

The
Economist

Intelligence
Unit

The shifting landscape of healthcare in Asia-Pacific

A look at Australia, China, India, Japan, and South Korea

A report from the Economist Intelligence Unit

Supported by

janssen
PHARMACEUTICAL COMPANIES
OF *Johnson & Johnson*

Contents

About the research	2
Executive summary	3
Living longer: The challenge of success	6
The healthcare burden	7
The epidemiological transition	7
The rise of non-communicable diseases	8
Key NCD risk factors	9
Communicable diseases—the example of tuberculosis	12
Mental Illness: A long ignored NCD gets some attention	14
What does good look like?	16
Prevention	16
Access	16
The patient at the centre	16
Primary care focus	17
This is not just a prescription for NCDs	18
Where change is most needed	18
Australia	18
China	19
India	20
Japan	21
South Korea	23
Examples of change in practice	25
Prevention that works	25
Community outreach in South Korea	25
Tobacco Control in Australia	25
The push for universal healthcare in China	27
Patient self-management at the centre	28
Big data in Japan	29
Point of care diagnostics in India	30
Reshaping care	30
Long-term care insurance in Korea	31
Accredited Social Health Activists in India	31
Conclusion	33
Notes	35

About the research

In contrast to Europe, the Asia-Pacific region is typified by diverse approaches to healthcare amongst countries with a range of different political and economic backgrounds—countries that are thought of as high income mix with others with significant growth potential and with those that have seen recent rapid growth. As a consequence countries in the region lie at varying stages along the epidemiological transition—the movement from infectious diseases being the primary healthcare burden on a country to non-communicable diseases (NCDs).

This report, *The shifting landscape of healthcare in Asia-Pacific: A look at Australia, China, India, Japan, and South Korea*, written by the Economist Intelligence Unit (EIU) and supported by Janssen, seeks to compare and contrast the challenges and opportunities arising from the disease burden in the region. It also aims to identify best practices that might be shared to improve the support offered to people with non-communicable disease and infectious disease across five countries.

The report draws on in-depth desk research and interviews with the following healthcare officials and experts:

Professor Mohammed Ali, associate professor, Hubert Department of Global Health, Rollins School of Public Health, Emory University

Professor Sanchia Aranda, president-elect, Union for International Cancer Control

Professor Malcolm Battersby, director, Human Behaviour and Health Research Unit, Flinders University

Professor Christine Bennett, dean, School of Medicine, Notre Dame University

Professor Juliana Chan, CEO, Asia Diabetes Foundation

Changbae Chun, general director, Korea Foundation for International Healthcare

Professor Aikichi Iwamoto, chair, National HIV Surveillance Committee of Japan

Professor Lixin Jiang, National Centre for Cardiovascular Disease, Beijing

Blessina Kumar, chair, Global Coalition of TB Activists

Dr Vivian Lin, director of health sector development, WHO Western Pacific

Professor Gordon Liu, professor of economics, National School of Development, Peking University, and director, China Centre for Health Economic Research, Peking University

Professor Chee Ng, director, Asia-Australia Mental Health, University of Melbourne

Dr Preetha Reddy, managing director, Apollo Hospitals Group

Dr Srinath Reddy, president, Public Health Foundation of India

Dr Shaukat Sadikot, president-elect, International Diabetes Foundation

Kenji Shibuya, head, Department of Global Health Policy, University of Tokyo

Kin-ping Tsang, chair, International Alliance of Patients' Organisations

The report was written by Paul Kielstra and edited by Charles Ross. Elly O'Brien from Bazian, an EIU healthcare business, provided research support. We would like to thank all interviewees for their time and insight.

Executive summary

Healthcare in Australia, China, India, Japan, and South Korea has seen substantial success, with life expectancy rising markedly over the past two decades in each country. In health, however, the playing field never stays constant with changing risks presenting challenges for each country. This study looks at current and likely future disease loads for these five countries as well as how healthcare systems are set to cope with them. Its key findings include:

Non-communicable diseases already dominate the current health burden in the five countries in this study. Traditionally, communicable diseases are associated with developing countries and non-communicable diseases (NCDs) with developed ones. Japan, Australia, and South Korea made the epidemiological transition to an NCD-dominated health burden some time ago. In recent years, China has joined them, with 85% of its mortality coming from NCDs in 2010. Even in India, a majority of deaths (53%) came from this group of diseases and the figure is likely to grow. Communicable diseases inevitably remain a potential threat to all countries, and an ongoing, widespread challenge to health systems in India and China, but the main health burden is, and increasingly will be, NCDs.

