

**Figure 3:** Deaths from non-communicable diseases and injuries that were attributable to risk factors in Japan in 2007 (A) Both sexes. (B) Men. (C) Women. Data from Shibuya.<sup>37</sup> PUFA=polyunsaturated fatty acids. SFA=saturated fatty acids. HTLV-1=human T-lymphotropic virus type 1. TFA=trans fatty acids.

people believed that they were middle class.<sup>46</sup> However, this belief might no longer be applicable. During the past two decades, Japan has had economic recession. Income inequality has increased to match the average for the member countries of the Organisation for Economic Co-operation and Development,<sup>47</sup> which accords with reports suggesting widening health disparities in recent years,<sup>48</sup> despite the decreasing trend and fairly small health disparities until the 1990s.<sup>2</sup>

### Challenges for Japanese population health Increase life expectancy

Cancer, heart disease, and cerebrovascular disease are the three leading causes of death in Japan, accounting for more than 50% of the risk that a person at age zero will die in the course of their lifetime.<sup>5</sup> To strengthen the extension of Japanese life expectancy, mortality from these non-communicable diseases must be prevented. Although the use of advanced medical technology is a promising strategy for improving survival, modifying the profile of the underlying population risk factors is also important to ensure a long-term increase in population health.

A comparative assessment of preventable risk factors in Japan showed that tobacco smoking and high blood pressure were the two distinctive determinants of adult mortality from non-communicable diseases in 2007 (figure 3).<sup>37</sup> Of 834 000 deaths from non-communicable diseases and injuries, the exposure to tobacco smoking in terms of smoking impact ratios accounted for 129 000 deaths, whereas high blood pressure accounted for 104 000 deaths. A similar estimate of the number of avoidable deaths from tobacco use was reported in a pooled cohort study of the current smoking status.<sup>49</sup> The comparative risk assessment also showed that male life expectancy at birth would have been extended by 1.8 years and female life expectancy at birth by 0.6 years if all adults abstained from smoking; and by 0.9 years for both sexes if the systolic blood pressure was reduced to a pressure that resulted in minimum harmful effects in the population.

Tobacco smoking has a striking effect on population health in Japan. Despite its well known harmful effects, smoking is still commonplace—about 50% of young men smoke—and the rate has been gradually increasing among young women.<sup>18</sup> The Health Promotion Law was enacted in 2003 to support the prevention of smoking and passive smoking in public places. Although compliance with this national tobacco control legislation has improved, disparities still exist in the progress of tobacco control policy across local governments,<sup>50</sup> and no mandatory clean air law has been passed nationally. The retail price of the most popular brand of cigarettes was only US\$3.3 in 2008, much lower than the average price in high-income countries (\$5.0).<sup>51</sup> These circumstances, favouring smokers, show to some extent that tobacco tax was one of the most important sources of revenue for the government in the past.<sup>52</sup> Further, the rate of mortality attributable to

this risk factor has increased in recent decades because of the accumulation of negative health effects in the older population.<sup>37</sup> Without effective policy interventions, the rate of mortality from tobacco smoking will continue to rise in the coming decades. A renewed emphasis on tobacco control, especially through its pricing mechanism, is necessary to discourage the consumption of tobacco products and promote smoking cessation.

Despite the decline in population blood pressure in the past four decades, the management of blood pressure is still not satisfactory in Japan. Blood pressure is effectively controlled with drugs in less than a fifth of the population with hypertension.<sup>37</sup> Additional efforts in the community and clinical practice in terms of early detection, lifestyle modification, and the effective treatment coverage of high blood pressure have the potential to extend life expectancy through a reduction in the mortality rates for cardiovascular diseases. In relation to this, strengthening adherence to standard clinical guideline recommendations<sup>53</sup> in general practice through continued medical education could be the key to increasing the effective coverage of outpatient services and to ensure the compliance of patients, as discussed in the third report in this Series.<sup>54</sup>

A large improvement in population health is still possible through the reduction of several risk factors for non-communicable diseases, such as high concentrations of blood glucose, physical inactivity, alcohol use, overweight and obesity, and high dietary salt intake. The control of several cardiovascular risks could also increase longevity for both sexes by reducing the risk of death.<sup>37</sup> A comprehensive prevention package is needed to lower the combined effects of several risk factors or metabolic syndrome, including the improvement of lifestyles and diet, and to increase the coverage of antihypertensive drugs. This package would be particularly relevant in the current obesity-friendly environment in Japan because, although lifestyle changes generally seem to matter more than do genetic factors, evidence suggests that the Japanese might be genetically more susceptible to being overweight or to developing diabetes mellitus.<sup>55,56</sup> Since 2008, in response to soaring health costs, the government has made it obligatory for people aged 40–74 years to have an annual check-up and a health education intervention that is focused on the prevention of metabolic syndrome,<sup>57</sup> although the effectiveness of health check-ups is not known in Japan.

Japan, similar to other east Asian countries, has many cancer-associated deaths from infectious causes.<sup>58</sup> Infections with hepatitis C virus and *Helicobacter pylori* account for many of the deaths from cancer.<sup>37</sup> In 2007, *H pylori* infection was the cause of 31 000 deaths from gastric cancer. Infection with hepatitis C virus was associated with 23 000 deaths from liver cancer, with clustering in people aged 70–79 years—ie, individuals born in the 1930s. Chronic infection with hepatitis C virus plays a major part in the cause of hepatic

carcinoma in Japan.<sup>59</sup> A decreasing prevalence of infections with hepatitis C virus after the birth cohort of about 1935 suggests that the disease burden of this virus will decrease in the future. The fairly high prevalence of *H pylori* is similar to that of stomach cancer.<sup>58</sup> However, a fall in the prevalence of *H pylori* infection has been noted in people born after 1955,<sup>60</sup> which indicates a future reduction in the burden of gastric carcinoma attributable to this risk factor in Japan.

### Prevention of suicide

Suicide prevention is another challenge for population health in Japan. Suicide rates contribute to premature mortality rates and profoundly affect society—by 2006, an estimated 3 million people had lost a loved one to suicide in Japan.<sup>61</sup> The number of suicides has been greater than 30 000 every year since 1998, when a sharp rise was recorded from the previous year (figure 4).<sup>62</sup> Roughly 70% of people who commit suicide are men and 50% are unemployed, and 40% of suicides in men are in individuals aged 45–64 years.<sup>63</sup> Major motives for suicide among working age men include psychiatric disorders such as depression, business failure, unemployment, and debts.<sup>64</sup>

The trends in suicide mortality rates might be associated with the increasing economic and social insecurity resulting from a stagnating Japanese economy since the beginning of the 1990s, especially in response to the Asian financial crisis in 1997.<sup>65</sup> The unemployment rate in the working age male population rose from 2.0% in 1991 to 3.4% in 1997 and then up to 5.5% in 2003.<sup>66</sup> Additionally, the work environment has greatly changed because of the easing in employment contract regulations in the late 1990s.<sup>67</sup> The employment pattern has shifted from the permanent employment that underpinned high economic growth in the past. The percentage of non-regular workers among male employees has increased from 9% in 1991 to about 19% in the late 2000s.<sup>66</sup> The government has responded to the suicide epidemic with a comprehensive strategy (ie, the Comprehensive Suicide Prevention Initiative<sup>68</sup>) that follows on from the Basic Act for Suicide Prevention, which was enacted in 2006, although its effect is not yet notable.

