evaluating different aspects of health check-ups and cancer screening, and further developing secondary prevention policies.

However, until recently, with regards to secondary prevention, the Japanese health information system has focused on monitoring access to and uptake of health check-ups that are legally required, and only recently have a few national initiatives have started to promote further analysis of health check-up data among insurers. They include development of national guidelines for analysis and utilisation of certain data such as health care claim data and specific health check-up results and also the introduction of financial incentives to promote the use and analysis of these data (Box 3.13). Insurers have started using these data more than before. For example, several associations of employment-based health insurance have prepared a benchmarking report comparing the uptake of health check-ups and lifestyle habits of the insured employees including smoking and alcohol consumption for a specific employer compared with those working for other employers within the same insurance association. Such feedback reports highlights key health challenges of their employees and this can help developing primary and secondary prevention activities at workplace.

Box 3.13. The national initiatives to support the analysis of health check-up data

Previously, insurers were expected to provide administrative support for the insured, to set and collect premiums, to negotiate and conclude a contract with providers providing health check-ups, and to pay for health care, but currently the role of insurers is expanding and includes promoting better health among the insured and incentivising health care providers to improve health care quality and effectiveness. This requires insurers to use, analyse and report data, so several initiatives have started to help them build data analysis capacity.

Firstly, in 2014, a national handbook was developed for insurers to help them develop the *Data Health Plan* and this includes suggestions on how to analyse health care claim and health check-up data and how to use these data in order to design, monitor and modify their primary and secondary prevention activities. This handbook was updated in 2017.

Secondly, a programme to prevent risks of developing diabetic renal diseases was developed at the national level in 2016. This programme lays out ways to identify people at risk by using both health care claim and health check-up data.

Thirdly, in 2018, as part of financial incentives related to elderly health insurance, the use of data was incentivised among insurers. For instance, the amount of financial support required for elderly health insurance was reduced if insurers made additional efforts in reaching out to the insured who are at risk. This indirectly promotes data use because those at risk can be identified if health care claim data and health check-up results are linked and analysed. Other incentives also include providing health check-up results in a user friendly manner such as the use of time series data and graphics and personalised explanation of results.

Nonetheless, in order to further promote evidence-based development of health check-ups, Japan has a lot to learn from more developed health information systems elsewhere. In Japan, many data collected at the provider level including health check-up results cannot be shared legally and/or technically for monitoring and evaluation at the health system level partly because unique IDs have not been systematically used. However, many OECD countries have nationally standardised digital medical records and they are able to use up-to-date data for monitoring and evaluation of the health system by automatically extracting data from electronic clinical records. For example, thirteen countries (Canada, the Czech Republic, Denmark, Finland, Israel, Korea, New Zealand, Norway, Singapore, Sweden and the United Kingdom (England, Scotland and Wales) regularly link data from different national datasets such as hospital and mental hospital in-patient data, cancer registry data and mortality data. Using these linked data, these countries are able to actively monitor health care quality and health system performance. In order to monitor and further develop secondary prevention strategies, Japan needs to develop a health information system which allows linking different data sources, and experiences of other OECD countries in developing a strong health information system within a data governance framework that protects patients' health information privacy which is laid out in OECD (2015b) would be useful for Japan in following such paths. Japan could also learn from the development of national cancer registries and their use in other countries for monitoring and improving the quality of cancer care including cancer screening (Box 3.7).

A stronger health information system could also facilitate streamlining the efforts to invite target population for health check-ups and cancer screening. Currently invitations are usually sent through multiple sources in an uncoordinated manner. For example, it is not possible for municipalities to know the exact target group for their health check-ups as the health check-ups covered by employment-based insurance for full-time employees and their dependents vary across employment-based insurance, and are not known. Hence, they send invitations to health check-ups to all their residents. This means that many employees and their dependents may receive invitations, for instance, for cancer screening from both municipalities and also employment-based insurers. Invitations for health check-ups are also usually sent to individuals who are already seeking treatment, even if results of medical examinations were recently evaluated. If a stronger health information system including cancer registry is developed, invitations can be sent only to those in need of health check-ups and cancer screening as done in other OECD countries, and Japan could send personalised invitation letters, without duplication, only to those who are in the target population, and not currently undergoing treatment, and to those who have not followed up on worrying results from a previous check-up. These targeted personalised approaches are considered more effective in recruiting people in need of health check-ups and cancer screening (OECD, 2019).

3.4.6. In order to improve access, Japan could seek more innovative and efficient methods of providing health check-ups and cancer screening

Japan could also seek innovative methods in providing health check-ups and share best practices to promote their use. There are some examples of utilising technologies to increase access to health check-ups in Japan. For example, in Adachi City, apps was developed by an ICT company collaborated with the municipality government and this apps allows requesting health check-up kit by smartphone and receiving results to smartphone. In some municipalities, mobile screening units for breast cancer are also used. As these examples could be useful for other municipalities and insurers, efforts

could be made to share best practices in effectively utilising technologies to increase access across municipalities and insurers.

Japan could also consider using innovative approaches taken in other countries if they are found effective in its own context. For instance, several countries such as the Czech Republic, Denmark, Finland and Norway have undertaken trials to send self-sampling device for cervical cancer screening such as lavage and brush devices to target age women who had previously declined participation to national cervical cancer screening programmes and this targeted trial using a new device was found effective in reaching out to non-participants. In addition, women's experiences were generally positive and sample devices were well received (Burger et al., 2015; Enerly et al., 2016; Karjalainen et al., 2016; Ondryášová et al., 2015). A systematic review of studies conducted in various countries found that for national colorectal cancer screening, mailing of a self-sampling kit to target population was an effective way to improve screening coverage (Camilloni et al., 2013). Once cancer screening is organised nationally and provided in a systematic manner, Japan may want to assess the benefits, cost-effectiveness and potential harms of innovative approaches and consider making decisions on their use within the national cancer screening programmes.

3.5. Conclusion

Japan relies significantly on population-based health check-ups and tries to improve population health through early detection of diseases. Based on health check-up results, Japan also aims to promote individuals' efforts to manage their own health condition by preventing the onset or severity of diseases through better lifestyles. Routine health check-ups are now available to almost all segments of population throughout the life course. On the other hand, cancer screening is not provided nationally in a standardised manner and screening protocols vary across municipalities, insurers and providers even though national guidelines are available. These secondary prevention strategies are unique in the OECD but it is not clear that the current policies are effectively adding value to the system in terms of both the health of the population and financing through cost-saving.

Considering the tight fiscal situation which is likely to continue due to population ageing, there is a mounting pressure for the Japanese government to allocate resources adequately across different policy options and use them effectively and efficiently. Generally, each health check-up has been evaluated and developed separately through consultations of its own working group, which is often composed mainly of providers. Japan could review and evaluate all health check-ups together, to assess priorities in its secondary prevention strategies and the role of secondary prevention in the health system and to streamline different initiatives while maximising their overall impact. This review could be comprehensive by including an assessment of health check-ups which are provided legally and recommended and also those which are provided voluntarily by municipalities, insurers and providers.

In order to support decisions for making adequate resource allocation and building sustainable, high-quality health system, Japan would benefit from reviewing its secondary prevention strategies by taking account of national and international evidence and best practice. International evidence generally point that regular population-wide health checks are not effective and cost-effective, and that investment in other types of prevention and health promotion programmes including nationwide standardised screening programmes for breast, cervical and colorectal cancer are a better use of

resources. Evidence on effectiveness but also economic evaluations of health check-ups, even from smaller scale studies, could be considered for this review. During this review process, Japan could involve the public in order to reflect their views and to make the process transparent and accountable, and the public comments could be also useful for improving the delivery of health check-ups and their communication strategies. If the comprehensive review suggests redesigning secondary prevention policies, implications of changing policies would need to be assessed in relation to different domains such as governance, financing, delivery, and quality assurance including training to develop pathways for smooth transitions from current secondary prevention policies.

The impact of Japanese secondary prevention policies is not well understood partly due to its health information system which is still fragmented. Japan may wish to strengthen its health information system, because a strong health information system is a backbone for monitoring and evaluating different aspects of health check-ups and cancer screening including their effectiveness and cost implications, their referral to further health guidance or follow-up care, and further developing its secondary prevention policies.

References

Adachi City (2018), *40 sai mae no kenkou zukuri kenshin nichiji tou no oshirase* (Information on health promotion for people aged below 40 including health chek-up dates), Adachi City, Tokyo, http://www.city.adachi.tokyo.jp/datahealth/fukushi-kenko/kenko/2605jyosei.html (accessed 16/06/2018).

Albreht T, et al (2016), "Slovenia: Health system review" *Health Systems in Transition*, 18(3):1–207. http://www.euro.who.int/__data/assets/pdf_file/0018/312147/HiT-Slovenia_rev3.pdf?ua=1 (accessed 05/0/2018).

Allemani, C. et al.(2018), "Global surveillance of trends in cancer survival 2000–14 (CONCORD-3): analysis of individual records for 37 513 025 patients diagnosed with one of 18 cancers from 322 population-based registries in 71 countries", *The Lancet*, http://dx.doi.org/10.1016/S0140-6736(17)33326-3.

Anell, A., A.H. Glenngård, and S. Merkur (2012), "Sweden: Health system review", *Health Systems in Transition*, 14(5):1–159. http://www.euro.who.int/__data/assets/pdf_file/0008/164096/e96455.pdf?ua=1 (accessed 05/06/2018).

Arakawa City (2018), *Kokoro to karada to kimochi no keep: 35 kara 39 sai kenshin no goannai* (Information on health check-ups for people aged between 35 and 39), Arakawa City, Tokyo, http://www.city.arakawa.tokyo.jp/kenko/hokeneisei/seijinkenshin/3539kensin.html (accessed 15/06/2018).

Assemblée Nationale (2016), *Eude d'impact : Projet de Loi visant à instituer de nouvelles libertés et de nouvelles protections pour les entreprises et les actifs*, http://www.assemblee-nationale.fr/14/pdf/projets/pl3600-ei.pdf (accessed 15/06/2018).

Auraaen, A. et al. (2016), "How OECD health systems define the range of good and services to be financed collectively", *OECD Health Working Papers*, No. 90, OECD Publishing, Paris. http://dx.doi.org/10.1787/5jlnb59ll80x-en.

Barasa E.W. et al. (2015), "Setting healthcare priorities at the macro and meso levels: a framework for evaluation", *International Journal of Health Policy and Management*, Vol. 4, No. 11, pp. 719-732.

Berrington de González, A. et al. (2009), "Projected Cancer Risks from Computed Tomographic Scans Performed in the United States in 2007", *JAMA Internal Medicine*, Vol. 169, No. 22, pp. 2071-77, http://dx.doi.org/10.1001/archinternmed.2009.440.

Brown, M. and L. Fintor (1993), "Cost-effectiveness of Breast Cancer Screening: Preliminary Results of a Systematic Review of the Literature", *Breast Cancer Research and Treatment*, Vol. 25, No. 2, pp. 113-118.

Buger, E. A. et al., (2015), "The cost-effectiveness of cervical self-sampling to improve routine cervical cancer screening: The importance of respondent screening history and compliance", OnlineFirst, American Association for Cancer Research.

Busse R and M. Blümel (2014), "Germany: health system review", *Health Systems in Transition*, 16(2):1–296. http://www.euro.who.int/__data/assets/pdf_file/0008/255932/HiT-Germany.pdf?ua=1 (accessed 05/06/2018).

Camilloni, L. et al. (2013), "Methods to increase participation in organised screening programs: a systematic review", *BMC Public Health*, 13:464.

Choi, K. S., et al (2015), "Effect of endoscopy screening on stage at gastric cancer diagnosis: results of the National Cancer Screening Programme in Korea", *Br J Cancer* 2015; 112: 608–12, https://doi.org/10.1038/bjc.2014.608.

Chu, M. (2017), "Medical screening often ends up representing status symbols here", *Korea Biomedical Review*, http://www.koreabiomed.com/news/articleView.html?idxno=266 (accessed 05/06/2018).

Coleman, D. et al. (1993), "European Guidelines for Quality Assurance in Cervical Cancer Screening. Europe Against Cancer Programme", *European Journal of Cancer*, Vol. 29A, Suppl. 4, pp. S1-S38.

De Koning, H.J. (2000), "Breast Cancer Screening: Cost-effective in Practice?", European Journal of Radiology, Vol. 33, No. 1, pp. 32-37.

De Pietro, C. et al (2015), "Switzerland: Health system review", *Health Systems in Transition*, 2015; 17(4):1–288. http://www.euro.who.int/__data/assets/pdf_file/0010/293689/Switzerland-HiT.pdf?ua=1 (accessed 05/06/2018)

Devesa, S.S. et al. (1989), "Recent Trends in Cervix Uteri Cancer", *Cancer*, Vol. 64, No. 10, pp. 2184-2190.

Drummond, M.F. et al. (2005), *Methods for the economic evaluation of health care programmes*, Oxford University Press.

Dryden, R. et al. (2012), "What do we know about who does and does not attend general health checks? Findings from a narrative scoping review", *BMC Public Health*, 12:723

ECDC (2012), *ECDC guidance: Introduction of HPV vaccines and in European Union countries – updates*, Stockholm, https://ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/20120905_GUI_HPV_vaccine_update.pdf (accessed 15/06/2018).

e-Gov (2018), *Education Health and Safety Act*, http://elaws.e-gov.go.jp/search/elawsSearch/elaws_search/lsg0500/detail?lawId=333M50000080018#B (accessed 14/06/2018).

Enerly E. et al. (2016), "Self-Sampling for Human Papillomavirus Testing among Non-Attenders Increases Attendance to the Norwegian Cervical Cancer Screening Programme", *PLoS ONE* 11(4): e0151978. https://doi.org/10.1371/journal.pone.0151978.

European Commission (2017), *Cancer Screening in European Union: Report on the implementation of the Council Recommendation on cancer screening*, https://ec.europa.eu/health/sites/health/files/major_chronic_diseases/docs/2017_cancerscreening_2ndreportimplementation_en.pdf (accessed 18/06/2018).

European Union (2003), *Council Recommendation of 2 December 2003 on Cancer Screening*, 2003/878/EC.

Ferré. F. (2014), "Italy: Health System Review", *Health Systems in Transition*, 16(4):1–168. http://www.euro.who.int/__data/assets/pdf_file/0003/263253/HiT-Italy.pdf?ua=1 (accessed 05/06/2018).

Finnish Ministry of Justice (2002), *No. 1485/2001 Government Decree on medical examinations in work that presents a special risk of illness*, Issued in Helsinki, December 27, 2001, unofficial translation, http://www.finlex.fi/en/laki/kaannokset/2001/en20011485.pdf, accessed 08/06/2018.

Gerkens S. and S. Merkur (2010), "Belgium: Health system review", *Health Systems in Transition*, 12(5):1–266. http://www.euro.who.int/__data/assets/pdf_file/0014/120425/E94245.PDF?ua=1 (accessed 05/06/2018)

Giordano, L. et al. (2012), "Communicating the Balance Sheet in Breast Cancer Screening", *Journal of Medical Screening*, Vol. 19, pp. 67-71, September.

Gmeinder, M., D. Morgan and M. Mueller (2017), "How much do OECD countries spend on prevention?", *OECD Health Working Paper*s, No. 101, OECD Publishing, Paris. http://dx.doi.org/10.1787/f19e803c-en.

Gøtzsche, P.C. and K. Jørgensen (2013), "Screening for Breast Cancer with Mammography", *Cochrane Database of Systematic Reviews*, Vol. 6, Article No. CD001877, http://dx.doi.org/10.1002/14651858.CD001877.pub5.

Hackl, F. et al. (2015), "The effectiveness of health screening", *Health Econ*, 24: 913–935, DOI: 10.1002/hec.3072

Hakama, M. and L. Hristova (1997), "Effect of Screening in the Nordic Cancer Control Up to the Year 2017", *Acta Oncologia*, Vol. 36, No. 2, pp. 119-128.

Hoebel et al. (2014), "Determinants of health check attendance in adults: findings from the cross-sectional German Health Update (GEDA) study*", BMC Public Health*, 2014, 14:913.

Hofmarcher M. and W. Quentin (2013), "Austria: Health system review",. *Health Systems in Transition*, 15(7): 1– 291.

Hurley, R. (2014), "Can Doctors Reduce Harmful Medical Overuse Worldwide?", *British Medical Journal*, Vol. 349, g4289, http://dx.doi.org/10.1136/bmj.g4289.

IARC (2005), "Cervix Cancer Screening", *IARC Handbooks of Cancer Prevention*, Vol. 10.

IARC (2012), "GLOBOCAN 2012: Estimated Cancer Incidence, Mortality and Prevalence Worldwide in 2012", http://globocan.iarc.fr/Pages/ionline.aspx (accessed 31/08/2018).

IARC (2015), "IARC Handbooks of Cancer Prevention: Benefits of mammography screening outweigh adverse effects for women aged 50–69 years", Press release No. 234, IARC, Lyon, https://www.iarc.fr/en/media-centre/pr/2015/pdfs/pr234_E.pdf (accessed 08/06/2018).

IARC (2018), "Colorectal cancer screening", *IARC Handbooks of Cancer Prevention Volume 17*. IARC, Lyon.

