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:

o 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;

o 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;

o 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-table 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.
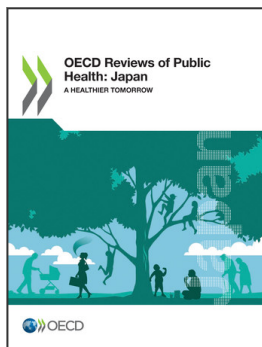
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