### Reduction in morbidity and disability

Do Japanese people not only live longer but better in terms of their physical and psychological functioning? Globally, evidence suggests an increasing prevalence of morbidity in accord with the ageing population, while disability has been falling.<sup>69</sup> In Japan, research suggests that trends in disability prevalence differ between the young elderly (65–74 years) and the oldest old ( $\geq 85$  years). For example, falling disability rates for those aged 65 years and older were recorded during the 1990s in a nationally representative sample of the Japanese elderly

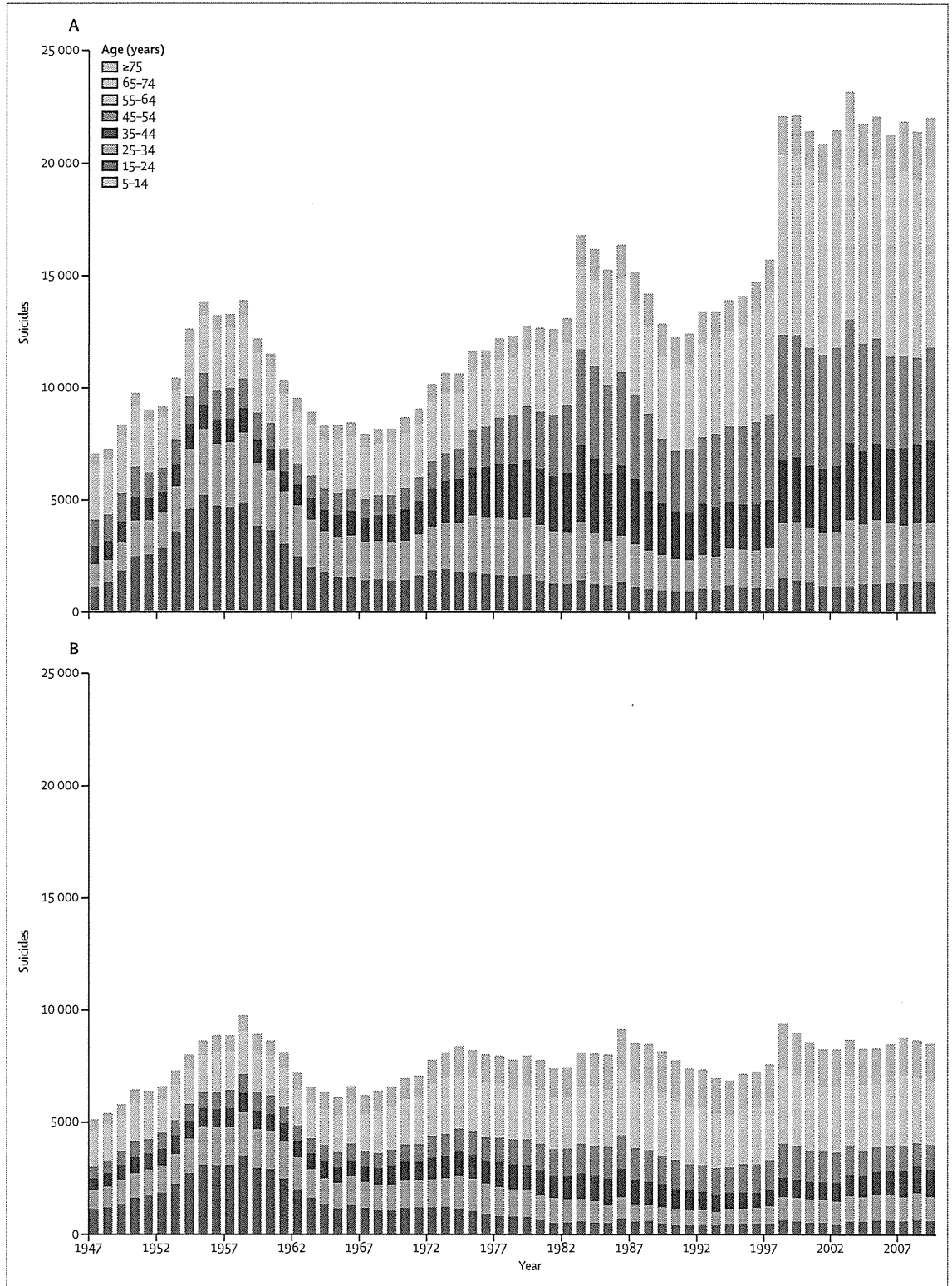


Figure 4: Deaths from suicide by age in Japan, 1947–2009  
(A) Men. (B) Women. Data from the Ministry of Health, Labour and Welfare.<sup>63</sup>

population,<sup>70</sup> whereas increasing rates were reported for centenarians in other studies.<sup>71,72</sup> National health interview survey data have been used in studies to show that the functional health status of the Japanese people deteriorated during 1995–2004,<sup>73</sup> and morbidity rates decreased from 1984 until 1995, but the trend reversed in the late 1990s until 2004.<sup>74</sup> However, self-reported data were used for a few of the health domains in these studies. The survey questions and response categories are not detailed enough to obtain a reliable measure of the non-fatal health status of the population. Therefore, the national information infrastructure needs to be urgently improved to gather valid, reliable, and comparable data for the rates of disability and morbidity in the Japanese population.

### Medical and long-term care

An unprecedented and unexpectedly steep reduction in mortality rates in older age groups<sup>75</sup> is contributing to the rapid increase in remaining life expectancy in Japan. The country has shown the most rapid increase in remaining life expectancy over the past six decades. For Japanese women, life expectancy at age 60 years increased from 16·4 years in 1950 to 28·1 years in 2007 (webappendix p 2), while life expectancy at age 80 years also increased substantially from 5·5 years to 11·4 years (webappendix p 2). The stagnating rate of increase in remaining life expectancy in other developed countries during the past two decades draws attention to Japan's exceptional improvement in life expectancy at older ages.

The nature of health care is also changing in this ageing society. The proportion of deaths resulting from illnesses that are no longer amenable to medical care, and Japanese society's concern about health have been increasing. A close link between medical care and long-term care should be further promoted to enhance population wellbeing and will be elaborated further in the fourth report in this Series.<sup>76</sup>

### Global lessons

The experience of post-war Japan suggests that countries with low socioeconomic development can achieve progress in terms of their population health. Japan's national income was low in the beginning of the 1950s, when a tremendous increase in life expectancy at birth started largely as a result of the scale-up of the coverage of essential child survival interventions and provision of free treatment for tuberculosis. The main driving force for improved population health during this period was undoubtedly the strong stewardship of the new Japanese Government in implementing major structural reforms in the health sector and placing priority on investment in key interventions for public health in the early phase of economic growth.

The path towards universal coverage should be encouraged globally. Stroke mortality reduction was a major determinant of the sustained extension of the

longevity of the Japanese population after the mid-1960s. The control of blood pressure improved with population-based interventions such as salt reduction campaigns and an increased availability of anti-hypertensive drugs through universal health insurance coverage. A reduction in mortality rates can be brought about by the interplay of improvements in both medical care and other societal factors (eg, income, education, nutrition, and sanitation). In turn, this reduction can vary by individual, place, and disease type.<sup>77,78</sup> A recent assessment of worldwide adult mortality rates<sup>79</sup> identified three important factors—socioeconomic development, increased access to health care and the progress in health technologies, and the diseases of affluence. Universal coverage is one of the most important factors and is essential in enhancing access to cost-effective health care at affordable prices that has indirectly contributed to the longevity through reduced cardiovascular-associated mortality rates in Japan. The lessons learned from the challenges and successes of population health in Japan lend support for the implementation of the current global health strategies to develop domestic health financing and risk-pooling mechanisms through health insurance and to scale up cost-effective interventions.<sup>80</sup>

Health disparities across regions and socioeconomic groups are quite small in this egalitarian society and have narrowed over time with increasing average population health. The establishment of free compulsory primary education early in the 20th century, a social insurance system before the war, and universal health insurance coverage in 1961 enabled the provision of equal opportunities for health promotion. These experiences confirm that working on population averages is not enough. Countries that have the least regional or socioeconomic disparity in longevity tend to be those in which the populations enjoy the longest life expectancies in the world.<sup>69</sup> Globalisation and rising economic disparity contribute to health inequalities and are increasingly causes for concern in many countries, and Japan is no exception. The goals of a health system include not only improvement of the averages but also reduction of health inequalities to a minimum.<sup>81</sup> By doing so, countries could accomplish what Japan has achieved.