IARC *Helicobacter pylori* Working Group (2014), "*Helicobacter pylori* Eradication as a Strategy for Preventing Gastric Cancer", *International Agency for Research on Cancer Working Group Reports*, No. 8, Lyon, France, http://www.iarc.fr/en/publications/pdfs-online/wrk/wrk8/index.php (Accessed 15/06/2018).

Ikeda et al. (2011), "What has made the population of Japan healthy?", *The Lancet*, Volume 378, No. 9796, p1094–1105, 17 September 2011, https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(11)61055-6/fulltext (accessed 08/06/2018).

Independent UK Panel on Breast Cancer Screening (2012), "The Benefits and Harms of Breast Cancer Screening: An Independent Review", *The Lancet*, Vol. 380, No. 9855, pp. 1778-1786, http://dx.doi.org/10.1016/S0140-6736(12)61611-0.

Japan Society of School Health (2017), *Shugakuji no Kenkoushindan Manual Heisei 29 nendo kaitei (Manual for health check-ups for children entering primary school),* https://www.gakkohoken.jp/book/ebook/ebook_H290040/index_h5.html#7 (accessed 28/08/2018),

Kadiyala, S. and E. Strumpf (2011), "Are United States and Canadian Cancer Screening Rates Consistent with Guideline Information Regarding the Age of Screening Initiation?", *International Journal for Quality in Health Care*, pp. 1-10.

Karlajalainen, L. et al. (2016), "Self-sampling in cervical cancer screening: comparison of a brush-based and a lavage-based cervicovaginal self-sampling device", BMC Cancer, 16:221.

Kim, H.S. et al. (2012), "National Screening Program for Transitional Ages in Korea: A New Screening for Strengthening Primary Prevention and Follow-up Care", *Journal of Korean Medical Science*, Vol. 27, Suppl: S70-S75.

Krogsbøll T et al. (2012), "General health checks in adults for reducing morbidity and mortality from disease: Cochrane systematic review and meta-analysis", *BMJ*, 345 :e7191.

Krogsbøll, L.T., K.J. Jørgensen and P.C. Gøtzsche (2013), "Universal Health Checks Should be Abandoned", *BMJ* 2013;347:f5227.

Kroneman, M. et al. (2016). "The Netherlands: health system review", *Health Systems in Transition*, 18(2):1–239. http://www.euro.who.int/__data/assets/pdf_file/0016/314404/HIT_Netherlands.pdf?ua=1 (accessed 05/06/2018).

Lai, T, (2013), "Estonia: health system review", *Health Systems in Transition*, 15(6):1–196. http://www.euro.who.int/__data/assets/pdf_file/0018/231516/HiT-Estonia.pdf?ua=1 (accessed 05/06/2018).

Lauritzen, T. et al. (2014), "General health checks may work", *BMJ* 2014;349:g4697 doi: 10.1136/bmj.g4697.

Loeb, S. et al. (2014), "Over-diagnosis and Over-treatment of Prostate Cancer", *European Urology*, Vol. 65, No. 6, pp. 1046-1055, http://dx.doi.org/10.1016/j.eururo.2013.12.062.

McDaid, D., E. Hewlett and A. Park (2017), "Understanding effective approaches to promoting mental health and preventing mental illness", *OECD Health Working Papers*, No. 97, OECD Publishing, Paris, https://doi.org/10.1787/bc364fb2-en.

Marmot, M. G. et al. (2013), "The benefits and harms of breast cancer screening: an independent review", *British Journal of Cancer*, 108, 2205–2240.

MEXT (2011), *Gakkou ni okeru kekkaku taisaku manual (Manual on tuberculosis strategies at school)*, http://www.mext.go.jp/component/a_menu/education/detail/__icsFiles/afieldfile/2012/03/30/1318847_06.pdf (accessed14/06/2018).

MEXT (2015), *Jidou seito tou no kenkou shindan manual (Manual on health check-ups for students)*, https://www.gakkohoken.jp/books/archives/187 (accessed 14/06.2018).

MHLW (2005), *Kyoubu X-sen kensa no hitsuyousei ni tsuite (Needs for chest X-ray examinations)*, http://www.mhlw.go.jp/shingi/2005/06/s0620-6f.html (accessed 14/06/2018).

MHLW (2012), *Kekka no gaiyou (Summary)*, MHLW, http://www.mhlw.go.jp/toukei/list/dl/h24-46-50_01.pdf (accessed 11/06/2018).

MHLW (2013a), *Roudou anzen eisei hou ni motozuku kennkoushindan wo jisshi shimashou (Health check-ups based on occupational health and safety act)*, MHLW, Tokyo, http://www.mhlw.go.jp/file/06-Seisakujouhou-11200000-Roudoukijunkyoku/0000103900.pdf (accessed 11/06/1018).

MHLW (2013b), *Yakujihou no shounin to yakka shuusai no process (Process on pharmaceutical product assessment and pricing)*, MHLW, Tokyo http://www.mhlw.go.jp/file.jsp?id=146639&name=2r9852000002wkg5_2.pdf (accessed 18/06/2018).

MHWL (2014), *Health, Labor and Welfare White Paper*, MHLW, Tokyo, http://www.mhlw.go.jp/wp/hakusyo/kousei/14/dl/1-01.pdf (accessed 08/06/2018).

MHLW (2015a), *Hyoujuntekina nyuyoujiki no kenkoushinsa to hokenshidou ni kansuru tebiki (Manual on standard health check-ups and guidance for newly-born children)*, MHLW, Tokyo, http://www.mhlw.go.jp/file/06-Seisakujouhou-11900000-Koyoukintoujidoukateikyoku/tebiki.pdf (accessed 14/06/2018).

MHLW (2015b), *Kenkoushinsa ni kansuru seido no hikaku (Comparisons of systems related to health check-ups)*, https://www.mhlw.go.jp/file/05-Shingikai-10601000-Daijinkanboukouseikagakuka-Kouseikagakuka/0000104590.pdf (accessed 30/08/2018).

MHLW (2015c), *Part-time roudousha no kenkoushindan wo jisshi shimashou (Health check-ups for part-time employees),* MHLW, Tokyo, http://www.mhlw.go.jp/bunya/koyoukintou/pamphlet/pdf/150330-1.pdf (accessed 14/06/2018).

MHLW (2016a), *Heisei 28 nen Roudou anzen eisei chousa (Jittai chousa) no gaikyou (Summary of occupational health and safety survey – 2016)*, MHLW, Tokyo, http://www.mhlw.go.jp/toukei/list/dl/h28-46-50_kekka-gaiyo02.pdf (accessed 11/06/1018).

MHLW (2016b), *Heisei 28 nendo Tokutei kenkou shinsa Tokutei kenkou shidou no jisshi joukyou (Implementation of specific health check-up and guidance – 2015)*, MHLW, Tokyo, https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000173202_00001.html (accessed 28/08/2018).

MHLW (2016c), *Heisei 28 nendo Tokutei kenkou shinsa Tokutei kenkou shidou no jisshi joukyou ni tsuite gaiyou (Summary on the implementation of specific health check-up and guidance – 2015)*, MHLW, Tokyo, https://www.mhlw.go.jp/content/12400000/000340085.pdf (accessed 28/08/2018).

MHLW (2016d), *Tokutei kenshin hoken shidou no iryouhi tekiseika kouka tou no kenshou no tameno working group torimatome (Summary records of working group meeting: assessment on the impact of specific health check-up on health care spending)*, MHLW, Tokyo.

MHLW (2016e), *Gan kenshin no genjyou (Current status of cancer screening)*, MHLW, Tokyo, http://www.mhlw.go.jp/file/05-Shingikai-10901000-Kenkoukyoku-Soumuka/0000127253.pdf (accessed 15/06/2018).

MHLW (2016f), *Tounyoubyousei jinshou jushouka yobou programme no sakutei ni tsuite (Development of programme on diabetic renal disease prevention)*, MHLW, Tokyo, http://www.mhlw.go.jp/stf/houdou/0000121935.html (accessed 11/06/2018).

MHLW (2017a), *Karoushitou boushi taisaku hakusho (White paper on strategies to prevent karoushi)*, MHLW, Tokyo, http://www.mhlw.go.jp/file/06-Seisakujouhou-11200000-Roudoukijunkyoku/0000179618.pdf (accessed 11/06/2018).

MHLW (2017b), *Stress check seido no jisshi joukyou (Implementation of stress check system)*, MHLW, Tokyo, http://www.mhlw.go.jp/file/04-Houdouhappyou-11303000-Roudoukijunkyokuanzeneiseibu-Roudoueiseika/0000172336.pdf (accessed 11/06/2018).

MHLW (2017c), *Heisei 28 nen Roudou anzen eisei chousa (jittai chousa) no gaikyou (Summary of occupational safety and health survey – 2016)*, MHLW, Tokyo, http://www.mhlw.go.jp/toukei/list/dl/h28-46-50_gaikyo.pdf

MHLW (2017d), *Heisei 28 nen Kokumin seikatsu kiso chousa no gaikyo: kekkano gaikyou III setaiin no kenkou joukykou (Summary of national livelihood survey 2016: health status),* MHLW, Tokyo, http://www.mhlw.go.jp/toukei/saikin/hw/k-tyosa/k-tyosa16/index.html (accessed 15/06/2018).

MHLW (2017e), *Zaisei Incentives nit suite (Financial incentives)*, MHLW, Tokyo https://www.mhlw.go.jp/file/05-Shingikai-12601000-Seisakutoukatsukan-Sanjikanshitsu_Shakaihoshoutantou/0000163331.pdf (accessed 18/06/2018).

MHLW (2018a), *Rousai hoken: Nijikenkoushindantou kyufu no seikyutetuzuki (Occupational injuries: application procedures for secondary health check-ups),* MHLW, Tokyo, http://www.mhlw.go.jp/new-info/kobetu/roudou/gyousei/rousai/dl/040325-1.pdf (accessed 11/06/2018).

MHLW (2018b), *Hyoujuntekina kenshin hoken shidou programme – heisei 30 nendo ban (Standard health check-up and health guidance programme – 2018)*, MHLW, Tokyo, http://www.mhlw.go.jp/file/06-Seisakujouhou-10900000-Kenkoukyoku/00_3.pdf (accessed 11/06/2018).

MHLW (2018c), *Heisei 28 nen Chiiki hoken kenkou zoushin jigyou houkoku no gaiyou (Summary report on community health promotion activities – 2016)*, MHLW, Tokyo, https://www.mhlw.go.jp/toukei/saikin/hw/c-hoken/16/dl/kekka1.pdf, http://www.mhlw.go.jp/toukei/saikin/hw/c-hoken/16/dl/kekka2.pdf (accessed 15/06/2018).

MHLW (2018d), *Gan kenshin (Cancer screening)*, MHLW, Tokyo, http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000059490.html (accessed 15/6/2018).

MHLW (2018e), *Shokuiki ni okeru gan kenshin ni kansuru manual (Manual on cancer screening for employees)*, MHLW, Tokyo, http://www.mhlw.go.jp/file/05-Shingikai-10901000-Kenkoukyoku-Soumuka/0000204422.pdf (accessed 15/06/2018).

MHLW (2018f), *Roudouryoku chousa (shousai shukei) heisei 29 nen (2017 nen) heikin (sokuhou) (Labour force survey – 2017 preliminary results)*, MHLW, Tokyo, http://www.stat.go.jp/data/roudou/sokuhou/nen/dt/pdf/index1.pdf (accessed 19/06/2018).

MHLW Tokyo Labor Bureau (2017), *Ippan kenkou shindan dewa joujishiyousuru roudousha ga taishouninaru tonokotodesuga, part roudousha no toriatsukaiwa donoyouninarimasuka? (Is a core health check-up required for part-time employees?)*, MHLW Tokyo Labor Bureau, Tokyo, https://jsite.mhlw.go.jp/tokyo-roudoukyoku/yokuaru_goshitsumon/roudouanzeneisei/q16.html (accessed 14/06/2018)

Miyamoto, A. et al. (2007), "Lower risk of death from gastric cancer among participants of gastric cancer screening in Japan: a population-based cohort study", *Prev Med*,2007;44 (1:12–19.

Mizoue, T. et al. (2003), "Japan Collaborative Cohort Study Group Prospective study of screening for stomach cancer in Japan", *Int J Cancer*, 2003;106 (1:103–107.

National Institutes of Biomedical Innovation, Health and Nutrition (2017), *The Nationoal Health and Nutrition Survey Japan 2014*, Daiichi Shuppan, Tokyo.

National Lung Screening Trial Research Team (2011), "Reduced Lung-Cancer Mortality with Low-Dose Computed Tomographic Screening", *New England Journal of Medicine*, Vol. 365, pp. 395-409, http://dx.doi.org/10.1056/NEJMoa1102873.

NHS (2017), *What is an NHS Health Check?*, https://www.nhs.uk/conditions/nhs-health-check/nhs-health-check (accessed 11/06/2018).

O'Dowd, A. (2014), "MPs call for review of NHS health checks", *BMJ,* 2014;349:g6498 doi: 10.1136/bmj.g6498.

OECD (2013a), *Cancer Care: Assuring Quality to Improve Survival*, OECD Health Policy Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264181052-en.

OECD (2013b), *Strengthening Health Information Infrastructure for Health Care Quality Governance: Good Practices, New Opportunities and Data Privacy Protection Challenges*, OECD Health Policy Studies, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264193505-en.

OECD (2015a), *Fit Mind, Fit Job: From Evidence to Practice in Mental Health and Work*, Mental Health and Work, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264228283-en.

OECD (2015b), *Health Data Governance: Privacy, Monitoring and Research*, OECD Health Policy Studies, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264244566-en.

OECD (2017), *OECD Health Statistics*, OECD Publishing, Paris, http://dx.doi.org/10.1787/health-data-en.

OECD (2018a), *OECD Health Statistics*, OECD Publishing, Paris, http://dx.doi.org/10.1787/health-data-en.

OECD (2019), *OECD Public Health Review: Chile: A Healthier Tomorrow*, OECD Publishing, Paris, https://doi.org/10.1787/9789264309593-en.

Olejaz M, (2012), "Denmark: Health system review", *Health Systems in Transition,* 14(2):1 – 192. http://www.euro.who.int/__data/assets/pdf_file/0004/160519/e96442.pdf?ua=1 (accessed 05/06/2018).

Ondryášová et al. (2015), "Utilization of self-sampling kits for HPV testing in cervical cancer screening – pilot study", *Ceska Gynekol*, Dec;80(6):436-43.

Paris, V. et al. (2016), "Health care coverage in OECD countries in 2012", *OECD Health Working Papers*, No. 88, OECD Publishing, Paris. http://dx.doi.org/10.1787/5jlz3kbf7pzv-en

Patz, E. et al. (2014), « Overdiagnosis in Low-Dose Computed Tomography Screening for Lung Cancer", *JAMA Intern Med*. 2014;174(2):269-274. doi:10.1001/jamainternmed.2013.12738.

Ringard, Å. (2013), "Norway: Health system review", *Health Systems in Transition*, 15(8): 1– 162. http://www.euro.who.int/__data/assets/pdf_file/0018/237204/HiT-Norway.pdf?ua=1 (accessed 05/06/2018).

Saito, H. (2018), *Cancer Screening in Japan*, National Cancer Center Japan, Tokyo.

Sassi, F. (2010), *Obesity and the Economics of Prevention: Fit not Fat*, OECD Publishing, Paris, https://doi.org/10.1787/9789264084865-en.

Sigurgeirsdóttir, S, J. Waagfjörð, and A. Maresso (2014), "Iceland: Health system review", *Health Systems in Transition*, 16(6):1–182. http://www.euro.who.int/__data/assets/pdf_file/0018/271017/Iceland-HiT-web.pdf?ua=1 (accessed 05/06/2018).

The Department of Health (2014), *Health assessment for people aged 45 to 49 years who are at risk of developing chronic disease*, Australian Government, http://www.health.gov.au/internet/main/publishing.nsf/Content/mbsprimarycare_mbsitem701_703_705_707 (accessed 18/06/2018).

The Department of Health (2016), *MBS Health Assessments Items 701, 703, 705, 707 and 715*, Australian Government, http://www.health.gov.au/internet/main/publishing.nsf/Content/mbsprimarycare_mbsitem_general_factsheet (accessed 18/06/2018).

Uchida Yoko Health Insurance Association (2018), *Uchida Yoko Health Insurance Association no challenge*, Uchida Yoko Health Insurance Association, Tokyo.

UN Inter-agency Group for Child Mortality Estimation (2017), *Chile Mortality Estimates*, http://www.childmortality.org/ (accessed 08/06/2018).

US Center for Disease Control and Prevention (2018), *What Screening Tests are There for Lung Cancer*, https://www.cdc.gov/cancer/lung/basic_info/screening.htm (accessed 05/06/2018).

van Thiel, G. and P. Stolk (2013), *Background paper 8.5 – Patient and citizen involvement, Priority Medicines for Europe and the World "A public health approach to innovation"*, World Health Organisation: http://www.who.int/medicines/areas/priority_medicines/BP8_5Stakeholder.pdf (accessed 19/06/2018).

Vuorenkoski, L. and P. Mladovsky and E. Mossialos (2008), "Finland: Health system review", *Health Systems in Transition*. 10(4): 1–168. http://www.euro.who.int/__data/assets/pdf_file/0007/80692/E91937.pdf?ua=1 (accessed 05/06/2018).