The impact of specific NCDs affecting the five countries vary greatly, with China and

India now the worst affected. A common set of risks accounts for much of the growth in the number of NCDs, including: ageing; unhealthy lifestyle choices around smoking, diet, and exercise; environmental pollution; and urbanisation. The extent of these risks, however, varies greatly between countries so that the specific NCDs affecting populations also differ markedly. Excessive salt consumption, for example, elevates the number of strokes in East Asian countries while excessive caloric intake means that heart disease is a bigger problem in Australia. Air pollution, meanwhile, is driving up chronic obstructive pulmonary disease (COPD) and lung cancer incidence in China and India. Currently, the voluntary and involuntary risks experienced in developing countries are exacting a heavier price than those in developed ones: according to the WHO, in South Korea, Japan, and Australia, the combined probability of dying from cancer, heart disease, diabetes, and COPD between the ages of 30 and 70 is just over 9%. In China, though, it is 19% and in India 26%.

Mental illness is too often an unrecognised part of the burden. Mental illness is a significant NCD, but, because it is directly responsible for few deaths, mortality data tends to hide the size of its impact. In terms of total years lived with disability by a population, though, the health burden is huge—between 20% and 30% of the

total. Service provision for those with these conditions is usually insufficient. Although China and India are beginning reforms in this area, health care personnel and infrastructure remain insufficient to meet patient need. Japan and Korea, meanwhile, remain wedded to care in isolated hospitals rather than the community-based provision which is current best practice. Although Australia has gone furthest in the right direction, it still has a long way to go.

The NCD challenge requires patient-centred, accessible healthcare systems. Most healthcare systems were developed for, and are still best-suited to, acute care. At our current state of medical knowledge, though, NCDs are largely chronic conditions which require long-term management. A system capable of meeting this challenge well needs to: give appropriate attention to cost effective prevention as many NCDs are preventable; be accessible so that care will be more than sporadic and episodic; provide patient-centred care, in which healthcare providers support patients to manage their own conditions rather than dictating from above; and be integrated so that it can provide each patient with coherent, customised care—a need typically best serviced by a strong emphasis on primary care. Such a system would benefit not only those with NCDs, but describes the type of care which experts in communicable disease such as tuberculosis and HIV also advocate.

None of the healthcare systems in this study meet this ideal and several are worryingly ill-suited to face their current healthcare burden.

Each of the countries covered has weaknesses:

- *Australia*—Although it has strong assets within its healthcare system, these require integration around the patient rather than exhibiting a provider focus. Currently patients can find it difficult to navigate the complexity.
- *China*—The country's recent healthcare reforms have so far failed in their goal to establish integrated, patient-centred, accessible

care. Instead provision typically involves episodic, very brief interaction with harried staff in hospitals. Moreover, costs remain high and frustrations have damaged patient-clinician trust to such an extent that two-thirds of Chinese do not trust doctors' professional opinions.

- *India*—The country's healthcare system is still almost entirely organised around acute care to an extent that even the health ministry acknowledges that efforts against NCDs are only "nascent." High costs also make regular care difficult for much of the population to afford. Both these factors make effective chronic care extremely difficult: one interviewee estimated that half of the country's 62 million diabetics do not even know they have the condition.
- *Japan*—Japanese healthcare has many strengths, but is doctor-dominated, hospital-focussed and has a weak role for primary care. The result is poorly integrated provision in which patients face lengthy waits for very short consultations as doctors and specialists are in short supply. It is also an open question whether the current system is financially sustainable when funding relies on a debt-strapped government.
- *South Korea*—Despite impressive improvements in its healthcare system in recent decades, South Korea shares some of Japan's flaws, including weak primary care, an over-emphasis on hospital-based provision, and too few clinicians. The quality of care also needs more attention and provision for those with mental illness is particularly poor given the need.