Japan now has challenges for population health that many other countries will have soon. Further progress in terms of longevity in Japan is dependent on the prevention of major risk factors for non-communicable diseases such as tobacco smoking, high blood pressure, and metabolic syndrome. Prevention of premature mortality from suicide is another major issue requiring a comprehensive societal response that involves, for example, stabilisation of the labour market, and improvement of the promotion and provision of mental health services.<sup>82</sup> The rapidly ageing population as a result of improved survival also challenges financing and quality of care in Japan's health system.<sup>30,54,76</sup> The tsunami and nuclear crisis caused by the

magnitude 9.0 Great East Japan Earthquake on March 11, 2011, might also affect future population health, which will need to be monitored and assessed. How should Japan respond to these challenges? Policy options to tackle the challenges are addressed in the other five reports in this *Lancet* Series on Japan, which we hope will serve as a guide that will help other countries to develop policies that fit their specific circumstances. Indeed, this Series will draw attention to how Japan is unique in overcoming different and changing population health challenges in the past 50 years to achieve population longevity, and how the country's experience can be an important resource for the global health community and could transcend geographical, social, cultural, and political boundaries for understanding and helping enhance population health worldwide.

#### Contributors

All authors contributed to the study concept, design of the report, data analysis, and interpretation of the results. NI, ES, NK, and KS wrote the first draft. MI, HI, and ME did a systematic review. NI, ES, NK, HI, SI, TS, AS, and KS contributed to drafting and critical revision. All authors contributed to the discussion and have seen and approved the final version of the report.

#### Conflicts of interest

We declare that we have no conflicts of interest.

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## Japan: Universal Health Care at 50 Years 2

### Japanese universal health coverage: evolution, achievements, and challenges

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Japan shows the advantages and limitations of pursuing universal health coverage by establishment of employee-based and community-based social health insurance. On the positive side, almost everyone came to be insured in 1961; the enforcement of the same fee schedule for all plans and almost all providers has maintained equity and contained costs; and the co-payment rate has become the same for all, except for elderly people and children. This equity has been achieved by provision of subsidies from general revenues to plans that enrol people with low incomes, and enforcement of cross-subsidisation among the plans to finance the costs of health care for elderly people. On the negative side, the fragmentation of enrolment into 3500 plans has led to a more than a three-times difference in the proportion of income paid as premiums, and the emerging issue of the uninsured population. We advocate consolidation of all plans within prefectures to maintain universal and equitable coverage in view of the ageing society and changes in employment patterns. Countries planning to achieve universal coverage by social health insurance based on employment and residential status should be aware of the limitations of such plans.

#### Introduction

Social health insurance, as a mechanism for progress towards universal health coverage, has both advantages

and disadvantages. The advantage compared with private insurance is that, being based on solidarity, premiums are levied according to the ability to pay, and not on the risk of illness.<sup>1</sup> By comparison with a tax-based system, the advantage is that the benefit package is defined as an entitlement and is financed by contributions that are earmarked for health care.<sup>2</sup> The weakness of social health insurance in which plans are organised according to employment and residential status is that solidarity is limited to people enrolled in the same plan. Consequently, plans that have enrollees with high average income and low risk will oppose any national equalisation because this process would lead to increased contribution rates.

Despite this obstacle, Japan managed to extend social health insurance to the entire population in 1961, and has since made benefits more equitable. These developments have been made in conjunction with regulatory measures for containment of costs through a fee schedule that sets the price and conditions across the board for all such plans. The tightening of these measures has contained costs compared with other countries: Japan is ranked 20th among Organisation for Economic Co-operation and Development (OECD) nations in the proportion of gross domestic product (GDP) spent on health.<sup>3</sup> This success in containment of costs has been a key factor for improvement of the equity of the system among plans and beneficiaries. Details of the cost-containment mechanism and quality control are explained in the third paper in this Series.<sup>4</sup>

But Japan is faced with a difficulty inherent in social health insurance; with an ageing society, the premiums paid by people who are working have become insufficient to cover the costs of health care for everyone.<sup>5</sup> In Japan, this difficulty has been exacerbated by the huge fiscal deficit amounting to twice the GDP<sup>6</sup>—which has restricted the capacity to increase funding from taxes—

#### Key messages

- Japan achieved universal health coverage in 1961, almost 40 years after social health insurance was first legislated in 1922. Coverage was expanded by establishment of employee-based and community-based plans, of which there are now about 3500. Dependants are covered by the plan of the head of the household.
- The services covered and the fees set for physicians and hospitals have been uniform across the nation since 1959, when community-based plans adopted the fee schedule of employee-based plans. Regulation of price has been the key mechanism for maintenance of equity and containment of costs.
- Although almost everyone became insured in 1961, the co-payment rate differed greatly: individuals with employee-based plans paid only a token amount for the first physician visit, but all others had to pay 50% of the fee schedule price. Since then, the rate has gradually decreased for those on community-based plans, and has gradually increased for employees. Nowadays everyone, except for elderly people and children, pays 30%. However, when the monthly co-payment exceeds a threshold amount, the co-payment is decreased to 1%.
- The greatest inequity is in the proportion of income levied as premiums. Although plans insuring people with low incomes are mitigated by subsidies from general revenues, and cross-subsidisation is enforced among plans to pay for the health-care costs of elderly people, there exists more than a three-times difference in the proportion of income paid as premiums across different plans.
- The sustainability of social health insurance is threatened by the increasing disparity in income and age composition among the plans, as a result of the ageing of society and changes in employment patterns. We advocate consolidation of all plans within prefectures to meet this challenge.
- Countries seeking to achieve universal health coverage through social health insurance based on employment and residential status should be aware of the limitations of this approach and address its weaknesses before opposition to structural reform becomes entrenched.

the continued existence of 3500 social health insurance plans, and changes in employment patterns. This report is divided into three parts: the first on historical development; the second on present status and issues in equity; the third on challenges and our plan for reform.

### Historical development

Although some public-sector employees began to have their health care covered as part of comprehensive benefits in Mutual Aid Associations from 1905, the road to universal coverage formally started with the enactment of the Health Insurance Act in 1922. Japan's insurance system followed the German social health insurance model in that the insurance plans (referred to as societies in Japan) were jointly managed by employers and employees.<sup>7</sup> The motives were also the same: improvement of industrial productivity and pre-emption of labour unrest.<sup>8</sup> These nationalistic goals prevailed over opposition from all parties immediately concerned: employers, because insurance increased labour costs (they had to pay half or more of the premiums); employees because they had to pay their share; and physicians because they had to accept lower fees than under the old system. Physicians ultimately went along with the fee schedule, partly persuaded by the argument that patients enrolled in social health insurance would no longer default on payments, and because they could continue to charge higher prices for patients who were not covered than for those with insurance. The fee schedule was straightforward and said to have been designed overnight by Shibasaburo Kitasato, President of the Japan Medical Association. It focused on primary care services and prescription drugs, because dispensing was the main source of revenue for physicians, whereas hospital services had a minor role in 1927.<sup>9</sup>

When first implemented, Japan's social health insurance scheme covered only manual workers, who represented 3% of the population in 1927. However, the scheme included those working in small firms. Small firms were probably included because their employees had been covered by the same worker's compensation system as employees in large firms. Because small firms did not have sufficiently large risk pools or the administrative capacity to manage their own system, the government had to provide health insurance for them directly—the origin of government-managed health insurance. This role of the national government as one, and the largest, among a group of health insurance carriers, rather than as either coordinator of insurance plans or the sole insurer, is the most distinctive element of Japan's health insurance system even nowadays. This role led the government to play a dominant part in negotiating with providers and weakened the independence of the social health insurance plans. However, unlike in countries in which health insurance is tax-based, the government did not take direct responsibility for financing the system.