Chapter 4. Japan's preparedness for public health emergencies

As an extremely disaster-prone country and a global economic hub, Japan must prepare for public health emergencies of all kinds, from natural hazards to pandemic and disease outbreaks, industrial accidents as well as security threats such as terrorism. This chapter looks at how Japan sets-up and implements public health emergency policies and at how it builds the resilience of its health system, in accordance with the OECD Recommendation on the Governance of Critical Risks and other international guidelines. This chapter suggests that there is scope to strengthen oversight of preparedness measures implemented at the local level, strengthen co-operation between Ministries, and increase the number of disaster preparedness exercises and drills.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

4.1. Introduction

Given the fundamental responsibilities of governments to provide security and safety, citizens and businesses expect them to be prepared for a wide range of possible crises and global shocks, and to handle them effectively should they arise. The first demand on government is to protect citizens' physical integrity when shock events disrupt the normal functioning of a society. Public health systems play an essential role in reducing human casualties and other negative health impacts of emergencies through well planned and resourced emergency preparedness, and by building their resilience to such shock events.

Japan has a long history of emergency preparedness given its significant exposure to disaster risks caused by natural hazards of all kinds. However, even the best prepared countries can see their emergency capabilities overcome by unforeseen high impact events, as dramatically shown in Japan in 2011 by the Great East Japan Earthquake (GEJE). Indeed, a broad vision is needed when it comes to public health emergencies and developing public health emergency preparedness and response capacities or building resilience. Critical risks may arise from natural phenomena, pandemics, major industrial or technological accidents and malicious actions that result in adverse impacts of national significance, notably on public health.

An all-hazards and threats approach to risk management is what the OECD calls for, with its Recommendation on the Governance of Critical Risks, adopted under the Chairmanship of Japan Prime Minister Abe at its Ministerial Council Meeting on 2014. This approach requires working across sectors, though a whole-of-government strategic approach to manage critical risks, which should encompass the different stages of the risk management cycle, from risk assessment, to risk prevention, emergency preparedness and response, and recovery and reconstruction. Engaging the whole society in developing its own resilience is also a critical aspect of modern risk management policies, from local governments to civil society and the private sector.

These principles are well aligned with the Sendai Framework for Disaster Risk Reduction adopted in 2015 by the United Nations, which includes preparedness for public health emergencies and health systems resilience amongst its priorities. They are also consistent with the International Health Regulations of the World Health Organisation regarding preparedness for public health emergencies, and their three-pronged approach: prevent-detect-respond.

With a focus on risk governance, this chapter will assess Japan's policies and their implementation to prepare for public health emergencies, including but not limited to earthquakes, tsunamis, floods and other natural hazards, epidemic and infectious disease outbreaks as well as security risks. In particular this chapter will look at how public health emergency stakeholders work jointly across silos to assess, prepare, detect, respond, recover and learn from public health emergencies. The chapter will also analyse how Japan is building the resilience of its health systems to the diversity of shock events that can occur in our increasingly complex and interconnected societies.

4.2. Japan's risk profile and potential public health consequences

Prior to diving into policies, this section aims at scanning the risk profile of Japan, to evaluate Japan's risk level with respect to public health emergencies, and gain insights on why this should be placed at the top of the public health policy agenda in the country. With a classic risk assessment approach, this section includes information on past

emergencies, exposure to hazards and factors of present and future vulnerabilities in Japan.

Overall, Japan's risk profile require that preparedness to public health emergencies be at the top of the public policy agenda. As a particularly hazard-prone country, disasters in Japan can lead to serious public health consequences, injured people, and heightened mental distress, as observed after the Great East Japan Earthquake.

As a global economic hub, the risk of pandemic and infectious diseases outbreaks in Japan is similar to other OECD countries, although lower anti-microbial resistance and widespread hygienic precautionary measures across the population can contribute to reducing the spread of pathogens. However, the organisation of the Olympic and Paralympic Games in Tokyo in 2020 requires an increased level of vigilance for the public health emergency preparedness and response system, be it for infectious diseases, major disasters as for (bio)-terrorism or other risks.

4.2.1. Japan is a natural hazard-prone country with growing vulnerabilities

Japan is characterised by its multi-hazard exposure (Table 4.1). Earthquakes, tsunamis and volcanic eruptions occur frequently, as do hydro-meteorological hazards, such as floods, typhoons, extreme temperatures, avalanches or landslides, causing significant socio-economic damages (Table 4.2).

Table 4.1. Types of natural hazards prevalent in Japan

Natural hazard category	Types of natural hazards
Geophysical	Earthquakes; volcanic activity, tsunamis
Meteorological	Typhoons; extreme temperatures
Hydrological	Floods; storm surge; landslides; avalanches
Climatological	-

Source: Cabinet Office (2016[1]), "White Paper Disaster Management in Japan 2016", http://www.bousai.go.jp/kyoiku/panf/pdf/WP2016_DM_Full_Version.pdf; EM-DAT (2017[2]), *The Emergency Events Database*, http://www.emdat.be/.

Table 4.2. Japan's largest disasters since 1980

Disaster event/location	Year	Fatalities	People injured / affected/ displaced	Estimated damage *(current)*
Great East Japan Earthquake	2011	19 846	368 820	USD 10 billion
Kobe Earthquake	1995	5 297	541 636	USD 100 billion
Chūetsu Earthquake	2004	40	62 183	USD 28 billion
Kumamoto Earthquake	2016	49	298 432	USD 20 billion
Typhoon Mireille (n°19)/ Chūgoku and Kyushu	1991	66	91 128	USD 10 billion
Typhoon Saomai/ Chūbu and Kansai	2000	18	360 110	USD 7 billion
Blizzard/ Honshu	2014	37	2 800	USD 5.9 billion
Flash flood and landslide/ Niigata and Fukushima	2004	21	25 807	USD 2 billion
Landslides/ Hiroshima	2014	82	1 100	USD 38 million

Source: Cabinet Office (2016[1]), "White Paper Disaster Management in Japan 2016", http://www.bousai.go.jp/kyoiku/panf/pdf/WP2016_DM_Full_Version.pdf; EM-DAT (2017[2]), *The Emergency Events Database*, http://www.emdat.be/.

The islands of Japan extend along the Pacific Ring of Fire, a region in the world that is exposed to major earthquakes and active volcanoes. Between 2004 and 2013, 18.5% of worldwide earthquakes with a magnitude of 6.0 or above occurred in Japan. Japan's location at the meeting point of four tectonic plates also explains why the country faces significant seismic risk and frequently experiences major earthquakes and related tsunamis (Ministry of Land, Infrastructure, 2007[3]). Earthquakes have been the leading cause of both reported disaster related fatalities and injured, displaced or affected people, in addition to their economic damages in Japan. The Great East Japan Earthquake and its subsequent tsunami wave in 2011 caused nearly 20 000 deaths, close to 370 000 affected, displaced or injured people and an estimated USD 210 billion in damages. The Kobe Earthquake in 1995 caused over 5 000 fatalities and affected more than 500 000 citizens (Cabinet Office, 2016[1]).

There is a high probability – estimated between 70% and 80% – that a major earthquake will occur in the next three decades affecting major urbanised areas of the country, including Tokyo metropolitan area and a large part of Western Japan along the Nankai Trough. These disaster scenarios project that the maximum death toll could reach 23 000 with a further 72 000 people in need of rescue for the Tokyo Inland earthquake scenario, and up to 323 000 deaths for the Nankai Trough's earthquake (Cabinet Office, 2015[4]). These projections give an idea of the potential scale of such emergencies and their potential health impacts that Japan has to prepare for.

111 active volcanos in 2014 are also spread throughout Japan's islands, which represent 7.1% of the active volcanoes in the world. Volcanos can lead to a variety of natural dangerous phenomena when they erupt, from lava flows, to cinder dissemination, as it happened during the last important eruption in Japan on Mount Ontake in 2014, which killed 58 persons (Cabinet Office, 2015[4]).

Hydro-meteorological risks are also widespread across Japan. As many of the rivers in Japan are relatively short, but descend with a steep declivity, water levels can rise rapidly, making many of Japan's rivers prone to flooding, and particularly flash floods which can have significant human consequences (Ministry of Land, Infrastructure, 2007[3]). In 2014, torrential rainfall in Hiroshima Prefecture triggered a series of landslides that killed 82 people and injured many others. In addition, typhoons frequently hit Japan (Ministry of Land, Infrastructure, 2007[3]). In 2000, typhoon Saomai caused a storm surge and heavy rainfall that triggered several landslides across Chūbu and Kansai. Similarly, the 1991 typhoon Mireille caused a storm surge, as well as several landslides and flash floods inland that led to 66 fatalities. The increasing frequency of heavy downpours observed throughout the country in the last decades indicates an upward trend for floods in the country despite the significant flood control projects in which Japan has invested over the years (Cabinet Office, 2016[1]).

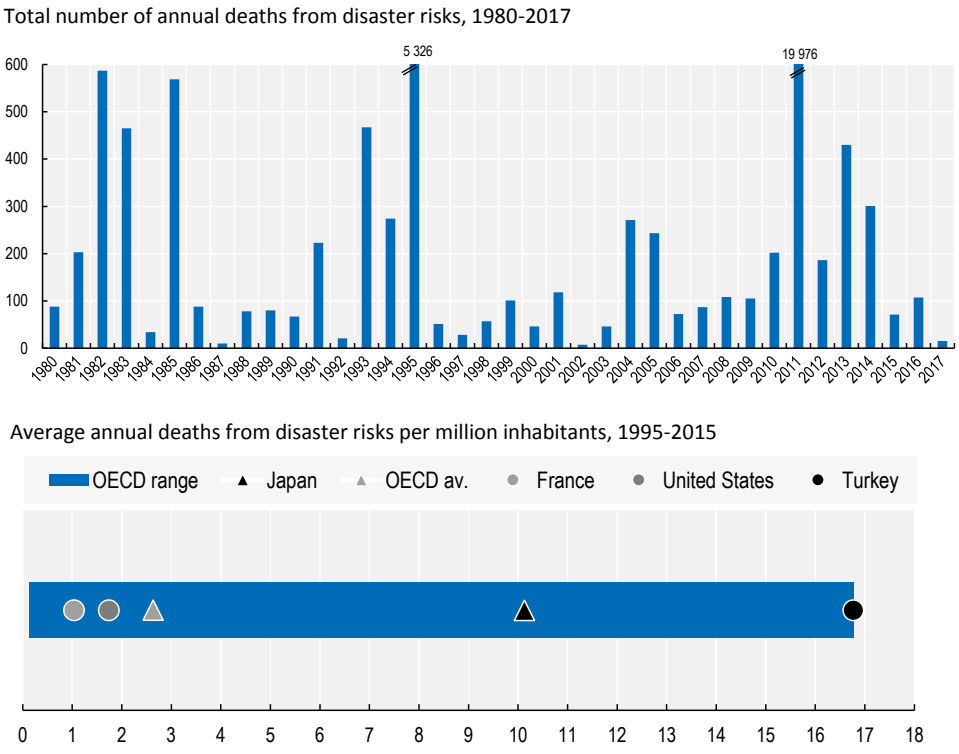
Similarly to earthquakes, the Japanese government has modelled scenarios of large-scale floods in key areas of the countries. For instance a flood affecting Tokyo Metropolitan area, that could lead to a maximum death toll reaching 2 600 people, and another 1.1 million people stranded and in need of emergency support (Cabinet Office, 2015[4]).

Japan is also exposed to other hydro-meteorological hazards, including avalanches in its large mountainous area, windstorms and heatwaves. The recent summers for instance were all marked by heatwaves throughout the country, causing excess mortality and significant rises in hospitalisations.

4.2.2. Public health consequences of disasters can be both direct and indirect

This overview of disaster risks affecting Japan shows the multiplicity of potential threats and their significant human consequences. Compared to other OECD countries, Japan suffers on average 4 times more human casualties per inhabitants from disaster risks. Figure 4.1 also highlights the significant variability of this indicator over the years, which indicates how much preparedness for large-scale hazardous events is important for the country.

Figure 4.1. Casualties from disaster risks in Japan



Source: Cabinet Office (2016[1]), "White Paper Disaster Management in Japan 2016", http://www.bousai.go.jp/kyoiku/panf/pdf/WP2016_DM_Full_Version.pdf; OECD (2018[5]), *Assessing Global Progress in the Governance of Critical Risks*, https://dx.doi.org/10.1787/9789264309272-en.

Indeed, disaster risks can have significant consequences for public health in Japan. Reducing the death toll caused by disaster is a fundamental policy objective. Both direct and indirect public health consequences of disasters have to be considered: disaster risks, especially large-scale ones, can lead to a significant number of injured people, for whom specific emergency interventions often on-site have to be planned for traumas or burns directly caused by the disaster.

From a public health perspective, it is equally important to consider indirect health effects, occurring after the disaster, which can be caused by affected health care provision, post-trauma stress and related psychological impact, or population evacuation and displacement. Large-scale disasters consistently show how damaging these indirect health effects can be. The example of the Great East Japan Earthquakes illustrates the range of consequences (Box 4.1).

Box 4.1. Direct and indirect health impacts of the Great East Japan Earthquake

With 21 839 deaths and missing people, tens of thousands of injured people, hundreds of thousands displaced persons, and many affected psychologically, the Great East Japan Earthquake was an unprecedentedly complex disaster, and demonstrated that more could be done to strengthen the resilience of the country and reduce public health consequences of disaster risks.

Disasters can affect the health system of a country, by damaging hospitals and health care facilities, affecting health care workers, and disrupting essential supplies for the continuity of health care, such as energy, water, or medical treatments. For instance, 80% of hospitals and a third of medical/dental clinics in the three affected Prefectures were damaged to different extents by the Great East Japan Earthquake, with some completely swallowed by the tsunami (Saito and Kunimitsu, 2011[6]). Strengthening the resilience of the overall health system to disaster risk should also be a priority of public health emergency preparedness in Japan.

In the case of large evacuations when temporary sheltering and relocation of an important number of people is organised, health care providers have a key role to play to ensure continuous health care, maintain provision of medical treatments, and take special care of elderly and other vulnerable groups to minimize secondary effects of disasters. A study on mortality rate after the GEJE conducted in the affected areas did show a significant excess mortality rate in the first month after the disaster, demonstrating these indirect effects (Morita et al., 2017[7]). These indirect effects were more severe and persistent for elderly people, and the four leading causes of death were pneumonia, coronary heart disease, stroke and cancer. These impacts show how a loss of access to medical care, environmental changes and physical and psychological stresses can aggravate health consequences of disasters, as well as the need to provide dedicated public health support post disaster to vulnerable groups such as the elderly.

Among the secondary effects, mental health and psychological impacts can also be significant; post-traumatic stress disorder, depression and anxiety symptoms can particularly affect vulnerable groups, from the disaster workers, to children, internally displaced people, and patients with psychiatric disorders. A comprehensive literature review found that following the GEJE a considerable proportion of the population from the affected areas was affected psychologically to a substantial degree, ranging from one tenth to nearly half of the sample respondents, highlighting that psychological assistance is a key aspect of post-disaster public health recovery and requires specific attention in the immediate aftermath of disasters.

Source: Saito and Kunimitsu (2011[6]), "Public health response to the combined Great East Japan Earthquake, tsunami and nuclear power plant accident: perspective from the Ministry of Health, Labour and Welfare of Japan", http://ojs.wpro.who.int/ojs/index.php/wpsar/article/view/129/70; Morita et al. (2017[7]) "Excess mortality due to indirect health effects of the 2011 triple disaster in Fukushima, Japan: a retrospective observational study", https://dx.doi.org/10.1136/jech-2016-208652 ; Harada et al. (2015[8]), "Mental health and psychological impacts from the 2011 Great East Japan Earthquake Disaster: a systematic literature review", https://dx.doi.org/10.1186/s40696-015-0008-x.

4.2.3. Japan has other specific vulnerabilities to disaster risks, some of which are growing

Japan shows some specific vulnerabilities to disasters that call for further close attention to public health emergency preparedness. The high density of Japan's population in risk prone areas is a potential factor for important human impact of disasters: half of the population is concentrated in the 10% of the country area which is prone to floods (Cabinet Office, 2015[4]). As shown above, major cities and urbanised areas are also prone to the risk of earthquakes. In addition, these areas concentrate most of the economic activities of the country, as well as most of Japan's health facilities, which by definition are located at the proximity of the population.

The increased interdependencies and interconnectedness between critical infrastructure sectors have to be considered in a vulnerability analysis as well (OECD, 2011[9]). More and more, with technological development, the health sector depends upon a continuous functioning of electricity, telecommunications, transportation, as do emergency services. A major disaster can significantly disrupt these services, with implications going far beyond the affected area. Ensuring the resilience of the health system should therefore consider its dependencies on critical supplies and essential lifelines and infrastructure, as well as their continuity.

The increased share of the elderly in the Japanese population is of serious concern when it comes to individual resilience to disaster risks. Demographic projections indicate that the share of the elderly (65+) will rise from around 26% today, already the highest in the OECD area, to almost 40% at mid-century (OECD, 2016[10]). As shown by the epidemiologic study quoted above, disasters can affect elderly persons disproportionally, notably given their greater likelihood of impaired physical mobility, diminished sensors awareness, poor chronic health conditions and social and economic limitations (Aldrich and Benson, 2008[11]).