The other source of Japan's social health insurance system is citizens' health insurance—local programmes

### Search strategy and selection criteria

The first section about historical development is based on a synthesis of domestic and international published work on social health insurance systems, and draws on previous studies made by the lead author. The only available nationally representative surveys are those that have been done by the national government. From the patient survey, we examined the effect of universal coverage on service use by age groups because the changes in co-payment rates would have the greatest effect on elderly people. For the degree of equity, after using PubMed to review the published work, we decided to adopt the method described in the World Bank Institute report to compare Japan with other countries. For data, we obtained access to the most recent individual level data available from the National Survey of Family Income and Expenditure to analyse the degree of progressivity of household expenditures to health-care expenditures, and to compare the extent of catastrophic payment. To compare horizontal equity, we obtained access to individual level data from the Comprehensive Survey of People's Living Conditions to analyse access to services adjusted for health need variables. In the following section on challenges and proposals for reform, reports and policy statements from the government national associations of health insurance plans were reviewed and analysed. We searched resources such as PubMed, Medline, JSTOR, and Google Scholars, and examined government reports and unpublished work from domestic sources. In formulating our proposal for reform, we discussed the possible options after examining the international experiences on consolidating social health insurance plans.

resulting from a voluntary, community-led movement in the 1930s.<sup>10</sup> The national government later formally recognised and supported this movement with the Citizens' Health Insurance Act of 1938. Unlike those enrolled in the employee-based plans, farmers and other self-employed workers did not have a regular source of income, nor was their income easy to assess. Consequently, each plan had its own method of collecting premiums with various degrees of progressivity. In addition to risk pooling, many such programmes established clinics and hospitals for their enrollees. This action led to confrontations with private practitioners, which were usually resolved by negotiation of fees with them and with hospitals.

The subsequent development of Japan's social health insurance can be divided into four periods. In the first two periods, the population covered by such plans expanded, and in the latter two periods, the differences in co-payments between insurance plans gradually decreased. Although not based on any explicit grand design, the system's general direction was towards realising egalitarian access and cost.

In the first period, from 1922 to 1945, the driving force to expand coverage came from the military, who were

This is the second in a Series of six papers about Japan's universal health care at 50 years

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For more on the World Bank Institute Report see <http://www.dcp2.org/file/146/Analyzing%20Health%20Equity%20Using%20Household%20Survey%20Data.pdf>



concerned about the physical condition of draftees, as the war with China intensified in the 1930s, and by extension about women in their childbearing years, Employee-based social health insurance was expanded to all employees in workplaces with more than five full-time equivalent workers in 1934, and to office workers and dependants in 1939. During this time, citizens' health insurance plans were established in many municipalities. As figure 1 shows, the government's efforts to expand coverage succeeded to the extent that, at the peak of the first period in 1943, 70% of the population was insured.<sup>11</sup>

In the second period, after World War 2 (from 1945 to 1961), the major political parties—the Liberal

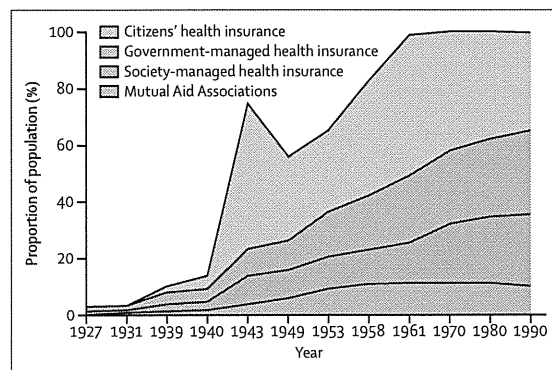


Figure 1: Trends in health insurance coverage in Japan, 1927-90. Values for years during World War 2 are estimates. Adapted from Takagi.<sup>11</sup>

#### Panel 1: Status of social health insurance plans

The main features of Japan's social health insurance system are:

- Individuals have no choice of plans.
- Dependants (except those older than 75 years) are covered by the plan of the head of the household.
- Employers have to enrol their employees (except those working less than three-quarters of the hours that full-time employees work, and those aged 75 years and older).
- All those not covered by employers, including people who have retired, have to enrol either in citizens' health insurance (if younger than 75 years) or in the Late Elders' Health Insurance (if 75 years or older) of their local government, unless they are on public assistance.
- There are about 3500 plans, roughly half employee-based, half community-based.
- In employee-based plans, contributions are deducted as a set percentage of wages, with the employer contributing at least half (55% on average). In community-based plans, each municipality has its own method of setting contributions, which are roughly based half on income (sometimes also assets), and half on a flat amount per enrollee (sometimes also per household), with premiums paid to the municipal government.
- Services covered, including drugs and dentistry, and payments to providers are the same in all plans.
- Despite the generally high co-payment rate, the proportion paid by patients is only 14% of national medical expenditure,<sup>13</sup> because of a reduced rate for elderly people and the provision of catastrophic coverage (data compiled by the Ministry of Health, Labour and Welfare that include all expenditure under public management, but exclude some factors such as over-the-counter drugs, and private room charges that are included in Organisation for Economic Co-operation and Development statistics<sup>14</sup>).

Democratic Party and the Japan Socialist Party—competed over establishment of a welfare state, with health insurance for all as a popular and tangible goal. Insurance coverage quickly recovered from the chaos of war-time and post-war conditions and expanded further.<sup>11</sup> In 1958, a new citizens' health insurance law formally committed Japan to universal coverage by making enrolment mandatory for people not covered by employee-based plans. The law mandated the adoption of the fee schedule of employee-based plans, which laid the basis for those enrolled in citizens' health insurance plans to access almost any provider. In 1961, when the last municipalities established citizens' health insurance, almost everyone became insured. However, the co-payment rate differed greatly: for employees, only a nominal amount had to be paid at the first physician visit, but their dependants and those enrolled in citizens' health insurance had to pay 50% of the fee schedule price for all services and drugs.

In the third period, from 1961 to 1982, the 50% co-payment rate was gradually lowered to 30%; for heads of household with citizens' health insurance in 1963 and their dependants in 1968, and for the dependants of employee-based plans in 1973. Meanwhile, some municipalities started to cover the co-payments for elderly people from general revenues. This movement expanded to entire prefectures, with the progressive Governor of Tokyo taking the lead in 1969. The national government was thus pressured to legislate free (no co-payment) health care for elderly people (those 70 years and older) in 1973. Another major revision in the same year was the introduction of catastrophic coverage in all plans—ie, no more co-payments once the monthly amount exceeds ¥30 000 (US\$83 in 1973). However, 1973 was the year when economic growth in Japan slowed substantially as a result of the so-called oil shock.<sup>12</sup>

Rising health-care costs and decreasing economic growth set the stage for the most recent period, 1982 to the present, when the co-payment rate was increased for individuals who had previously had low rates. As a result, the co-payment rate eventually became the same for most enrollees. Legislation enacted in 1982 led to a small token co-payment for the elderly population in 1983, and the revision of the Health Insurance Act led to the introduction of a 10% co-payment for employees in 1984. Subsequently, the co-payment for employees increased to 20% in 1997 and to 30% in 2003. For elderly people, the flat amount gradually increased and in 2003 became a 10% rate for those with incomes below that of the average worker, and 20% for those above, which was increased to 30% in 2006. The co-payment is now 30% across the board for all, except for people aged 70 years and older with incomes below those of average workers (93% of all elderly people), who pay 10%, and for children younger than 6 years, who pay 20%. Catastrophic coverage has also been curtailed but with a similar regard to equity; the threshold for the monthly co-payment amount is tiered into three levels

according to the enrollee's income, and a 1% co-payment is levied for the amount above the threshold (panel 1).