Climate change might also be an aggravating factor to take into consideration for preparedness to public health emergencies. While it remains unclear how climate change will affect the frequency and severity of cyclones or flooding events, the increased risk of heatwaves will most certainly led to more severe impacts on human health in Japan (Nakano, Matsueda and Sugi, 2013[12]; Ministry of the Environment, 2014[13]).

4.2.4. Japan is at risk of infectious disease outbreaks

Regarding infectious diseases outbreaks and the risk of pandemics, Japan, as a global economic hub is exposed to virus or pathogens in a similar manner to most OECD countries. The recent most noticeable examples of outbreaks, such as the Ebola virus outbreak in 2014, the H1N1 pandemic influenza in 2009 or SARS in 2003 are all revealing of how similar forms of public health emergencies can affect Japan. Japan is also subject to the resurgence of more classic infectious diseases, such as tuberculosis, dengue, rubella, or measles, which all sporadically continue to affect citizens and cause deaths.

Like most OECD countries, Japan was affected by the H1N1 pandemic influenza in 2009. From its emergence in March 2009 in Mexico, the first case in Japan was confirmed mid-May in western Japan, where the number of cases increased then decreased quickly. A second outbreak that started in early June 2009 quickly spread to all parts of Japan. Overall around 20 million people are estimated to have contracted the H1N1 influenza in the country, 18 000 people were hospitalised (Okumura et al., 2011[14]) and 198 deaths

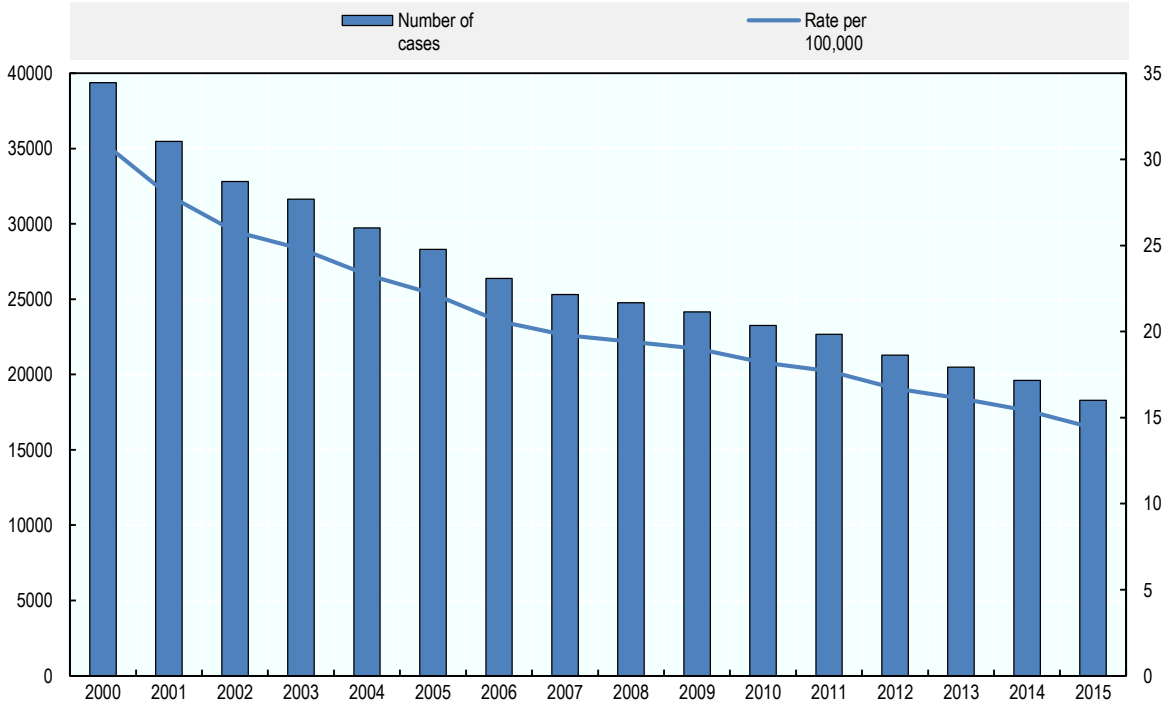
were confirmed at the end of the pandemic (Cabinet Secretariat, 2013[15]). Japan had a significantly lower mortality rate of 0.2 deaths per million individuals compared to other countries such as the United Kingdom (2.2), Canada (2.8), Mexico (2.89), United States (3.3), New Zealand (4.4), Chile (8.1), or Australia (8.6) (Takahashi et al., 2017[16]). Explanatory factors include on one side the scope of the government measures, including large school suspension at the early stage of the outbreak and large distribution of antiviral drugs, and on the other side important societal awareness and good personal hygiene amongst the Japanese population (Omi, 2010[17]).

Other infectious disease outbreaks with global or regional impacts, such as SARS in 2003 which affected many neighbouring Asian countries, or Ebola hemorrhagic fever in 2014, did not affect Japan. These two outbreaks nevertheless led to a large mobilisation of the public health services and caused fear among the population and health workers (Imai et al., 2005[18]).

The prevalence or resurgence of other infectious diseases should also be considered. In Japan, if the number of reported cases of tuberculosis and the prevalence rate has continuously declined over the last 15 years (Figure 4.2). However, compared to OECD peers, the 2017 rate of 15 cases per 100 000 inhabitants remains quite high; for instance, the rate is 3.1 in the United States, 5.5 in Canada, 6.8 in Australia, 8 in France or 8.9 in the United Kingdom (World Health Organization, 2018[19]). In South Korea, Japan's OECD Asian neighbour, the prevalence rate of TB in 2016 was a very high 70 incidents per 100 000 population.

Almost 70% of new cases of TB affect people over 65 years old and may be subject to the reactivation of previous TB infections. For the younger age population, a significant part of the new cases affect foreign-born people, reaching for instance around 50% of the new cases for the age group between 0 and 24. This illustrates the two groups of population vulnerable to tuberculosis in Japan: the elderly and young migrants. Prevalence is also higher in the dense urban areas of Tokyo and Osaka and in the tropical south (Tuberculosis Surveillance Center, 2016[20]).

Figure 4.2. Number of tuberculosis cases and prevalence rate in Japan (2000-2015)



Source: Tuberculosis Surveillance Center (2016[20]), *Tuberculosis in Japan Annual Report – 2016*, http://www.jata.or.jp/english/dl/pdf/TB_in_Japan_FINAL_1114.pdf..

During the rubella outbreak of 2012-2013, about 15 000 cases of rubella and 43 cases of congenial rubella syndrome were reported to the National Epidemiological Surveillance of Infectious Diseases. This resurgence mostly affected middle-age adult men who did not receive routine rubella vaccine in their childhood, and mostly affected the densest part of country, with 80% of cases reported in Tokyo, Osaka and neighbouring prefectures (Ujiie, Nabae and Shobayashi, 2014[21]). Sporadic measles outbreaks have also affected Japan in recent years, mostly due to imported cases.

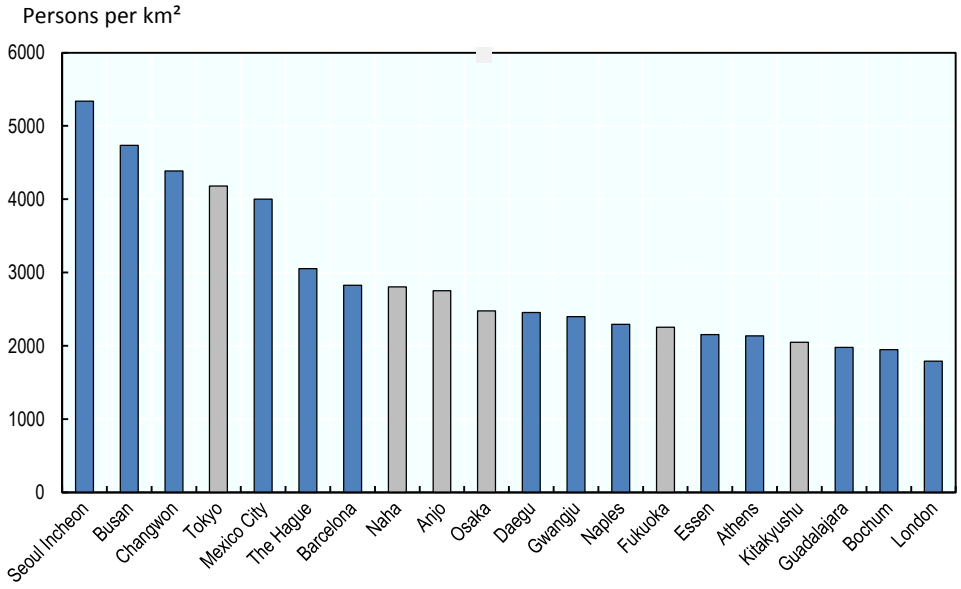
Regarding vector-borne diseases, a dengue fever outbreak unexpectedly occurred in the summer of 2014, which was the first autochthonous transmission in Japan in the last 70 years. Imported cases of Chikungunya, malaria and Zika have also been reported (Nakamura et al., 2018[22]).

4.2.5. Japan's high population density and international exchanges contribute to increasing the risk of infectious disease outbreaks but vaccination and hygienic measures lower the risks

Japan's risk profile related to the risk of infectious diseases outbreaks and spread depends upon a series of factors, such as population density, international exchanges and travels, hygienic precautionary measures taken by the population, population health conditions, vaccination coverage rate (Chapter 1), and levels of anti-microbial resistance. Japan presents a contrasted situation when we look at the different indicators related to such vulnerabilities.

Japan's high population density, and the large and increasing numbers of inbound and outbound travellers to and from the country are factors that can favour the spread of infectious diseases. Across the 300 metropolitan areas of the OECD metropolitan database, five out of the 20 densest ones are located in Japan (Figure 4.3). Such a high population density increases the risk of contaminations from person to person.

Figure 4.3. Population density in the 20 densest OECD metropolitan areas (2014)



Source: OECD (2019[23]), "Metropolitan areas", *OECD Regional Statistics* (database), https://dx.doi.org/10.1787/data-00531-en.

In addition, according to the Japan National Tourism Organisation, the number of annual visitors to Japan has seen a 4-fold increase from 6.2 million in 2011 to 24 million in 2016. The government has set a target of 40 million international visitors in 2020, when the Tokyo Olympic and Paralympic Games will be held (Nakamura et al., 2018[22]). Similarly, according to border control statistics, Japanese travelling overseas were between 16 and 18 million per year in the last decade (around 13% of the Japanese population). The data shows a significant anomaly in 2003, when Japanese travellers abroad dropped to 13 million, which might have been caused by fear of the SARS syndrome which was affecting neighbouring Asian countries that year. This is another example of the application of the precautionary principle by the Japanese population.

As explained in Chapter 1, Japan's vaccination programmes follow WHO recommendations; vaccinations are highly recommended for 13 selected diseases as routine vaccination. Overall the vaccination rate in Japan slightly exceeds the OECD average contributing to a good level of immunisation for many infectious diseases.

The growing challenge of anti-microbial resistance (AMR) around the world is also a concern for Japan's preparedness for public health emergencies. According to the National Action Plan on AMR, total use of antibiotics in humans in Japan ranks at a relatively low level (15.8 per day per thousand inhabitants in 2013) compared to EU countries. But, AMR is higher in several reference bacteria (see Chapter 1). Regarding animal AMR, Japan appears to rank at a comparable level to those of OECD countries (Government of Japan, 2016[24]). Beyond nosocomial infections, this raises concerns on

the risk of outbreaks of anti-microbial resistant infections at community levels, for which Japan started to collaborate horizontally with the National Action Plan, notably on raising the awareness among the public and health professionals.

Finally, while difficult to measure, the significant use of precautionary and hygienic measures within the Japanese population is largely recognised as a factor that limits the risk of infectious diseases propagation in the country (Takahashi et al., 2017[16]). These measures include regular handwashing and the widespread use of face masks, which has significantly increased amongst the population in recent years, especially following the H1N1 outbreak.

4.2.6. Other risks of public health emergencies in Japan should be part of an all-hazard preparedness approach

In this rapid scan of public health emergency risks in Japan it is also important to mention other risks, beyond natural hazards and diseases outbreaks, can necessitate the development of dedicated emergency preparedness measures. From large-scale food poisoning, or transport accidents, to chemical leaks, nuclear disasters, and terrorist attacks of all sorts, there are many other risks that can have a significant impact on public health. While the analysis of this chapter mostly concentrates on disaster risks and infectious diseases, it also aims to apply an all-hazards and threats approach to the analysis of public health emergencies preparedness policies in Japan.

In the context of the Tokyo Olympic and Paralympic Games (Box 4.2), it appears particularly important to strengthen focus on security threats. The Sarin Gas attack of the Tokyo subway in 1995 remains among the few examples of chemical terrorism among OECD countries. The synchronised attacks led to 13 deaths and more than 5 800 injured people (Public Security Intelligence Agency, 2018[25]).

Box 4.2. Public Health Emergency Preparedness for the Tokyo 2020 Olympic and Paralympic Games.

Japan will host the Tokyo Olympic and Paralympic Games in 2020 which will involve a large population influx from various countries to Tokyo. The Tokyo Metropolitan Government has primary responsibilities for preparing the event and ensuring public safety and security during the Games. Tokyo Metropolitan Government has consequently strengthened its emergency preparedness in order to be ready to host the event in the best conditions. The potential risks for visitors to Tokyo 2020 Olympics are communicable disease risks for vaccine-preventable illnesses such as measles and rubella as well as food and waterborne diseases. The risk of acquiring vector-borne diseases is considered low in Japan. Heat-related illness also represent a potential risk, as Tokyo 2020 is scheduled during the hottest season in Japan, with temperatures generally expected to exceed 30°C. Prior vaccination and appropriate hygiene measures for food and waterborne diseases as well as heat-related illness are highly recommended for visitors. It may also be useful to increase the number of multilingual triage clinicians to provide first contact services and coordination of emergency care in the Tokyo area during the Olympics and Paralympics.

Source: Nakamura et al. (2018[221]), "Health risks and precautions for visitors to the Tokyo 2020 Olympic and Paralympic Games", https://doi.org/10.1016/j.tmaid.2018.01.005.

4.3. Japan makes of preparedness for public health emergencies a priority, as reflected in its public policies

The snapshot of risks in Japan and their potential public health consequences demonstrate how preparedness can be critically important for Japan. The high number of potentially affected people by disaster risks and the important risk factors for the spread of diseases outbreak within the country demonstrate how preparing for emergencies should be a national priority in the country. In light of these major risks for public health, Japan makes of preparedness for public health emergencies a key policy priority. This is first reflected in its domestic legal and institutional framework related to the important risks of pandemic outbreaks and disasters, but also in its international cooperation activities.

4.3.1. Japan has a sophisticated legal framework for public health emergencies

Japan has a sophisticated legal framework to deal with national emergencies and their public health consequences. Both for pandemic and disaster risk preparedness, parliamentary acts clearly define the roles and responsibilities of ministries, prefectures and municipalities: all actors have to prepare countermeasure plans for their jurisdictions from national to local levels, following the principle of subsidiarity.

The 1961 Disaster Countermeasures Basic Act, with its subsequent revisions, formulates a comprehensive and strategic disaster management system for Japan. This system covers the entire risk management cycle, from prevention, to emergency preparedness and response, as well as recovery and reconstruction. It instructs all levels of governments to establish both a Disaster Prevention Council for policy planning and implementation, and a Headquarters for Disaster Control for operational response, as well as to develop disaster prevention plans at each level. While it establishes the primary responsibility for emergency response at the local level, it also allows higher levels of governments to intervene locally in case local capacities are overwhelmed, by applying the principle of mutual co-operation. The Act promotes a series of disaster risk reduction measures, specifies displaced person support activities, clarifies financial support from the national level and allows the Cabinet to make declaration of a state of emergency disaster. The Cabinet Office bears responsibility for overseeing policy implementation and ensuring multi-stakeholder coordination, and the Prime Minister chairs the Central Disaster Prevention Council.

In a similar mode, the Special Measures Act for Pandemic Flu and New Infectious Diseases Preparedness and Response specifies the responsibilities as well as the countermeasures to be taken by national and local governments, designated public institutions and business operators, to deal with pandemic influenza and infectious diseases. While the 1998 Infectious Disease Control Act classifies diseases it covers into categories depending on their infectiousness and the severity of the symptoms, defines the surveillance systems, and infectious disease control measures, the 2012 Special Measures Act instructs all levels of governments to develop action plans and emergency headquarters, clarifies the stockpiling policy and define a series of emergency measures to be undertaken. The Act also establishes the Response Headquarters led by the Prime Minister.