### Changes in rates of use

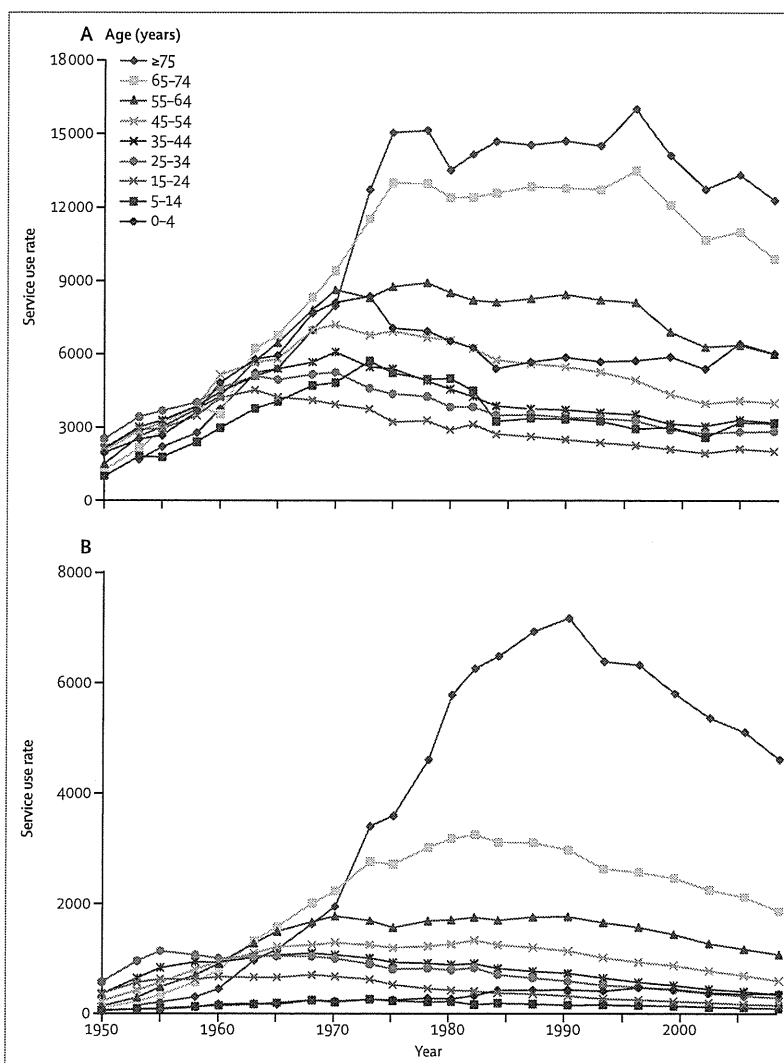
How have the rates of use of outpatient and inpatient services changed over time with the expansion of coverage and adjustments in co-payment rates? As figure 2 shows, the use of outpatient services increased in all age groups from 1950 till the mid 1960s, as the population covered expanded and average incomes increased.<sup>15</sup> From the mid-1960s, the trend began to differ according to age groups. Although it started to plateau for young people and middle-aged adults, it continued to increase for children and elderly people, resulting from decreases in the co-payment rate. Use gradually started to decrease for people younger than 70 years from 1980, and for elderly people from 1999. For employees, the increase in their co-payment rate led to a reduction in use by patients with hypertension and hyperlipidaemia,<sup>16</sup> but for elderly people, no effect has been shown. Other factors, such as the extension of the maximum number of days that drugs could be prescribed from 14 days to 3 months in 2002, could account for decreases in use. Even with the decrease, the per-head number of physician visits was 13.4 in 2007, which was three times that in the USA (4.0).<sup>3</sup> This rate of use shows the "relative readiness with which the Japanese both recognize departures from health and consult doctors about them".<sup>17</sup> Such characteristics might also explain why the number of visits per year is also high in Korea (13.0 in 2008),<sup>3</sup> which has a similar cultural background and historical roots in Chinese medicine.

For inpatient services, the trend is much the same as that for outpatient services, with some differences. First, the rate for the 25–34 year age group was at its highest in the mid-1950s because of the high prevalence of tuberculosis. Second, the rate of increase in people older than 75 years is more striking and so is its subsequent decrease from 1990. The increase was attributable to the provision of free medical care in 1973, which opened the door to so-called social admissions (patients admitted because their families were unable or unwilling to care), and turned many small hospitals into de-facto nursing homes. The subsequent decrease could not be ascribed to increases in co-payment rate because the catastrophic coverage has kept out-of-pocket payments low; it was probably due to the building of new long-term care facilities for elderly people, and other factors.<sup>4,18</sup>

### Complex financing

Subsidies from general revenues and transfers between the plans to equalise the health-care costs of elderly people have allowed the same services to be covered by all social health insurance plans, despite substantial differences in income and age structure. Figure 3 shows this mechanism, which groups the plans into four tiers

according to the average income of their enrollees.<sup>19,20</sup> The first three tiers each cover about 30% of the population, and the fourth covers the remaining 10%. The first tier is composed of 1497 plans that insure people employed in large companies and industry sectors (society-managed health insurance) and 77 plans that insure those employed in the public sector (Mutual Aid Associations). The second tier has only one plan, the quasipublic National Health Insurance Association (reorganised from government-managed health insurance in 2008), for those employed in small-to-medium companies who tend to have lower incomes than those enrolled in the first tier plans. The third tier is composed of citizens' health insurance for the self-employed, the irregularly employed, and pensioners



**Figure 2: Trends in outpatient (A) and inpatient (B) service usage rate over time by age**  
Service use rate is the number of people using the services on the day of the survey per 100 000 population in each age group. Since 1984, the patient survey has been done every 3 years, most recently in 2008. Data are from Ministry of Health, Labour and Welfare.<sup>15</sup>

younger than 75 years, managed by the 1788 municipalities, plus the 165 citizens' health insurance unions of self-employed occupational groups (including private

See Online for webappendix

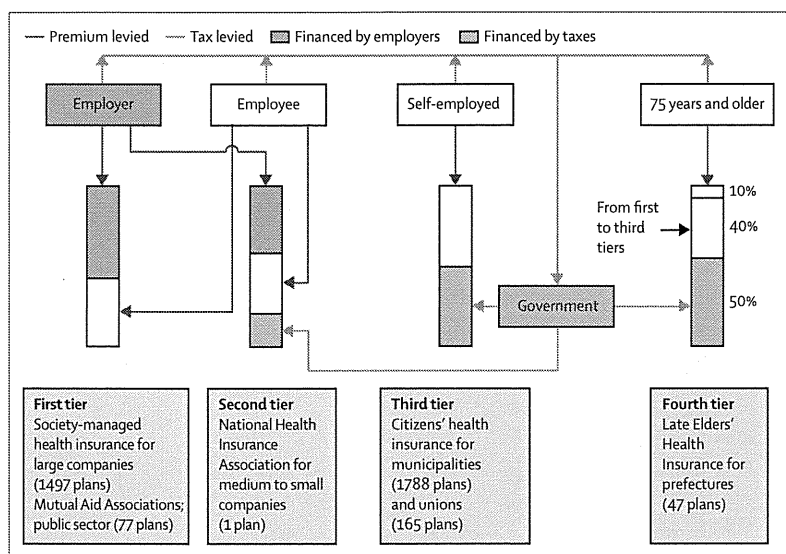


Figure 3: Financial flow in the four tiers of insurance plans

Number of social health insurance plans in Japan as of March, 2009. Data from Ministry of Health, Labour and Welfare.<sup>19</sup>

#### Panel 2: Unpleasant surprise for Mr Yamamoto on retirement

Until Mr Yamamoto retired at the age of 67 years from the Japan Industry Corporation, he had not thought about his health insurance contribution. It was automatically deducted from his payroll, along with taxes and other social security contributions. The deductions had increased as his salary had increased, and that was annoying, but he had never looked at the breakdown.