This legal framework evolves regularly taking into consideration the evolution of risk factors. For instance, the Special Act was a response to the 2009 H1N1 pandemic influenza. It elevated the level of preparedness for infectious disease, which proved particularly useful during the 2014-2015 Ebola outbreak. Similarly, the Basic Act on

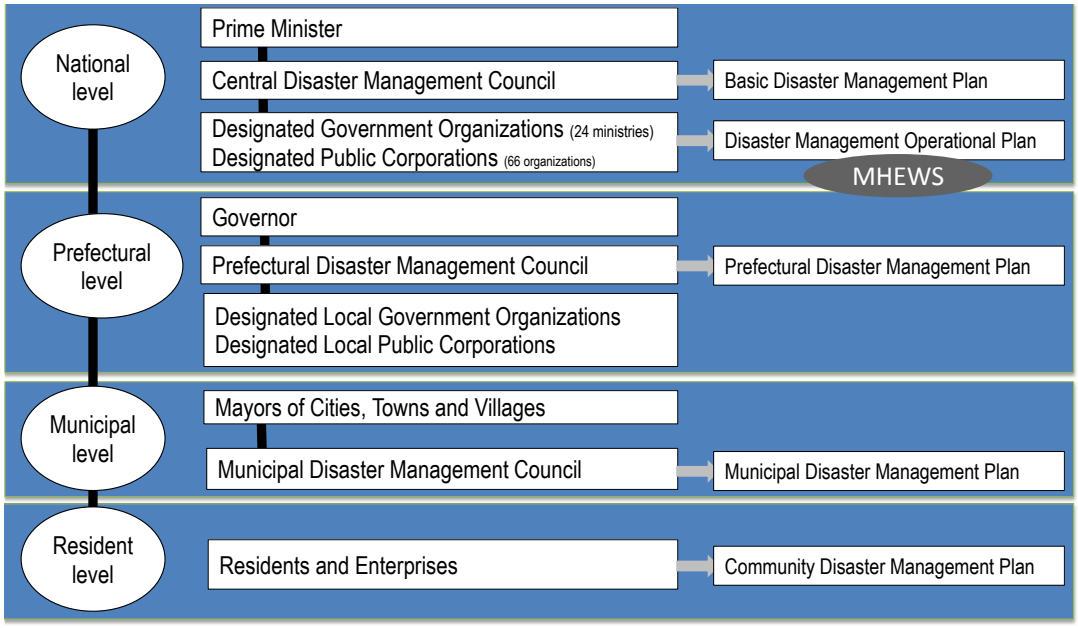
Disaster Management has been continuously reviewed and revised since its adoption in 1961 following lessons learned from large-scale disasters.

4.3.2. Japan's institutional setting for public health emergency preparedness and response involves the whole-of-government

In accordance with the OECD Recommendation on the Governance of Critical Risks, Japan's legal framework allows for whole-of-government engagement in public health emergency preparedness and response, both horizontally across sectors, and vertically across levels of government. However, similar to its legal framework, Japan does not have a unified all-hazards and threats approach to emergency preparedness and response but different ones for different risks. Furthermore, as discussed below, co-ordination remains a major area for improvement.

For all public health emergencies, Japan builds on its three-tiered decentralised governance system, with its 1719 Municipalities, its 47 Prefectures and its National Government, which all have preparedness responsibilities within their jurisdictions, and action plans to prepare following national guidelines (Figure 4.4). The Basic Disaster Management Plan and the National Action Plan for Pandemic Influenza and New Infectious Diseases govern the national government efforts, and are replicated locally in each Prefecture and Municipality of the country.

Figure 4.4. Outline of Japan's disaster risk management system



Source: Cabinet Office (2015[4]), "Disaster Management in Japan", http://www.bousai.go.jp/kaigirep/hakusho/pdf/WP2015_DM_Full_Version.pdf.

For disaster risks, a bottom-up approach with scaling-up procedures from municipalities, to prefectures and the national level predominates, for pandemics, the prefectural and national levels concentrates more responsibilities. This differentiated approach corresponds well to the different nature of the response to these emergencies and the local capacities that exist: when disasters strike, reducing their public health consequences requires active measures to take care of the affected people locally, to which higher levels

of governments can contribute when local capabilities are overwhelmed. For the case of pandemics on the contrary, surveillance, control, and containment policies need a more comprehensive approach at a larger scale.

For both risks, the national level can in any case step in for particularly severe emergencies by establishing a Management Headquarters at Cabinet level and/or through an ad-hoc activation of the government wide crisis response system, as it did in 2014 (Cabinet Secretariat, 2015[26]) immediately after the first detection of fever symptoms in a traveller returned from Liberia to Japan during the Ebola outbreak (Box 4.3).

Box 4.3. Public Health Response to Ebola

The largest outbreak of Ebola virus disease (EVD) in West Africa in 2014 resulted in unprecedented transmission worldwide and the World Health Organization (WHO) declared a Public Health Emergency of International Concern (PHEIC) on 8 August 2014. Although the number of travellers from EVD endemic countries was limited and no direct flight was operated to and from these countries, the Japanese Government promptly started to reinforce the border controls and domestic response capacity. First, the government raised awareness among travellers entering Japan through posters at quarantine stations and in-flight announcements. Travelers were asked to declare their travel history to endemic countries. In October 2014, the MHLW revised the entry screening policy for those who had travelled from Guinea, Liberia, or Sierra Leone. The Quarantine Act required these travellers to be isolated if they had symptoms at quarantine, or to be put under active health monitoring. The government activated the government-wide crisis response system in October 2014, immediately after the first traveller returning from Liberia to Japan developed fever at quarantine. In Japan, nine individuals were screened in 2015 and all were negative.

Source: Saito (2015[27]), "Public health challenges and legacies of Japan's response to the Ebola virus disease outbreak in West Africa 2014 to 2015", https://doi.org/10.2807/1560-7917.ES.2015.20.44.30056.

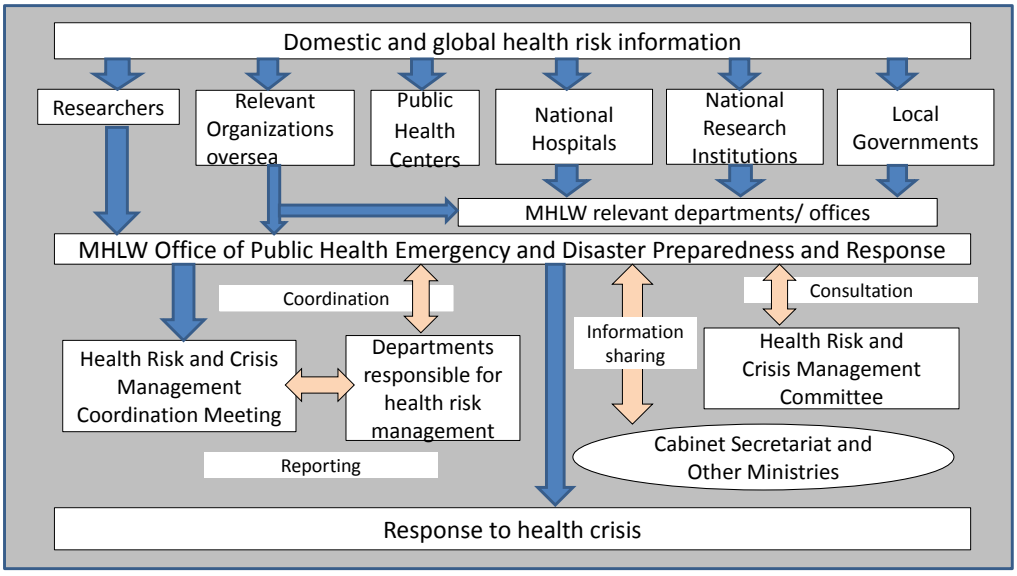
4.3.3. Horizontal coordination is better established for disaster risks compared to other public health emergencies

Regarding horizontal coordination, all relevant ministries are involved in public health emergency preparedness and response. Overall coordination is ensured by the Japanese Center of Government; the Cabinet Office has a dedicated State Minister for Disaster Prevention and the Cabinet Secretariat an Office for Pandemic Influenza and New Disease Preparedness and Response for infectious disease outbreaks. The engagement of national leadership in policy formulation, approval of national plans, multi-stakeholder coordination, strategic crisis management and regular drills enshrined in acts aligns well with the OECD Recommendation on the Governance of Critical Risks. This also reflects the fact that public health emergency preparedness is a priority for the country.

Japan's public health system, in particular the Ministry of Health, Labour and Welfare (MHLW) – with its Office of Public Health Emergency and Disaster Preparedness and Response – and the network of the 500 Public Health Centres throughout the country, is the first in charge for response to public health incidents (Figure 4.5). For disaster risk preparedness and response, the public health system is more a contributing entity to the larger disaster management system, which involves a large number of stakeholders, including the Fire and Disaster Risk Management Agency and the Self-Defence Forces.

The main role of the public health system in case of major disasters is to organise the national support to local public health authorities and health care institutions, and deploy health supplies and public health and health care workforce to affected area.

Figure 4.5. Public Health Risk Management in MHLW



Source: Presentation to the OECD at the National Public Health Institute, 2018.

Overall, the disaster risk management system appears to have established more robust co-ordination mechanisms over the years. This is understandable given the regular occurrence of large-scale disasters in Japan. Coordination of the public health sector with other government agencies for diseases outbreaks is in its early stage – as shown during the Ebola outbreak, during which several non-existing inter-agency coordination mechanisms were established (Saito, 2015[27]) – and would benefit from learning from the better established disaster risk management process.

4.3.4. Beyond government, the private sector and civil society also play a role

Beyond government, preparedness also requires the involvement of the private sector and civil society organisations, which can play a critical role in supporting emergency response with surge capacities, or can also be mobilised for specific capacities required for the response, such as the production of vaccines or therapeutics.

Japan benefits from a large engagement of volunteer and civil society organisations during disaster events. This is favoured by legislation, which encourages citizens' self-preparedness and volunteerism. The Red Cross Society of Japan is for instance a member of the Central Disaster Management Council and 900 000 volunteers contributed to the emergency response of the Great East Japan Earthquake in the three provinces of Tohoku (Ranghieri and Ishiwatari, 2014[28]).

The specific status of "designated public corporations" also asks critical infrastructure operators in key sectors to prepare emergency plans, both for disasters and disease outbreaks. There is, though, a difference in the list of these public and private companies, as vaccine and pharmaceuticals companies are included for the latter, given the key role they can play for these emergencies (see the subsequent section on stockpiling).

4.3.5. Internationally, Japan is a key supporter of the Global Health Security Agenda

As a major promotor of the Global Health Security Agenda (GHSA), Japan takes a leading role on these issues internationally. Under Japan's G7 Presidency in 2016 global health was at the top of the agenda, leading to the adoption of the G7 *Ise-Shima* Vision for Global Health. This is similar for disaster preparedness, as demonstrated by the hosting of the UN World Conference on Disaster Risk Reduction in 2015. The Sendai Framework on Disaster Risk Deduction adopted thereof recognises in particular the need to enhance the resilience of the health system.

As noted in the 2014 OECD Development Co-Operation Review of Japan, these international policy priorities are also reflected in Japan's development policy, which makes human security one of its priorities (OECD, 2014[29]). This has translated into the mainstreaming of disaster risk reduction into Japan's development co-operation projects. Japan is also a significant contributor to the budget of the WHO; in 2016 for instance Japan's contribution to WHO's core budget represented 38% of the total contribution of the OECD Development Assistance Committee donors.

4.4. Identifying and assessing public health emergencies risk in Japan

Preparing for public health emergencies requires, first, a good knowledge of the critical risks and their public health consequences. Japan assesses its main risks and their public health consequences with a scenario-based approach, which is a good way to plan its capabilities to deal with emergencies.

By combining the use of elaborated modelling and solid databases, the association of its world-class scientific research and the application of international guidelines – such as the International Health Regulations – Japan has identified a series of major risks and estimated their impacts. This is undertaken for most categories of National Emergencies in Japan, which range from earthquakes, to flood, volcanic eruptions, nuclear and industrial accidents, terrorism or pandemic influenza and other infectious diseases. Unlike many OECD countries, however, Japan does not conduct a National Risk Assessment (OECD, 2018[30]), which would allow the comparison of all major risks in terms of likelihood and potential impacts, and to prioritise resources accordingly. This is consistent with the lack of a unified all-hazard and threat approach to emergency management in Japan.

4.4.1. Japan conducts a comprehensive risk assessment for infectious diseases

Under the Infectious Diseases Control Act Japan has established a list of notifiable infectious diseases and defined eight categories of classification according to their infectiousness and the severity of their symptoms, from the most severe – category 1- to the most easily controllable – category 5 – (Table 4.3). This classification is dynamic, and the MHLW or the Cabinet can add or delete diseases to the list depending on the category.

Table 4.3. Notifiable diseases under the Japan Infectious Diseases control Law

Classification	Infectious diseases
Cat 1	Viral hemorrhagic fevers, Plague, Smallpox, and others
Cat 2	Tuberculosis, SARS, Specific Avian Influenza (H5N1 & H7N9), MERS and others
Cat 3	Cholera, Shigella, E. coli O157 infection, typhoid, paratyphoid
Cat 4	Hepatitis E, hepatitis A, yellow fever, anthrax, infantile botulism, avian influenza (excluding H5N1 and N7N9) and others
Cat 5	Influenza (excluding avian flu and pandemic influenza), viral hepatitis (excluding hepatitis E and A), HIV/AIDS, MRSA (methicillin-resistant Staphylococcus aureus), and others
New Influenza	
Designated Infectious Disease	
New Infectious Disease	

Source: National Institute of Infectious Diseases (2018[31]), "Infectious Disease Surveillance System in Japan", https://www.niid.go.jp/niid/images/epi/nesid/nesid_en.pdf.

Beyond risk identification, Japan has developed scenarios of pandemic diseases outbreaks for several of them, based on the most advanced scientific knowledge and conservative assumptions. For instance, for H5N1 pandemic influenza, the National Action Plan estimates that 25% of the population could be infected, with 13 to 25 million patients visiting medical institutions. A medium-level influenza pandemic could lead to 530 000 hospitalisation and 170 000 fatalities, at a 0.53% case fatality rate. A severe influenza with a 2% fatality rate would lead to 2 million hospitalisation and 640 000 fatalities. This assessment also estimates the maximum number of hospitalisation per day between 100 000 and 400 000 and a rate of absenteeism reaching 40% for all employees during the peak period (Cabinet Secretariat, 2013[15]). This assessment is also replicated at the local level to inform preparedness at the municipal and prefectural levels. For instance, the Yokohama City Action Plan is based on the most severe of these two scenarios (City of Yokohama, 2014[32]).

This risk assessment approach is similar to the concept of the reasonable worst case scenario developed by the United Kingdom for its National Risk Assessment (OECD, 2018[30]), which is a good way to plan capabilities that would be required to prepare and respond to such public health emergency (Box 4.4).

Box 4.4. National Risk Assessment in the United Kingdom

The UK National Risk Assessment (NRA) is a yearly process aimed at identifying characterising and comparing all the major hazards and threats of national significance that may cause significant impacts in the UK on a five-year horizon. Led by the Civil Contingencies Secretariat of the Cabinet Office, it involves a large multi-agency process that allows ranking risks based on the likelihood –or plausibility- and impact of the "reasonable worst-case scenario" on a series of criteria (human, economic, service disruption and psychological). According to the Civil Contingencies Act, the NRA constitutes the fundamental basis for capabilities-based planning to support emergency preparedness and response from national to local level. Endorsed by the Cabinet Office, the NRA allows risk ownership by assigning the responsibility to manage each identified risk to one government department. While remaining in part confidential, a public version of the NRA is made publicly available and serves as fundamental reference document for risk information and awareness across the country.

Source: OECD (2018[331]), "OECD Toolkit on Risk Governance", https://www.oecd.org/governance/toolkit-on-risk-governance/home/.

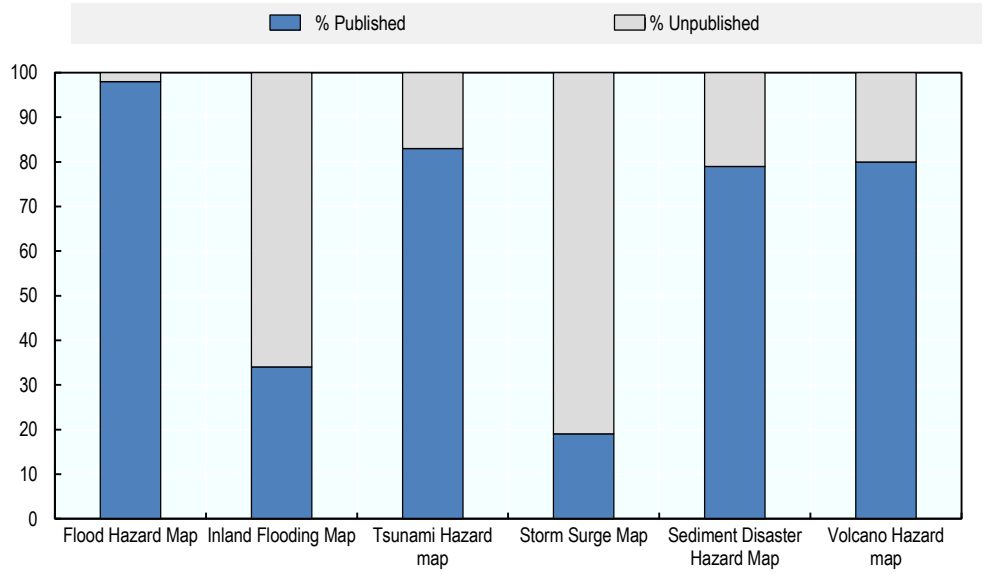
4.4.2. Japan significantly improved its disaster risk assessment following the Great East Japan Earthquake

A similar assessment exercise is undertaken for disaster risks, which helps determine the potential public health consequences for the various hazards that can affect the Japan and to prepare accordingly. Under the coordination of the Cabinet Office, Japan benefits from the combined use of advanced research institutes and government agencies to conduct such assessments, through the development of hazard maps, vulnerability and risk analysis, based on data collection of past disasters impacts and risk modelling.

All the major risks of earthquakes, tsunamis, floods, volcanoes have consequently been assessed in Japan, and scenarios have been developed for the most significant risks. Every year the revision of the Basic Disaster Management Plan provides an opportunity to improve some of these assessments by integrating most recently available knowledge. As discussed earlier in this chapter, this includes for instance the Nankai Trough Earthquake and Tsunami, the Tokyo Inland Earthquake or the Tokyo Metropolitan Flood, for which the number of maximum probable deaths, affected or evacuees are assessed (Cabinet Office, 2015[4]).

The Japanese government had conducted a risk assessment for earthquake and tsunami risks prior to the Great East Japan Earthquake. The anticipated scenario was based on 8.6 magnitude earthquake with a tsunami that would flood an area of 270 square kilometres (Ochi and Suzuoki, 2012[34]). Instead, the GEJE was of a 9.0 magnitude and the flooded area the double that of the scenario estimate, leading to far more human and economic damages than expected, in addition to the unforeseen nuclear disaster. In this sense, the disaster reality far exceeded the anticipated scenario. Post GEJE, risk assessments for major disasters have been reviewed throughout the country, notably regarding their potential damages, leading to significant re-evaluation of preparedness and response countermeasures, and a practical approach to learning lessons from crises. This also led to reviewing the hazard maps in the different municipalities at risk of the country, for the main hazard types. Even if not completed everywhere, this work shows significant progress according to the 2016 White Paper on Disaster Management in Japan (Figure 4.6).

Figure 4.6. Status of hazard map development in Japan in 2014



Source: Cabinet Office (2016[1]), "White Paper Disaster Management in Japan 2016", http://www.bousai.go.jp/kyoiku/panf/pdf/WP2016_DM_Full_Version.pdf.

4.4.3. Assessing other public health risks caused by rare events such as terrorism and nuclear disasters should be continuously improved

The "Terrorist Attack Preparedness Action Plan" established since 2004 includes a joint threat and risk assessment developed in partnership between the public health and the security sector. During interviews with the OECD to inform this review, some stakeholders suggested that coordination between these sectors could be improved to more precisely analyse the likelihood of different forms of terrorist attacks and their potential consequences to better prepare the public health response. Regarding nuclear facility accidents, the Great East Japan Earthquake led Japan to revise its policy and integrate the risk of complex disasters in its Basic Plan for Disaster Management and similarly for local governments located within a 30-km radius from a nuclear power plant should integrate this risk in their local disaster management plan (Cabinet Office, 2016[1]).

4.4.4. Risk communication and awareness programs is a major priority in the country

Well-developed risk knowledge is largely used to communicate about risks, strengthen the risk awareness and risk preparedness culture of the population, and promote societal resilience and self-protection. Japan is among the most advanced countries of the OECD when it comes to disaster education. School curricula from kindergarten to university integrates risk management (Box 4.5), regular exercises and drills are organised at all levels in the Japan, publicly available risk maps are mandatory and indicate evacuation routes to be taken and anticipated safe meeting points (OECD, 2016[10]). Similarly, regarding diseases outbreaks, local government plans, information at public health centres and school programmes all contribute to raising citizens' awareness on potential health risks and precautionary measures to be taken in case of an outbreak.

Box 4.5. Disaster Risk Education in Japan: the example of Kamaishi school

The importance of risk education to reduce the impact of disasters has been proven on many occasions, with perhaps the example of the Kamaishi schools during the 2011 tsunami the most well-known. Despite the significant impact of the tsunami, and 1000 casualties in this coastal city, all 3000 school children evacuated to higher ground and none lost its life, taking the appropriate actions making quick and flexible judgment while helping the more vulnerable. In Kamaishi-city, students reacted according to the concept of "*tsunami tendenko*," which calls for a quick evacuation. The concept developed in the eastern coast of Japan as a grassroots response to large-scale disasters. The word tendenko has been handed down in the Tohoku region as an important code of action to be observed in local communities at risk of tsunami. Professor Toshitaka Katada of Gumma University also contributed to children's preparedness. He told the students to make their best efforts in any situation, and to take the initiative of evacuation in the community. In Unosumai, students of Kamaishi East Junior High School immediately ran out of the school to higher ground after the earthquake occurred. Their very quick and resolute response prompted local residents and even the students and teachers in a neighbouring elementary school to follow and consequently saved a lot of lives. The response of Kamaishi East Junior High School students was based on the principles of evacuation taught by Professor Katada.

Source :OECD (2018[33]), "OECD Toolkit on Risk Governance", https://www.oecd.org/governance/toolkit-on-risk-governance/home/.

4.5. Capabilities for public health preparedness and response in Japan

Based on its risk analysis, Japan has invested resources for the development of a robust infrastructure and dedicated capabilities to prepare for public health emergencies, from their detection and surveillance to the response and medical care. While progress can continuously undertaken in this domain, these capacities appear to be tailored in good accordance with the level of risk, national policies and international standards.

Overall, in terms of capabilities, preparedness for disaster risks appear very advanced in Japan, based on risk analysis, with constant improvements, a large mobilisation of resources throughout the country. Capabilities' planning for infectious diseases is also risk-based and at a good level, even though concerns about maintaining this level of preparedness, ensuring human resources have the right skills and ensuring that local government can properly fulfil their requirements are widespread across health professionals.

4.5.1. Surveillance, monitoring and information systems make good use of innovation, but more could be done to foster early detection and inter-agency cooperation

Japan's advanced technical and scientific capacities are constantly mobilised to improve its systems for surveillance and monitoring of the potential risks of public health emergencies. From disease outbreak surveillance to natural hazard detection, early warning systems and information sharing platforms, innovative tools are used by the Japanese authorities to detect emergencies in a timely way, rapidly evaluate their probable public health consequences and disseminate this information across the large network of emergency stakeholders. The potential of big data, social networks and

artificial intelligence could further increase timeliness and accuracy of emergency information, as is proposed in several on-going public sector innovation projects.

Regarding disaster risks, dense monitoring networks for hydro-meteorological and earthquake risks allow the detection of natural hazards that can lead to an emergency. Well-established state-of-the-art early warning systems ensure that warnings are provided in a timely manner to disaster management authorities and the public at large, which leads to establishing the Emergency Response Headquarter at the level corresponding to the emergency. For large-scale disasters the Cabinet Information Collection Centre gathers all the disaster-related information from all sectors and disseminates it to the different sectors and the public. In such circumstances, the MHLW provides information regarding health, welfare and labour situations. In addition, the MHLW online Emergency Medical Information System (EMIS) is used to share information among the Ministry and with medical institutions in affected areas. EMIS makes it possible to dispatch Disaster Medical Assistance Teams where the greatest needs are.

However, these information-sharing systems proved to be insufficient for properly assessing the public health emergency priorities during the Great East Japan Earthquake. Significant improvements are currently being elaborated to allow better real-time cross-ministerial information-sharing with the creation of the Disaster Health care Assistance System (Box 4.6), which would allow better tailoring the response to the emergency needs through an innovative data-sharing platform (Kanatani, 2017[35]).

Box 4.6. The Information Integration System for Disasters, an innovative platform for health emergency information sharing

Discrepancies in information-sharing and delayed health care assistance were highlighted during the Great East Japan Earthquake. As part of its cross-ministerial Strategic Innovation Promotion Program, the Japanese government is developing a new information-sharing platform to improve activities of medical assistance teams. The aim of the platform is to automatically integrate disaster information to estimate in real time the number of affected population, their characteristics and their location to support the distribution of medical assistance teams in the first 8 hours that follows a disaster. Damage modelling also assess the status of disaster base hospitals and automatically integrates disaster reports from the different national agencies to refine the analysis and adjust the emergency response accordingly.

Source: Kanatani (2017[35]), "Perspectives on satellite and simulation technologies for disaster response".

For infectious diseases surveillance and detection, the National Epidemiological Surveillance of Infectious Diseases (NESID), set up in mid-90's by the Infectious Diseases Control Law, is a robust country-wide system, jointly operated by medical institutions, prefectures and the national government (Zaraket and Saito, 2016[36]). NESID builds on a solid network of 5000 sentinel hospitals, 500 Public Health Centres, 81 Public Health Laboratories, 40 quarantine stations in airports and harbours and the National Institute for Infectious Diseases, with its BSL-4 lab which was made operational in 2014 (Box 4.7).

Box 4.7. The operationalisation of the BSL-4 lab in Japan during the Ebola outbreak

Social acceptance is necessary for establishing infectious diseases labs handling the most-hazardous pathogens. Introducing the first BSL-4 lab into Japan is one example. Japan's National Institute of Infectious Diseases (NIID) built the biosafety-level-4 (BSL-4) lab in the city of Musashi-Murayama in 1981, but it has been limited to operating as a BSL-3 lab because of community safety concerns. Over the years, the NIID made various attempts to gain public support for BSL-4 operations at the site, but some citizens and politicians were concerned that the risks outweighed the benefits. Fears that Ebola might reach Japan during the 2014 outbreak in West Africa partly motivated the policy change. An agreement reached in August 2015 between Japan's Minister of Health, Labour and Welfare and the Mayor of Musashi-Murayama City clears the way for the facility to begin limited work with pathogens such as the Lassa and Ebola viruses.

Source: Shen (2015[37]), "Ebola spurs creation of Japan's first maximum-security biolab", https://doi.org/10.1038/nature.2015.18179; Dickmann et al. (2009[38]), "Report of the International Conference on Risk Communication Strategies for BSL-4 Laboratories, Tokyo, October 3-5, 2007", https://doi.org/10.1089/bsp.2009.0023.

Reports collected, pathogen surveillance, school absenteeism and excess mortality are all monitored to inform NESID's weekly infectious disease report, as well as the bi-monthly meeting of MHLW Health Risk and Crisis Management Coordination. Mobile detection capabilities for biological threats detection also exist among security authorities (Saito, 2017[39]). According to the stakeholders interviewed, the NWSID surveillance system functions well, as shown during the Ebola outbreak. NESID could nevertheless be further strengthened, notably by integrating social-media screening in event-based surveillance (Box 4.8) and better training local health institutions. That could have helped detect the Kansai area H1N1 outbreak earlier (Shobayashi, 2011[40]).

Box 4.8. Digital disease detection

Progress in event-based surveillance benefits from big data analysis and social media screening for the early detection of the emergence of infectious diseases. Canada's Public Health Agency has been a pioneer in the development of such a tool with the development of the Global Public Health Intelligence Network (GPHIN) in 1997, which has constantly been evolving to integrate new analytical methods. The GPHIN relies on an automated web-based system that scans newspapers and other communications worldwide for potential indicators of outbreaks (or "signals") that are analysed and rapidly assessed by a multilingual, multidisciplinary team at the Agency. Every day the GPHIN analyses more than 20 000 online news reports (over 30 000 sources) in nine languages worldwide. A web-based program aggregates data based on an algorithm that provides potential signals of emerging public health events. When a risk is identified analysts disseminate relevant information and alerts to senior officials and stakeholders for decision-making. The GPHIN identified the early SARS outbreak in China, was credited with the first detection of MERS-CoV and has played a significant role in the monitoring of the Ebola outbreak in West Africa.

Source: O'Shea (2017[41]) "Digital disease detection: A systematic review of event-based internet biosurveillance systems", https://doi.org/10.1016/J.IJMEDINF.2017.01.019; Dion, AbdelMalik and Mawudeku (2015[42]), "Big Data and the Global Public Health Intelligence Network (GPHIN)." https://doi.org/10.14745/ccdr.v41i09a02; Parmar, Arii and Kayden (2013[43]), "Learning From Japan: Strengthening US Emergency Care And Disaster Response", https://doi.org/10.1377/hlthaff.2013.0704.

4.5.2. Japan has made large investments in health infrastructures dedicated to emergencies

Since the mid-90's, Japan has invested significantly in its health infrastructure to strengthen its preparedness level for emergencies. MHLW established programmes for disaster base hospitals and for Class 1 and 2 infectious diseases designated hospitals based on lessons learned from disasters or following legislation requirements. Japan also has a dense network of Designated Evacuation Centres, which are used when evacuation orders are emitted in case of disasters.

Following the 1995 Great Hanshin-Awaji Earthquake, MHLW decided that at least one disaster base hospitals (DBH) should be set up in every secondary medical zone in Japan. These hospitals should accept the injured patients from the affected area, have surge medical capacities and are required to have a quake-resistant construction and firm lifelines, such as autonomous energy, heliport, satellite telecommunications, and substantial water storage (Homma, 2015[44]). According to the 2017 White Paper, Japan has 706 designated hospitals – with 82 in Tokyo Prefecture. DBH become the centres for the acceptance of patients or the dispatch of required personnel when a disaster occurs. These infrastructure constitute a fundamental element for the resilience of the Japanese health system. The on-going survey on DBH conducted by MHLW is an important step to assess the status of implementation of this policy.

Disaster-affected populations can receive health services to limit secondary health effects of disasters in Designated Shelters, which can host up to 36 million people throughout the country (Cabinet Office, 2016[1]). After the GEJE, the Cabinet Office announced "Evacuation Centre Management Guidelines" to encourage municipalities and others to take necessary measures to manage the living environment of the affected people who stay in evacuation centres.

According to the 1997 Infectious Diseases Act, in addition to the four designated hospitals for novel infectious diseases, every prefecture needs to have a Class 1 designated hospital for deadly and highly transmissible diseases, and for Class 2 diseases there should be one hospital for each secondary care area. However in 2014, as revealed when WHO declared the Ebola outbreak a Public Health Emergency of International Concern (PHEIC), 9 prefectures out of 47 had not yet set-up their Class 1 hospital, (Table 4.4). Similarly to disaster base hospitals, there is a lack of formal control measures in these facilities, in particular on infection control in biosafety wards (Saito, 2015[27]).

Table 4.4. Types of infectious diseases hospitals and their characteristics

	Types of infectious disease hospital		
	Specified	Class 1	Class 2
Designated by	MHLW	Prefectural Governor	Prefectural Governor
Location policy	Several nationally	One in a prefecture	One in a secondary medical care area
Major requirements for the wards	Not documented	Negative pressured private room with toilet and shower Anteroom Dedicated ventilation with HEPA filter Dedicated drainage	Dedicated ward for infectious disease patients with toilet and shower
Diseases	Novel, Cat 1 & 2	Cat 1 & 2	Cat 2
Hospitals (beds)	3 (8)	45 (86) in 38 of 47 prefectures	335 (1 716)

Source: Saito (2015[27]), "Public health challenges and legacies of Japan's response to the Ebola virus disease outbreak in West Africa 2014 to 2015", https://doi.org/10.2807/1560-7917.ES.2015.20.44.30056.

4.5.3. Japan stocks large amounts of medical countermeasures and emergency supplies for emergency response

Emergency capabilities also include stockpiling of medical countermeasures (MCM) for diseases outbreaks, as well as of emergency relief supplies for disasters. Japan has a dynamic policy for MCM stockpiling. This policy covers 45 million people to be able to cope with a severe pandemic influenza, which would possibly affect 25% of the population. National and local governments have emergency antiviral stockpiles, mostly of Tamiflu and Inavir. New drugs are included in Japan's antiviral portfolio to address also the risk of resistance to these widely used treatments. An increased share of the market storage and production is envisioned as well, which would lead to a more dynamic stockpiling policy, which also addresses the risk of drugs expiration when managed by local governments. In the adoption of this dynamic stockpiling policy, Japan is making a good use of its pharmaceutical sector. This is less the case though for new infectious diseases, as Japan does not have an official access programme for the use of unlicensed drugs outside clinical trials (Saito, Tanabe and Tamura, 2016[45]).

Regarding vaccines, four strains of pre-pandemic H5N1 vaccines have been stockpiled in bulk for 10 million people each (Saito, Tanabe and Tamura, 2016[45]). The aim is to supply health care providers as a priority, as well as the people essential to ensure the continuity of the key sectors and lifelines of the country. A prototype cell-cultured vaccine has also been licensed and three pharmaceutical companies are developing capacities to provide such vaccine for all citizens in 6 months. Japan also has a national stockpile of a small pox vaccine.

For disaster emergencies, the disaster risk management system secures rescue equipment and relief supplies for affected population throughout the country across the three government levels. The exceptional Great East Japan Earthquakes demonstrated how quickly these supplies can be used in large-scale disasters, notably for drugs and medical treatments (Parmar, Arii and Kayden, 2013[43]).

4.5.4. Emergency health care providers can be mobilised rapidly when disasters hit, but skills shortage in infectious disease control and treatment is a concern

The mobilisation of adequate health care workers is an essential feature of the response to public health emergencies. Ensuring that the right skills are developed and can be rapidly mobilised and dispatched to the affected areas requires dedicated programmes and resources.