The day after his retirement, he went to his city government's citizens' health insurance division and applied for enrolment. He was surprised to learn that his contributions would be calculated on the basis of his previous year's household income, which would include not only his salary, but also his pension and his wife's earnings of ¥1 million (US\$12 000) as a part-time worker. Additionally, the property tax he had been paying for his house would also be included.

On the basis of his past year's household income of ¥5 million (\$60 000) and his property tax, he was told that his annual citizens' health insurance contribution would be ¥450 000 (\$5400). This amount was more than three times what he had paid to the society-managed health insurance of Japan Industry Corporation in the previous year because his employer had been contributing half; his contributions had been based only on his salary, and excluded both his pension and his wife's earnings; he did not have to pay extra premiums for his wife because her earnings were low enough to qualify her as his dependant; his property had not been included in the calculation; and the city's citizens' health insurance rate was high because it has a large housing complex for people on low income.

However, when Mr Yamamoto visited his local clinic for his hypertension with his new insurance card, both the treatment and the co-payment amount (about \$20 including drugs) were the same as they had been when he was covered under his employer's health insurance plan. He was thankful that nothing had changed about his care after being forced to change his plan on retirement.

Note that case studies are fictional and for illustrative purposes only.

practice physicians, barbers, and construction workers), which enrol about a tenth of those in this tier. The fourth tier is the Late Elders' Health Insurance, established in 2008 as a health insurance scheme to which all people aged 75 and older have to enrol, irrespective of their employment or dependence status; this scheme is managed by one coalition of municipalities in each of the 47 prefectures.

To augment premiums from employers and individuals, the national government provides subsidies from general revenues to the plans in the second to fourth tiers, amounting to a quarter of total health expenditure. Specifically, these subsidies cover 16.4% of benefit spending in the second tier; an average of 50% (40% for rich municipalities, up to 80% for poor municipalities) in the third-tier citizens' health insurance; and 50% in the fourth-tier plan for people aged 75 years and older. Additionally, to equalise health-care expenditure for elderly people, each plan must contribute a fixed amount per enrollee. These transfers, which flow through a central pooling fund, cover 40% of spending in Late Elders' Health Insurance, and subsidise people aged 65–74 years who are enrolled in other plans.

#### Extent of equity

The mechanisms discussed here have contributed to making the household's total financial contribution to health care—ie, direct and indirect taxes appropriated to health care, social health insurance premiums, and out-of-pocket expenditures—almost proportional to its income as measured by the Kakwani index,<sup>21</sup> and to be much the same as for schemes in South Korea and somewhat more equitable than those in Germany.<sup>22,23</sup> The percentage of households in which out-of-pocket health-care expenditure exceeded 25% of total expenditure excluding food (the catastrophic threshold) was 1.68% in 2004, which was similar to that in Taiwan (1.49% in 2000), higher than that in Malaysia (0.78% in 1998–99), but lower than that in South Korea (4.82% in 2000) and China (11.23% in 2000).<sup>24</sup> We analysed whether individuals with the same need get equal access to health care by calculating the concentration index.<sup>25,26</sup> Although the data are difficult to compare, it seems that access to physicians controlled for patients' need seems to be about the same as in the UK (see webappendix pp 1–3 for technical notes on the analysis).

However, when contribution rates are compared across social health insurance plans, the average rate for the citizens' health insurance plans is three times that in society-managed health insurance plans for employees of large companies.<sup>27</sup> Thus, when employees retire and join the citizens' plans, they have to pay higher premiums than they did previously (panel 2). Moreover, even within the first tier, more than a three-times difference exists in contribution rates between

	Minimum	Maximum	Median	IQR	Mean	SD
Number enrolled	26	584681	7585	14015	20184.7	44147.1
Age of employee (years)	25.8	54.1	41.6	3.6	41.3	3.3
Monthly wage (¥)	210463.0	1030349.0	368333.0	84839.5	379381.6	81462.7
Health-care cost per person insured (¥)	21113.0	271336.2	152946.2	35812.2	151222.9	29535.3
Supplementary benefits per person insured (¥)*	0	37973	4842.5	6732.8	5179.9	4614.7
Contribution rate as percentage of monthly wage (%)	3.12%	9.62%	7.40%	1.50%	7.31%	1.04%

\*Supplementary benefits that reduce the co-payment amount are available in 86.5% of society-managed health insurance plans. Data are from Federation of Health Insurance Societies.<sup>28</sup>

Table: Differences between the society-managed health insurance plans

society-managed health insurance plans, from 3.12% to 9.62% (table).<sup>28</sup> Analysis of contribution rates for these plans shows that they are mainly related to employees' average age and average income, more than to their average health spending. Incidentally, age is a factor because per-head health spending increases gradually with age (figure 4),<sup>28,29</sup> but transfers only equalise spending for individuals from age 65 years.

### Challenges and proposals for reform Sustainability of the social health insurance system

Opinion polls show that the government's policies to ensure access to health care based on need, rather than on ability to pay, have wide popular support.<sup>31</sup> However, the social health insurance system that has been the basis for achieving this principle is threatened by three factors: the ageing society, changes in employment patterns, and the emerging issue of the uninsured.

First, ageing has led to transfer payments that now amount to nearly half of total expenditure in society-managed health insurance plans for people employed by large companies. These transfers are not only to Late Elders' Health Insurance, but also to compensate for differences in the proportion of individuals aged 65–74 years in other plans (they average only 4% in the employee-based society-managed plans, but 33% in the citizens' health insurance plans).<sup>27</sup> These transfers will increase. Because the proportion of people aged 65 years and older in the population will increase from 22% in 2008 to 30% in 2020, their share of health expenditure is projected to increase from 52% to 66%.<sup>32</sup> Employers and labour unions have protested that these transfers have jeopardised the existence of society-managed health insurance.