Following the 1995 Kobe earthquake, the MHLW has developed a dedicated programme for disaster medical care with the creation of Disaster Medical Assistance Teams (DMAT). DMAT are specialised teams – typically composed of a doctor, two nurses and one coordinator – which can be immediately deployed in disaster-affected areas to provide emergency medical care in the acute phase, typically the first 72 hours after a disaster. The 1 426 DMAT teams throughout Japan are composed of 9 328 members, and automatically go in standby when major disasters occur, while the DMAT Secretariat ensures their transportation to the affected area through military airplanes to provide surge capacities in disaster-base hospitals and in the affected areas (Hakuno, 2016[46]). While DMAT expertise is not limited to post-earthquake assistance, DMAT's special skills in trauma care can be particularly useful when major earthquakes occur and complement well the well-trained local and specialised search and rescue teams of Japan's disaster risk management system. While DMAT is a fundamental asset for public health emergencies, Japan needs to continue improving its medical surge capacities to respond to the diversity of public health consequences that can be caused by disasters.

During the Great East Japan Earthquake (Box 4.9), there were fewer lifesaving interventions to undertake, given the devastating and fatal combination of the earthquake with a tsunami, which led to many deaths by drowning (Saito and Kunimitsu, 2011[6]). The need was more for support to vulnerable populations in need of classic medical care, drugs and treatment or psychological assistance. The DMAT teams deployed could not make the best use of their skills and the medical teams organised by the Japan Medical Association (JMA Teams, JMAT) were of particular importance, and stayed longer to contribute to the restauration of the significantly affected health care system of the disaster-hit region (Ishii, 2016[47]). This illustrate the complementary capacities of these two systems. It also highlights the importance of completing the DMAT system to take into consideration all the public health needs after a disaster. The MHLW is currently supporting the development of a new system of Disaster Health Emergency Assistance Team (DHEAT), to focus more broadly on public health consequences of disasters. Training started in 2016, and DHEAT were first deployed in July 2018 during the devastating floods which affected south-western Japan.

Regarding psychological assistance, the MHLW started a similar approach with the Disaster Psychological Assistance Teams (DPAT) a few years ago. These teams are composed of psychiatric workers and deployed in disaster-affected areas, and particularly in psychiatric institutions. By meeting an important demand, this programme has been evaluated as successful, but it faces constraints as long-term action is often required for psychological assistance and requires corresponding engagement of DPAT members. The surge capacity provided by the DPAT system could be better linked with the local mental health institutions and practitioners so that a longer-term follow-up system is set up.

In the case of infectious diseases, there are more concerns over human resources. According to the National Institute of Public Health, 33% of Class 1 hospitals are lacking clinical infectious diseases experts, for instance. The Field Epidemiologist Training Programme of NIID also does not train sufficient staff. In a context where infectious

diseases outbreaks are not as frequent as disasters, and with a decreasing budget and population, maintaining capacity, expertise and awareness within the public health system to deal with the risk of pandemic diseases outbreaks is a challenge.

Box 4.9. Public Health Response to the Great East Japan Earthquake

During the Great East Japan Earthquake, approximately 6000 teams of over 23 000 people were involved in assisting the affected prefectures and municipalities, which includes the 383 Disaster Medical Assistance Team (DMAT) consisting of 1 852 members dispatched on the day of the disaster. Once Miyagi Prefecture requested aid on March 14, many health care teams (physicians, nurses, and pharmacists) from across the nation gathered and then dispersed to the disaster shelters. While these professionals made full use of their ingenuity and creativity to provide care for evacuees and disaster victims in local areas, this disaster highlighted several shortcomings in public health preparedness for complex disasters in Japan.

During the GEJE, health relief activities encountered included (1) delay in the resource delivery and evacuation (2) delay in reaching evacuees (3) the lack of leadership and coordination system (4) the lack of logistic supports of non-clinical public health issues (5) inefficient disaster control centres (6) disparity in levels of living condition among shelters. Public health nurses and town employees initially had to reach the shelters on foot because of lack of transportation; this forced them to take much more time in assessing the situations and needs of the affected people.

The GEJE revealed weak points in Japan's health preparedness including disaster response plans in general. The relevant legal framework had expected damage of a much more limited scale. Thus, prefectures were not prepared to replace the leadership for disaster response when the local municipalities were destroyed and ceased to function. As well as physical structures, well-prepared management systems are necessary to strengthen resilience.

Source: Uehara (2013[48]), "Be Prepared! – Lessons learned from the Great East Japan Earthquake and tsunami disaster, http://www1.med.or.jp/english/journal/pdf/2013_02/118_126.pdf".

4.6. Emergency countermeasures and their implementation during crisis

Japan has developed a set of emergency plans to mobilise its capabilities and implement countermeasures when public health crises occur. While this large set of preparedness plans from national to local levels – as well as in designated services – makes clear the different countermeasures to be applied to reduce public health consequences of all kinds of emergencies, the lack of centralised oversight and quality control is a lost opportunity for cross-constituencies learning and overall continuous improvement of the national preparedness level. Improvements to inter-agency coordination across sectors and more regular practical exercises with the health sector would multiply the benefits from Japan's sophisticated system of preparedness planning.

4.6.1. Public health emergency plans are developed at all levels but there is a lack of oversight and control of these plans

In application of legislation related to disaster risks and diseases outbreaks, emergency response stakeholders, public authorities at all levels and key private sector partners all

have to prepare action plans at their levels composed of a series of countermeasures to limit public health consequences of emergencies. From the overarching Basic Disaster Management Plan and National Action Plan for Pandemic Influenza and New Infectious Diseases, which govern the national whole-of-government emergency response for disasters and diseases outbreaks, national guidelines instruct all ministries and local authorities to prepare their own emergency plans.

As such, the MHLW has developed a series of response plans for public health emergencies in Japan, which address potential public health emergencies. The MHLW's Disaster Management Operational Plan sets out both the preparedness measures for the organisation of the public health response to disaster events and for maintaining the continuity of the activities of the Ministry. The public health response follows standard operating procedures set out in the plan to ensure the rapid deployment of DMAT, DPAT and emergency supplies in the affected areas, as well as support to Disaster Base Hospitals. Regarding heath crises, the National Action Plan proposes a comprehensive set of actions on 6 areas: surveillance and information collection, information provision and sharing, prevention of occurrence and spread, medical services and maintenance of stability of civil life and economy. These two plans have complemented the pre-existing MHLW Basic Guidelines for Health Risk and Crisis Management adopted in 1999, which were an initial effort to make the different sectoral division of the Ministry work on a joint crisis management framework for health crises related to drinking water, food poisoning, pharmaceuticals and infectious diseases. This series of emergency plans at the Ministry level allows for all-hazard and threat preparedness for public health emergencies.

At the local level, all the Prefectures and government-designated cities also have to develop a pandemic influenza and new infectious disease preparedness plan. These plans should follow the 10 national guidelines for countermeasures established by the Ministry which cover areas such as surveillance, risk communication, quarantine measures, prevention of spread, immunisation, medical care, antivirals, measures in office, measures in communities, burial and cremation. Box 4.10 presents the set of countermeasures implemented by Japan during the H1N1 influenza pandemic. These plans can also be used as a risk communication and awareness tools for citizens, as done for instance by the City of Yokohama (City of Yokohama, 2014[32]). While all Prefectures published their action plan by the end of 2014, one year after the new Act, there is no system in place set up by the Ministry or the association of the Prefectural governments to assess their quality, control their compliance or identify areas for improvement in these plans. In addition, not all major cities have developed a disease outbreak preparedness plan.

Similarly for disasters, all prefectures and municipalities have to develop their own disaster management plans, which should include emergency preparedness measures. While the White Paper on Disaster Risk Management prepared by the Cabinet Office and presented every year to the Parliament includes a series of statistics on emergency planning at the local level, these plans also are not subject to a quality control process. This can leave to some potential gaps as demonstrated during the Great East Japan Earthquake, when insufficient medical supplies or poor health and hygiene conditions in shelters showed that local governments' capacities and preparedness planning were not at the level expected. Following this tragic disaster Japan undertook a review of its planning assumptions and revised its national plans for large-scale disasters such as for the Nankai Trough earthquake, the Tokyo Inland earthquake or the Tokyo large flood. These revised national plans for local large-scale disasters have all increased the number of potential affected or injured persons, or deaths, that public health emergency preparedness

measures should prevent. In addition, these renewed plans establish a timeline of actions for life-saving for the initial 72-hour period post disaster (Ogata, 2016[49]).

Box 4.10. Public Health Response to H1N1

Following the outbreak of pandemic influenza (A/H1N1) in April 2009, the Japanese government took various measures to ensure early detection of patients and prevent the spread of infection. First, important announcements were made by the Japanese government regularly at fixed times following the outbreak of pandemic influenza. The mass media offered informative feature programs, which helped many people understand the pandemic influenza and this presumably prompted people to take concrete actions. Second, surveillance was conducted in various. Third, the government issued the Guideline for Securement of Medical Services, Quarantine and Requests for Temporary Closure of Schools, Day-care Facilities. After the WHO declared phase 6 on June 12, the Guideline was revised in a week. The government also requested the temporary closure of schools in a certain area in response to the emergence of first patients in Japan. Fourth, the government requested prefectures and other authorities to set up fever counselling centres according to the action plan and guidelines. Fifth, vaccination was conducted in a budget-based programme with the cooperation of prefectures, municipalities, and medical institutions. The mortality rate in Japan remained low thanks to the efforts of individual citizens and the professional efforts of health care workers at hospitals, clinics, and pharmacies.

Source: Shobayashi (2011[40]), "Japan's Actions to Combat Pandemic Influenza (A/H1N1)", https://www.med.or.jp/english/journal/pdf/2011_05/284_289.pdf.

As a complement, designated public institutions in critical sectors, disaster base hospitals, and public health centres all are required to develop business continuity plans for disasters and other public health emergencies, but there is no detailed guidelines for such plans nor a review process in place.

4.6.2. Inter-agency coordination mechanisms for emergency response are too complex and MHLW lacks resources to contribute effectively

While all these preparedness measures and plans ensure that every relevant institution prepares for public health emergencies, recent crises revealed shortcomings in inter-agency coordination, as well as between the different levels of governments. While improvements have been made, notably after the GEJE or the H1N1 pandemic, there is still a need to better prepare joined-up emergency response across sectors.

The engagement and leadership of the Cabinet Crisis Management Centre and of its various offices for pandemic and disaster preparedness aim to ensure that government-wide approaches are set-up. The Crisis Management Centre operates on a 24/7 basis and in case of an emergency, it allows the national government to take a whole-of-government response by convening the emergency response team for rapid information-sharing and to discuss countermeasures. This team is composed of the Director Generals from all the relevant sectoral ministries. Depending on the type of emergency, a Disaster Countermeasure Headquarter can be set up or an ad-hoc Countermeasure Headquarter for infectious diseases convened.

In parallel, the relevant ministries and local governments establish their crisis management structures. For disease outbreaks, the prefectures and designated cities are fully in charge for many of the countermeasures, while for disasters, municipalities,

prefectures and the national government all establish their Disaster Countermeasures Headquarters. The multiplicity of stakeholders, structures and coordination bodies can lead to redundancies and question the roles of the different structures, which can affect the effectiveness of the response (Shobayashi, 2011[40]).

In this framework, the public health response is coordinated by MHLW, with its Office of Public Health Emergency and Disaster Preparedness and Response, which establishes the Ministry's medical and health response headquarter. Representatives of the Ministry participate in the national headquarters at the Cabinet and in the field. For infectious diseases outbreaks, the Ministry emergency response team coordinates closely with the Prefecture Health Bureau and the crisis management structures set up by the Governors.

The absence of a permanent dedicated and well-equipped Emergency Operations Centre at the MHLW makes it challenging for the Ministry to ensure a rapid reaction and a smooth coordination of all the different stakeholders. Similarly, with only 7 fully dedicated members in its emergency office, the MHLW could face severe human resource shortage in case of a major crisis to coordinate effectively the public health response.

Furthermore, even though this overall engagement of diverse stakeholders in the response and the set-up of inter-agency mechanisms makes sense to improve cooperation, the lack of working-level relationships and routine coordination between ministries and levels of government remains largely prominent. At times this can compromise the required level of agility and flexible partnerships that are needed to deal with complex emergencies. During the GEJE for instance, the fact that DMAT and Search and Rescue teams were separated in action led to difficulties for health care providers to access the persons in need (Uehara, 2013[48]), Collaboration arrangements between the different institutions in charge are often made during the crises rather than in advance (Saito, Tanabe and Tamura, 2016[45]). There is scope for practical improvement in inter-agency coordination across sectors to increase preparedness and response to public health emergencies in Japan, beyond the written guidelines or plans.

4.6.3. Improving crisis communication requires better training of public officials and an increased use of social media

Crisis communication is an essential part of emergency response. It is fundamental to convey critical messages for the safety and security of the population as well as to reduce citizens' uncertainty during crises (OECD, 2015[50]). Good or poor crisis communication can significantly change the course of a crisis, both in terms of public health consequences (e.g.if citizens are not well informed of the countermeasures taken or that they should follow) and/or in terms of trust in government and public institutions (e.g. if the perception that the crisis is not well managed prevails).

There is widespread recognition that the Japanese Government's communication during the Great East Japan Earthquake and the Fukushima Daichi nuclear crisis was could have been more effective (OECD, 2015[50]). The lack of clear information led to significant confusion both nationally and internationally, which led many to question how transparent the Government was. Similarly, the Review Meeting held after the H1N1 pandemic outbreak by the MHLW identified major weaknesses in crisis communications, such as overly frequent government notifications and difficult-to-understand official jargon, which all together did not ensure that messages were conveyed effectively to the population (Shobayashi, 2011[40]).

These examples have shown the importance of developing a doctrine for crisis communication and better training public officials for this difficult task. In addition, the widespread use of social media platforms also requires that government crisis managers make best use of these tools, to communicate with the public as well as to counter rumours and avoid panic (OECD, 2015[50]). While the Japanese Government has been a pioneer in the use of social media for crisis communication by setting up dedicated twitter and Facebook accounts during the Great East Japan Earthquake (OECD, 2015[50]), it appears that not all public health emergency stakeholders use these tools effectively. The MHLW for instance does not have a response policy to counter rumours or false information during a crisis. Several methodologies for the effective use of social media in crisis communication have been developed in other OECD countries, such as those of the US Center for Digital Government (Box 4.11).

Box 4.11. Implementing a social media-based crisis communications strategy

Over the last few years, social media has become one of the preferred means of communication in modern societies, including in crisis situations. In 2012, over 20 million tweets related to Hurricane Sandy were posted on Twitter. Although social media represents a rapid way to communicate, it is also sometimes imprecise, and authorities need to be present and effective on social media during a crisis to counter this. In the United States, the Center for Digital Government has developed seven "best practices" for crisis managers using social media during crisis situations:

1. Identify a consistent hashtag: it is important to give the disaster a name, helping social media users easily find and follow information;
2. Be the voice of authority: it is essential to have a clear and authoritative voice;
3. Establish a rumour control website: since social media facilitates the spread of rumours in a very short time frame, a website for tracking, verifying and correcting rumours is useful;
4. Use several people to manage the flow of requests: because major disasters require continual coverage of social media, it is important to divide the work;
5. Avoid social media scams: there are many social media scammers, and it is important to identify, avoid and blow the whistle on them;
6. Implement a social media archiving solution: this is particularly useful following a crisis, especially for evaluating the actions of the authorities;
7. Choose a precise communications strategy in advance: targets and types of social media must be defined, tasks and responsibilities for communications in the crisis structure must be defined, and accounts listing the organisation's role must be opened;

Source: Center for Digital Government (2014[51]), "Issue Brief. Social Media: Emergency Communications' Best Ally", http://snoco.wa.gov.archivesocial.com.

4.6.4. Multi-stakeholders emergency simulation exercises based on complex scenarios could be done regularly

In Japan, simple exercises are undertaken regularly to test emergency plans and procedures as well as the different inter-agency coordination committees, but simulation exercises based on more complex scenario including multiple stakeholders are necessary to improve its preparedness. Every year there is a disaster exercise conducted at the Cabinet level, as well as one on pandemic influenza, to which the Prime Minister regularly takes part. For instance in 2017, all the relevant ministries, prefectures, municipalities and designated public institutions participated in a communication exercise, which included the establishment of the National Countermeasures Headquarters with the Prime Minister.

The MHLW also conducts four exercises per year, one to set up a countermeasures headquarters within the ministry, one for pandemic influenza and new infectious diseases, one for ensuring gathering of emergency personnel to the ministry and a drill for safety confirmation of the personnel. This is similar at the local level where Prefectures must undertake exercises linked to their disaster plan and infectious disease plan, every year.

Despite the usefulness of this series of exercises to test understanding and knowledge of emergency plans, this approach is may not be sufficient to prepare for complex emergencies. Indeed, these exercises are too-often conducted as table-top exercises and lack elements of surprise and complexity which would force crisis managers and officials to go out of their comfort zone as real emergencies require, and to detect areas of improvement. Beyond the yearly whole-of-society exercises on the Disaster Prevention Day, such complex exercises should involve the entire network of emergency responders from the different sectoral ministries as well as the levels of government, the private sector and civil society. As more and more OECD countries are now utilising exercises to go beyond the testing of emergency procedures to learn lessons, identify deficiencies and improve policies and procedures, Japan could learn from these advanced approaches, such as the LUKEX exercises in Germany which focused in 2013 on an exceptional biological threat (Box 4.12).