The second factor eroding Japan's social health insurance is change in working patterns and the structure of the economy. When universal coverage was achieved in 1961, 29% of all workers were engaged in the primary industries of farming, fishing, and forestry; they formed the backbone of citizens' health insurance. More recently, competitive cost pressures, deregulation, and a shift in corporate priorities to favour shareholders and management over employee welfare have led to hiring of more irregular workers (temporarily, part-time, and contracted

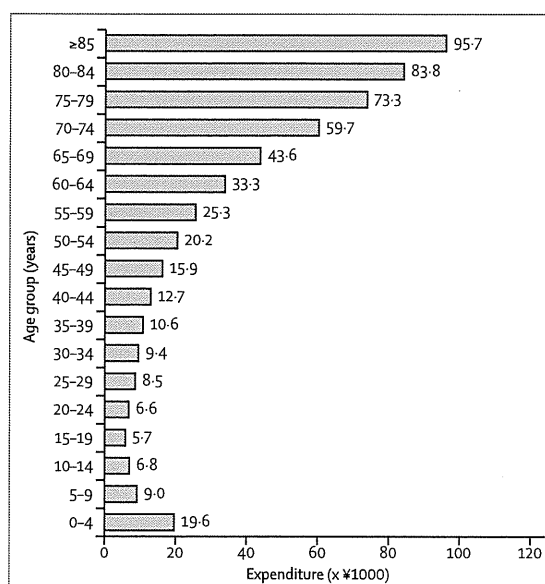


Figure 4: Per-head annual health expenditures by age group in Japan, 2007  
Data from Ministry of Health, Labour and Welfare.<sup>29</sup>

out)<sup>33</sup> from 18% of the total employed in 1988 to 34% in 2010.<sup>34,35</sup> Anyone who works less than three-quarters of the hours that full-time employees work need not be enrolled in employee-based plans. As a result of these changes, the composition of people enrolled in citizens' health insurance has been transformed. In 1965, the proportion working in primary industry was 42%, and 25% were self-employed. These percentages have decreased to 3% and 17%, respectively, in 2008. During this time, the proportion of pensioners and others not working has increased from 7% to 40%, while that of those who are employed, but not covered by the employee-based plans, has increased from 25% to 34%.<sup>27</sup>

The third factor is the increasing numbers of individuals who are unwilling or unable to enrol in citizens' health insurance, although they are legally required to do so. Municipal governments have no way of knowing who should apply so the numbers cannot be worked out directly. Our analysis of the Comprehensive Survey of People's Living Conditions data for 2007 showed that

1.3% of the sampled population were not paying social health insurance premiums even though their incomes were high enough to be taxable. If this proportion could be extrapolated, about 1.6 million people would not have insurance, which might bring into question Japan's status as a country with universal coverage. In addition to these non-payers, the benefits of those enrollees who have not paid premiums for more than 18 months in the citizens' health insurance are severely restricted (pay full amount first, and get reimbursed later).<sup>36</sup> 1.6% of people enrolled in citizens' health insurance have this status.

All three difficulties have been exacerbated by the fragmentation of social health insurance plans by employment and residential status, and the increasing disparity in income levels and age structure among the plans. This disparity could be compensated for by increasing subsidies from general revenues, which would require taxes to be increased. However, every government in Japan that has raised or attempted to raise value added taxes (VAT) has subsequently lost the next election, the most recent being Prime Minister Kan losing control of the upper house in July, 2010, because he made an ill-timed announcement on the need to raise VAT.<sup>37</sup> The Great East Japan Earthquake might lead to a bipartisan movement to increase taxes, but this money would mostly be allocated to rebuilding the devastated regions and to paying back the huge deficit, and would probably not lead to a real increase in funding for health care.

### Panel 3: Debate on the insurance scheme for late elders

A new insurance scheme for people aged 75 years and older (late elders) was introduced in April, 2008. All those aged 75 years and older, irrespective of where they had been enrolled previously, joined the Later Elders' Health Insurance. Because the needs and risk of medical service use are distinctively higher in late elders than in other age groups, an age-specific scheme seemed to be more valid because risk pooling would become homogeneous, services covered could be made more appropriate for this group, and financing responsibility could be made more explicit.

However, the new scheme became a political fiasco for the government led by the Liberal Democratic Party at the time. The media reported on the administrative difficulties of introduction of the new scheme and the outrage expressed by people whose premiums increased, but the greatest public outcry was towards its perceived ageism aspect. This feature was exemplified by the introduction of an end-of-life consultation fee only for late elders. Accusations were made that it would not be consultation, but persuasion, so that it had to be delisted from the fee schedule only 2 months after its introduction.

The present government, led by the Democratic Party of Japan, came to power in September, 2009, with a pledge to abolish the scheme by 2013. The services listed only for late elders in the fee schedule were formally abolished in April, 2010, during one of its scheduled revisions (every 2 years). To replace the plan for late elders, in December, 2010, the government committee recommended a two-stage reform. The first was to revert back to the enrolment rule that existed before the plan for late elders: people aged 75 years and older who are dependants of employees or are themselves employees would continue to be enrolled in the employee-based plan (20%), the rest would be enrolled in citizens' health insurance (80%). The second was to consolidate citizens' health insurance within prefectures. However, even if the reform is implemented, the disparity between and within tiers will remain.

Another possible solution would be to reduce the benefits covered by social health insurance to a basic package, with the rest to be paid out of pocket or to be covered by supplementary private health insurance. The Regulation Reform Council composed of industry leaders and economists backed by Prime Minister Koizumi attempted such a reform in 2004. However, opposition from the Ministry of Health, Labour and Welfare and the Japan Medical Association resulted in a compromise in 2005, which largely left intact the regulations restricting extra billing and balance billing, while giving more flexibility to hospitals wanting to provide new technology not yet listed in the fee schedule.<sup>38</sup> Although advocates of deregulation will always exist, if equal access is not to be sacrificed Japan should continue to impose broad and complex restrictions on extra billing, as Canada and some European countries have done.<sup>39</sup>

### Consolidation of social health insurance plans

From our analysis, we believe that the way forward would be to consolidate social health insurance plans. Consolidation would equalise premium contribution rates across plans, increase total funding by raising the contribution rates of plans currently set at a low level, and improve administrative efficiency by expanding risk pools. Three options exist for consolidation.

The first is to allow everyone to choose the plan that they prefer, after adjustment of the basic premium rate for income, age, and other factors that affect the risk profile of the individual. Such structural adjustments would decrease differences in contribution rates and increase the pressure for plans to consolidate, as has occurred in Germany.<sup>40</sup> However, this approach would not work in the Japanese context because most social health insurance plans do not operate as independent entities. They are administered as de-facto divisions of the company's personnel department in most society-managed health insurance plans, and of the municipal government in the citizens' health insurance plans.

The second is national unification of all social health insurance plans, as has been done in South Korea.<sup>41</sup> This option has the advantages that risk pooling occurs nationally, the contribution rate is the same for all, and the administrative costs would be lower. However, such unification would be contrary to present efforts to decentralise the national government's functions and would ignore the differences in per-head health expenditure after adjustment for age structure in the 47 prefectures.<sup>42</sup>

The third is to unify social health insurance plans regionally and untie insurance coverage from employment status. Canada and many European countries have a history of provincial autonomy and have organised their systems on a regional basis. The advantages are that the health insurance contribution rate would be indicative of the medical expenditure of the region, after the national government has standardised regional differences in

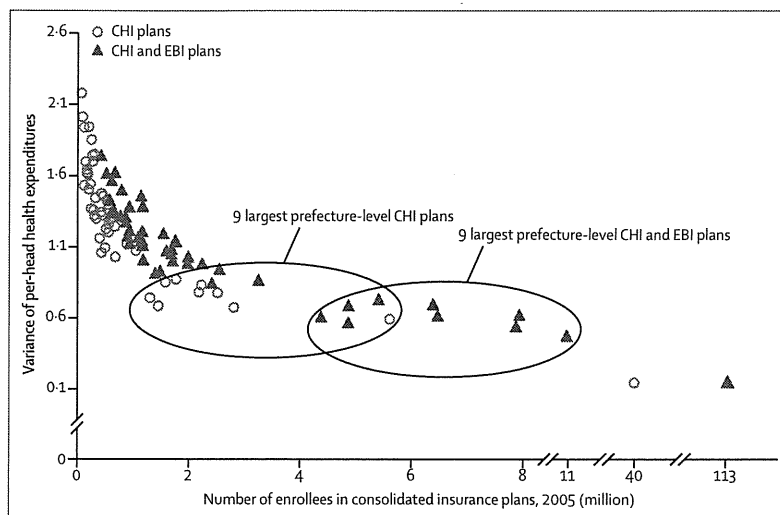
income, age, and other factors on the demand side. By doing so, popularly elected regional governments would have an incentive to increase efficiency of service delivery.

In view of the difficulties associated with the first two options, we believe that regional consolidation is the most appropriate solution for Japan. A bonus is that enrolment of everyone within a prefecture in the same plan would facilitate improved tracking of the uninsured. This option has recently become more realistic since the Ministry of Health, Labour and Welfare announced its intention to consolidate the citizens' health insurance within the 47 prefectures as the second stage in its goal of abolishing the plan for those aged 75 years and older (panel 3). However, unless employee-based plans are consolidated as the third stage, because contribution rates in most citizens' health insurance plans are already high, no substantial increase in funding would be achieved.

We assessed the effect of expansion of the risk pool by analysing the variance in per-head annual inpatient medical expenditures if plans were to be consolidated within prefectures, on the basis of data for individuals from all social health insurance plans in 2005 (see webappendix p 4 for technical notes). As figure 5 shows, when the number enrolled exceeds 1.5 million in the consolidated citizens' health insurance plans and 4.5 million in these plans and employee-based plans, further consolidation would bring only a small incremental benefit when compared with national consolidation. Nine prefectures would exceed this level and their combined population would compose slightly more than half the total. The population of the remaining prefectures would still be less than the economically efficient level, but further consolidation would necessitate mergers of the prefectures themselves.

We are aware of formidable political and institutional obstacles to merging employee-based plans with community-based citizens' health insurance. Consolidation would be opposed by the employee-based plans, particularly the society-managed health insurance plans with fairly young, high-income enrollees. They will argue that increased contribution rates would reduce the global competitiveness of Japanese products, but this fear is unfounded. Germany has managed to maintain its competitive advantage despite a contribution rate that is twice the average for society-managed health insurance.<sup>7</sup> Another obstacle is that the method of premium calculation differs between the employee-based plans and citizens' health insurance. Moreover, among citizens' health insurance plans, not only does each municipality use a different method to calculate contribution, but also the extent to which subsidies are provided from the municipality's general revenues budget differs.

However, these obstacles could be overcome, especially now that solidarity has been strengthened after the Great East Japan Earthquake. Structural reform will result in all households within the same prefecture contributing the same percentage of their income as premiums,



**Figure 5:** Size of consolidated citizens' health insurance plans and employee-based insurance plans, and variance of per-head annual inpatient health expenditures (ratio of standard error to the mean [%]) in Japan, 2005. The circle and the triangle on the far right show the variance if the plans were consolidated nationally. CHI=Citizens' health insurance. EBI=Employee-based insurance. Data from Ministry of Labour, Health and Welfare (unpublished).

#### Panel 4: Public assistance and safety net for the poor

Definition of individuals who cannot afford any contribution is a prerequisite for universal coverage by social health insurance. In Japan, people on public assistance are not enrolled in any social health insurance plan, and are exempted from both premium contribution and co-payment. Medical expenditures paid by public assistance contribute about 3–4% of the total. The medical services to which people with public assistance are eligible are the same as for social health insurance enrollees, and providers are paid at the same fee schedule rate.

Although all individuals who meet the nationally defined criteria should be eligible for public assistance, in practice, the hurdle is high. Municipal governments have been reluctant to provide coverage because they have to fund 25% of expenditure from their general revenues—which amounted to 17% of Osaka City's budget in 2010—and because they are aware of the public outcry should any abuse be reported by the media. Applicants are told to first seek assistance from family members who are legally bound to help under the civil code. However, municipal governments do not have any means of enforcing family support.

The number of people on public assistance has increased by 10% compared with 2010, to 2 million in 2011, a record high. The national government has tried to lower the proportion they currently fund, 75%, and have pointed out the 11-times difference in the per-head number of those on public assistance even between prefectures. However, the municipalities have so far successfully resisted, arguing that because ensuring basic livelihoods is a constitutional right, the national government should be primarily responsible, and that prefectures that have high proportions of people on public assistance are metropolitan areas with a higher prevalence of people without homes than in rural areas.

The livelihood allowance provided by public assistance is higher than the basic pension amount, which has added another layer of complexity because its reform is linked to pension reform. In health care, it is linked to the next layer of poverty: those who will be exempt from co-payment among those enrolled in the citizens' health insurance, which is also a decision made by municipalities. Thus, the safety net for the poor is doubly at risk when the municipality faces fiscal difficulties.

irrespective of employment status. Income would be calculated from all sources, and not restricted to wages as is currently the case for employee-based plans. This

approach will adjust to further changes in employment patterns, including an increased number of pensioners working. Additionally, the co-payment rate should be lowered for all households with low income—not only elderly people—to improve inequities in access. Where to set the line to exempt people from contributing premiums and making co-payments should be considered in the context of public assistance reform (panel 4).<sup>43</sup>

Consolidation within prefectures does not mean that the national government would abdicate its responsibility. On the contrary, the government should continue to play a major part in deciding the services to be covered and their prices in the fee schedule, in setting national standards of quality and professional qualifications, and in subsidising prefectures with low average incomes, a higher proportion of elderly people, and so forth. However, key decisions about investment in and restructuring the delivery system would be made by prefectural governments. This devolution of authority and fiscal responsibility would be in line with the ongoing trend in the public sector in Japan.

### Global lessons

Japan's major accomplishment with social health insurance, from a global perspective, has been its successful pursuit of the normative goals of expansion of coverage and containment of costs while improving equity in the health system over time. Japan offers several lessons for other countries.

The first is that attainment of universal coverage on the one hand and achievement of equity in benefit packages and rates of co-payments and contributions on the other, are different goals and need different long-range strategies.<sup>44</sup> Before universal health coverage was achieved in 1961, community-based plans adopted the fee schedule of employee-based plans in 1959. The co-payment rate became uniform, except for elderly people and children, only in 2003. However, contribution rates still differ by more than three times between the social health insurance plans. Reform is a continuous process that will never be completed.

The second is the importance of political driving forces to move countries forward on the path to universal coverage. For Japan, the political forces for expansion of social health insurance coverage were the goals of achieving a wartime state in the 1930s and 1940s, and a welfare state in the 1950s to 1970s. For the welfare state, Japan's post-war democracy had a crucial role, providing both popular support and political party competition that motivated efforts to decrease inequities in the different rates of co-payment between social health insurance plans. Successful egalitarian reforms have been undertaken in South Korea and Taiwan after the election of democratic governments.<sup>45</sup>

The third is the inherent weakness of a social health insurance system that is fragmented by employment and residential status as in Japan. Because each plan

will differ in risk profile and income level, economic and political incentives against policy change are created.<sup>46</sup> This difficulty will be exacerbated if local governments are allowed to choose their own method of setting contribution rates. Countries that might consider adopting Japan's model of social health insurance should plan in advance to address its weaknesses before opposition to structural reform becomes deeply entrenched.

#### Contributors

B-KY, HH, MM, AB, and RW contributed to the data analysis. B-KY, HH, MM, AB, HO, KS, B-MY, and MRR commented on the report, and MRR revised the report. All authors contributed to the discussion and have seen the final version of the report.

#### Conflicts of interest

We declare that we have no conflicts of interest.

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