Box 4.12. Lukex 13: Germany Strategic Crisis Management Exercise on Exceptional Biological Threat

Germany established the National Strategic Crisis Management Exercise (LUKEX), which takes place every two years and aims to raise awareness among top government officials. The LUKEX provides training for cross-ministerial management and crisis response staff and includes the participation of political authorities, relief organisations, scientific institutions, critical infrastructure operators and key service providers. The entire cycle of the strategic exercise lasts 16-18 months. The exercise is intended to be as complete as possible and comprises table-top activities to introduce the scenario to the operational staff in their normal working environment and real-situation simulations.

In 2013, the LUKEX exercise was conducted over two days with a scenario of an exceptional biological threat. It included the deliberate addition of the toxin Ricin to the food chain and a simultaneous intentional contamination with Tularaemia pathogens at a major public event. A total of about 2 000 individuals were involved in the exercise conduction either as active participants in crisis staffs or as members of the exercise control organisation. These included participants from six federal departments, 19 federal

authorities, nine federal states, 24 businesses and associations, 3 Poison Control Centres, 4 relief organisations, one diplomatic mission and the European commission,

This exercise identified a series of areas of improvement for public health crisis management, including in the field of resource management (e.g. laboratory capacities) and the allocation of tasks to Federal and federal state committees, as well as in the fields of internal and external communication. Legal and technical issues were also identified in connection with the reception and (deliberate) disposal of contaminated food require examination. The clarification of the obligation to report toxic poisoning, the improved surveillance and the drafting of recommendations and guidelines for the management of exceptional biological threats were identified as a key areas for improvement.

Source: Federal Office of Civil Protection and Disaster Assistance (2013[52]), "LÜKEX 13 Exceptional Biological Threats Comprehensive Exercise Report" https://www.bbk.bund.de/EN/Topics/Crisis_management/LUEKEX/LUEKEX_History/LUEKEX_his_node.html#doc10174870bodyText2.

4.7. Conclusion

In line with the important risks the country faces, from large-scale disasters to widespread outbreak of infectious diseases, Japan has invested significantly in public health emergency preparedness. By learning lessons from past events – particularly in the aftermath of the 1995 Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake – and applying international guidelines, over the years Japan has developed a sophisticated system for preparedness, supported by a comprehensive legal framework. The major risks in Japan are well known and comprehensively assessed, capacities to detect emergencies and capabilities to respond have been properly set-up across the different sectors and levels of governments, as well as with the private sector and civil society. Emergency countermeasure plans are prepared, coordination mechanism established and exercises are held. Japan makes of public health emergency preparedness a priority of its public health policies.

Despite this well thought-out system, Japan nonetheless faces some challenges in order to make sure it can effectively respond to complex emergencies. Disasters such as the Great East Japan Earthquake, and the response to the H1N1 pandemic influenza, did show how important it can be to be ready for complex and unforeseen emergencies. The lack of oversight and control over the preparedness measures implementation at the local level, the limited co-operation between the sectoral ministries and levels of governments beyond formal requirements and the insufficient number of real-condition exercises and drills limit Japan's ability to guarantee that the preparedness level reaches its full potential. There are missed opportunities to fully make sure that Japan is as safe and prepared as it intends to be.

Overall, Japan appears to be over-reliant on planning at all the levels of its administration, which is important but not sufficient to be ready for more complex and unforeseen emergencies. Strengthening capacities for a more agile response based on information sharing, multi-stakeholder partnerships and flexible arrangements should be the guiding objectives for Japan to for further progress in emergency preparedness. Finally, in order for Japan to adapt its public health preparedness system to the future, it is important to maintain and develop the relevant skills and workforce, as well as to make a best use of innovative approaches and technologies.

References

Aldrich, N. and W. Benson (2008), "Disaster preparedness and the chronic disease needs of vulnerable older adults", *Preventing Chronic Disease*, Vol. 5/1, http://www.cdc.gov/pcd/issues/2008/jan/07_0135.htm. [11]

Cabinet Office (2016), *White Paper Disaster Management in Japan 2016*, Cabinet Office Japan, Tokyo, http://www.bousai.go.jp/kyoiku/panf/pdf/WP2016_DM_Full_Version.pdf. [1]

Cabinet Office (2015), *Disaster Management in Japan*, Government of Japan, Tokyo, http://www.bousai.go.jp/kaigirep/hakusho/pdf/WP2015_DM_Full_Version.pdf. [4]

Cabinet Secretariat (2015), *Japan's Response to Ebola Virus Disease*, Cabinet Secretariat , Tokyo, https://www.kantei.go.jp/jp/singi/ebola/ebola_eng.pdf. [26]

Cabinet Secretariat (2013), *National Action Plan for Pandemic Influenza and New Infectious Diseases*, Cabinet Secretariat, Tokyo, https://www.cas.go.jp/jp/seisaku/ful/keikaku/pdf/national%20action%20plan.pdf. [15]

Center for Digital Government (2014), "Issue Brief. Social Media: Emergency Communications' Best Ally", http://snoco.wa.gov.archivesocial.com (accessed on 17 January 2019). [51]

City of Yokohama (2014), *Measures for Pandemic Influenza*, City of Yokohama, Yokohama, http://www.city.yokohama.lg.jp/kenko/hokenjo/genre/kansensyo/pdf/reaf.pdf. [32]

Dickmann, P. et al. (2009), "Report of the International Conference on Risk Communication Strategies for BSL-4 Laboratories, Tokyo, October 3-5, 2007", *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, Vol. 7/2, pp. 227-233, http://dx.doi.org/10.1089/bsp.2009.0023. [38]

Dion, M., P. AbdelMalik and A. Mawudeku (2015), "Big Data and the Global Public Health Intelligence Network (GPHIN)", *Canada Communicable Disease Report*, Vol. 41/9, pp. 209-214, http://dx.doi.org/10.14745/ccdr.v41i09a02. [42]

EM-DAT (2017), *The Emergency Events Database*, http://www.emdat.be/ (accessed on 18 July 2018). [2]

Federal Office of Civil Protection and Disaster Assistance (2013), *LÜKEX 13 Exceptional Biological Threats Comprehensive Exercise Report*, Federal Office of Civil Protection and Disaster Assistance , Berlin, https://www.bbk.bund.de/SharedDocs/Downloads/BBK/DE/Publikationen/Broschueren_Flyer/Fremdsprach_Publikationen/LUEKEX-13_Bericht_en.pdf?__blob=publicationFile (accessed on 17 January 2019). [52]

Government of Japan (2016), *National Action Plan on Antimicrobial Resistance 2016-2020*, Government of Japan, Tokyo, http://www.mhlw.go.jp/file/06-Seisakujouhou-10900000-Kenkoukyoku/0000138942.pdf. [24]

Hakuno, H. (2016), ""Designated Remarks" In Ogata, T. (2016) "Disaster Management in Japan"", *Japan Medical Association Journal*, Vol. 59(1)/30, https://www.med.or.jp/english/journal/pdf/jmaj/v59no01.pdf. [46]

Harada, N. et al. (2015), "Mental health and psychological impacts from the 2011 Great East Japan Earthquake Disaster: a systematic literature review", *Disaster and Military Medicine*, Vol. 1/1, p. 17, http://dx.doi.org/10.1186/s40696-015-0008-x. [8]

Homma, M. (2015), "Development of the Japanese National Disaster Medical System and Experiences during the Great East Japan Earthquake.", *Yonago Acta Medica*, Vol. 58/2, pp. 53-61, http://www.ncbi.nlm.nih.gov/pubmed/26306054 (accessed on 16 January 2019). [44]

Imai, T. et al. (2005), "SARS Risk Perceptions in Healthcare Workers, Japan - Volume 11, Number 3—March 2005 - Emerging Infectious Diseases journal - CDC", *Emerging Infectious Diseases*, Vol. 11/3, pp. 404-410, http://dx.doi.org/10.3201/EID1103.040631. [18]

Ishii, M. (2016), "Japan Medical Association's View of Disaster Measures and Practice.", *Japan Medical Association journal : JMAJ*, Vol. 59/1, pp. 31-34, http://www.ncbi.nlm.nih.gov/pubmed/27738585 (accessed on 16 January 2019). [47]

Kanatani, Y. (2017), *Perspectives on satellite and simulation technologies for disaster response*. [35]

Ministry of Land, Infrastructure, T. (2007), *Land and Climate of Japan*, http://www.oecd.org/fr/publications/the-changing-face-of-strategic-crisis-management-9789264249127-en.htm. [3]

Ministry of the Environment (2014), *Comprehensive Study on Impact Assessment and Adaptation for Climate Change 2014 Report*, Government of Japan, Tokyo, https://www.nies.go.jp/s8_project/english/index.html. [13]

Morita, T. et al. (2017), "Excess mortality due to indirect health effects of the 2011 triple disaster in Fukushima, Japan: a retrospective observational study.", *Journal of epidemiology and community health*, Vol. 71/10, pp. 974-980, http://dx.doi.org/10.1136/jech-2016-208652. [7]

Nakamura, S. et al. (2018), "Health risks and precautions for visitors to the Tokyo 2020 Olympic and Paralympic Games", *Travel Medicine and Infectious Disease*, Vol. 22, pp. 3-7, http://dx.doi.org/10.1016/j.tmaid.2018.01.005. [22]

Nakano, M., M. Matsueda and M. Sugi (2013), "Future projections of heat waves around Japan simulated by CMIP3 and high-resolution Meteorological Research Institute atmospheric climate models", *J. Geophys. Res. Atmos*, Vol. 118, pp. 3097-3109, http://dx.doi.org/10.1002/jgrd.50260. [12]

National Institute of Infectious Diseases (2018), *Infectious Disease Surveillance System in Japan*, https://www.niid.go.jp/niid/images/epi/nesid/nesid_en.pdf (accessed on 01 July 2018). [31]

Ochi, S. and M. Suzuoki (2012), *The lessons of the Great East Japan Earthquake 2011 and the countermeasures against earthquakes and tsunami in future- Fundamental Concepts behind Future Tsunami Disaster Prevention*, https://www.nehrp.gov/pdf/UJNR-4217.pdf. [34]

OECD (2019), "Metropolitan areas", *OECD Regional Statistics* (database), https://dx.doi.org/10.1787/data-00531-en. (accessed on 22 January 2019) [23]

OECD (2018), *Assessing Global Progress in the Governance of Critical Risks*, OECD Reviews of Risk Management Policies, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264309272-en. [5]

OECD (2018), *National Risk Assessments: A Cross Country Perspective*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264287532-en. [30]

OECD (2018), *OECD Toolkit on Risk Governance*, https://www.oecd.org/governance/toolkit-on-risk-governance/home/ (accessed on 01 September 2018). [33]

OECD (2016), *Japan: Boosting Growth and Well-being in an Ageing Society*, Better Policies, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264256507-en. [10]

OECD (2015), *The Changing Face of Strategic Crisis Management*, OECD Publishing, Paris, http://www.oecd.org/fr/publications/the-changing-face-of-strategic-crisis-management-9789264249127-en.htm. [50]

OECD (2014), *OECD Development Co-operation Peer Reviews: Japan 2014*, OECD Development Co-operation Peer Reviews, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264218161-en. [29]

OECD (2011), *OECD Reviews of Risk Management Policies: Future Global Shocks*, OECD, Paris, http://www.oecd.org/governance/48329024.pdf (accessed on 16 January 2019). [9]

Ogata, T. (2016), "Disaster Management in Japan", *Japan Medical Association Journal* , Vol. 59/1, pp. 27-30, https://www.med.or.jp/english/journal/pdf/jmaj/v59no01.pdf. [49]

Okumura, A. et al. (2011), "Deaths Associated with Pandemic (H1N1) 2009 among Children, Japan, 2009–2010", *Emerging Infectious Diseases*, Vol. 17/11, http://dx.doi.org/10.3201/eid1711.110649. [14]

Omi, S. (2010), "Novel influenza H1N1 pandemic: lesson learned", *Nippon rinsho. Japanese journal of clinical medicine*, Vol. 68/9, pp. 1602-1604, https://www.scopus.com/record/display.uri?eid=2-s2.0-79952044105&origin=inward (accessed on 16 January 2019). [17]

O'Shea, J. (2017), "Digital disease detection: A systematic review of event-based internet biosurveillance systems", *International Journal of Medical Informatics*, Vol. 101, pp. 15-22, http://dx.doi.org/10.1016/J.IJMEDINF.2017.01.019. [41]

Parmar, P., M. Arii and S. Kayden (2013), "Learning From Japan: Strengthening US Emergency Care And Disaster Response", *Health Affairs*, Vol. 32/12, pp. 2172-2178, http://dx.doi.org/10.1377/hlthaff.2013.0704. [43]

Public Security Intelligence Agency (2018), *23 years on from the sarin incident on the subway report*, http://www.moj.go.jp/psia/aum-23nen.html (accessed on 15 November 2018). [25]

Ranghieri, F. and M. Ishiwatari (eds.) (2014), *Learning from Megadisasters: Lessons from the Great East Japan Earthquake*, The World Bank, http://dx.doi.org/10.1596/978-1-4648-0153-2. [28]

Saito, T. (2017), *Overview of Bioterrorism Preparedness and Response in Japan*. [39]

Saito, T. (2015), "Public health challenges and legacies of Japan's response to the Ebola virus disease outbreak in West Africa 2014 to 2015", *Eurosurveillance*, Vol. 20/44, p. 30056, http://dx.doi.org/10.2807/1560-7917.ES.2015.20.44.30056. [27]

Saito, T. and A. Kunimitsu (2011), "Public health response to the combined Great East Japan Earthquake, tsunami and nuclear power plant accident: perspective from the Ministry of Health, Labour and Welfare of Japan", *Western Pacific Surveillance and Response Journal*, Vol. 2/4, pp. 7-9, http://ojs.wpro.who.int/ojs/index.php/wpsar/article/view/129/70. [6]

Saito, T., M. Tanabe and D. Tamura (2016), *Revisions and Advances in Pandemic Preparedness in Japan after 2009 pandemic*, https://isirv.org/site/index.php/component/content/article/9-events/352-options-ix. [45]

Shen, H. (2015), "Ebola spurs creation of Japan's first maximum-security biolab", *Nature*, Vol. 524/7565, pp. 274-275, http://dx.doi.org/10.1038/nature.2015.18179. [37]

Shobayashi, T. (2011), "Japan's Actions to Combat Pandemic Influenza (A/H1N1)", *Japanese Medical Association Journal*, Vol. 54/5, pp. 1459-1463, https://www.med.or.jp/english/journal/pdf/2011_05/284_289.pdf (accessed on 16 January 2019). [40]

Takahashi, S. et al. (2017), "Public preventive awareness and preventive behaviors during a major influenza epidemic in Fukui, Japan", *Journal of Infection and Public Health*, Vol. 10/5, pp. 637-643, http://dx.doi.org/10.1016/J.JIPH.2017.04.002. [16]

Tuberculosis Surveillance Center (2016), "Tuberculosis in Japan Annual Report - 2016", Department of Epidemiology and Clinical Research, the Research Institute of Tuberculosis, http://www.jata.or.jp/english/dl/pdf/TB_in_Japan_FINAL_1114.pdf. [20]

Uehara, N. (2013), "Be Prepared!— Lessons learned from the Great East Japan Earthquake and tsunami disaster", *Japan Medical Association Journal*, Vol. 56/2, pp. 118-126, http://www1.med.or.jp/english/journal/pdf/2013_02/118_126.pdf (accessed on 16 January 2019). [48]

Ujiie, M., K. Nabae and T. Shobayashi (2014), "Rubella outbreak in Japan.", *Lancet (London, England)*, Vol. 383/9927, pp. 1460-1461, http://dx.doi.org/10.1016/S0140-6736(14)60712-1. [21]

World Health Organization (2018), *Tuberculosis country profiles*, https://www.who.int/tb/country/data/profiles/en/ (accessed on 17 January 2019). [19]

Zaraket, H. and R. Saito (2016), "Japanese Surveillance Systems and Treatment for Influenza", *Current Treatment Options in Infectious Diseases*, Vol. 8/4, pp. 311-328, http://dx.doi.org/10.1007/s40506-016-0085-5. [36]

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Union takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

OECD PUBLISHING, 2, rue André-Pascal, 75775 PARIS CEDEX 16
(81 2019 03 1 P) ISBN 978-92-64-31159-6 – 2019

OECD Reviews of Public Health: Japan

A HEALTHIER TOMORROW

This review assesses Japan's public health system, highlights areas of strength and weakness, and makes a number of recommendations for improvement. The review examines Japan's public health system architecture, and how well policies are responding to population health challenges, including Japan's ambition of maintaining good population health, as well as promoting longer healthy life expectancy for the large and growing elderly population. In particular, the review assesses Japan's broad primary prevention strategy, and extensive health check-ups programme, which is the cornerstone of Japan's secondary prevention strategy. The review also examines Japan's exposure to public health emergencies, and capacity to respond to emergencies as and when they occur.

Consult this publication on line at ***https://doi.org/10.1787/9789264311602-en***.

This work is published on the OECD iLibrary, which gathers all OECD books, periodicals and statistical databases.
Visit ***www.oecd-ilibrary.org*** for more information.

OECD*publishing*
www.oecd.org/publishing

ISBN 978-92-64-31159-6
81 2019 03 1 P