Initiatives both large and small point to changes that can work. There is no simple way to create a perfect healthcare system, but diverse initiatives in the countries in this study show that change is possible in a range of important areas:

- *Prevention*—Effective prevention involves winning people over as well as creating conditions which make healthy choices easier. This can occur at various levels. In Seoul's Gangdong district, health counselling centres

based in the community rather than in healthcare facilities are attracting large numbers of citizens and having a measurable, positive effect on health indicators. At the national level, Australia's anti-tobacco efforts, through decades of consistent, coherent activity combining education, regulation, and taxation have brought down smoking rates from 38% in the mid-1970s to 13% today.

- *Universal access*—China's healthcare reform efforts have, as noted above, substantial weaknesses but it would be wrong to overlook their successes. The widespread extension of insurance has helped allow a substantial increase in use of healthcare facilities as well as an expansion of basic provision such as vaccinations and ante-natal care.

- *Patient-centricity*—The Flinders Chronic Condition Management Programme in Australia has created self-management support processes that involve true partnership between patient and clinician, putting into practice the oft-espoused wish for patient-centric, integrated care. Early studies indicate that it is improving healthcare outcomes as well.

- *Technology*—Information and communication technology have important innovations to offer medical care. Japanese surgeons and diabetologists are using big data to shape understanding of best practice. Cardiac surgeons, who were pioneers in the effort, have seen more than a decade of improved outcomes. IT is not limited to well-off countries. In India, the Swasthya Slate is a point-of-care device that allows healthcare workers to conduct 33 different tests on the spot and feed the data to more senior clinicians if appropriate.

- *Reshaping care*—If doctor-delivered, hospital-based care is too expensive for dealing with an NCD-based disease load, what alternatives might exist? Long Term Care Insurance in South Korea has for several years been providing subsidised social care for the elderly and has shown the potential for reducing levels of social hospitalisation—the long-term housing of the elderly in hospitals for lack of a better alternative. In India, meanwhile, the Accredited Social Health Activist programme has helped train 900,000 community health workers in rural areas. Maternal and child care have especially benefitted.

1 Living longer: The challenge of success

Any examination of the ability of healthcare systems in Australia, China, India, Japan, and South Korea to address the substantial healthcare needs of their populations should begin by recognising that, to a greater or lesser extent, each country's problems are more an outcome of success than failure.

Measured by life expectancy alone, all five countries achieved substantial increases in mortality between 1990 and 2013. India, China, and South Korea's gains were above the global mean rise, with each country adding between four and five months to life spans for every year that passed in that period. Improvements in Japan and Australia were below the global average but their progress is inevitably slower as they already have the world's first and third longest national life expectancies respectively. (Figure 1)

While all have gained, the routes have differed. In India, progress has largely been against acute,

communicable diseases, in particular diarrhoea, lower respiratory infection, and neo-natal disorders. When combined, these account for over half its gain in life expectancy since 1990. In China, longer lives have come from better care for communicable and chronic, non-communicable conditions, especially cardiovascular (CVD) and chronic respiratory diseases. The three more economically developed countries in this study present a different picture again, with progress almost entirely centred on non-communicable diseases (NCDs), in particular CVD and cancer, gains that explain over half the extended life expectancy there.

Beyond the obvious, life expectancy figures hold another lesson for understanding the healthcare burden facing these countries: the extent to which conditions within them appear to be similar or divergent can shift rapidly on closer examination.

Figure 1: Living longer
Changes in life expectancy at birth 1990-2013 (years)

	Australia	China	India	Japan	South Korea
Expectancy 1990	77	68	58	79	72
Expectancy 2013	82	76	66	83	81
Gain	5	8	8	4	9
Areas of most progress	CVD Cancer	Diarrhoea/LRI/other CVD	Diarrhoea/LRI/other Neonatal disorders HIV and TB	CVD Cancer	CVD Cancer

Source: Institute for Health Metrics and Evaluation, Life Expectancy & Probability of Death, 2014, available from <http://vizhub.healthdata.org/le/>. Based on WHO Global Burden of Disease figures.

The healthcare burden

The epidemiological transition

Developed and developing populations get sick and die differently for many reasons but one important factor behind the variance is that economic development results in an epidemiological transition. Poor societies typically face a greater burden from infectious diseases as a group but the improvements in healthcare and health systems that frequently accompany higher national income lead to gradual progress against such conditions. As infectious illnesses recede, NCDs come to the fore and remain dominant because humans, a mortal species, inevitably die of something.

All five countries in this study have either completed such a transition or are presently in the midst of one. The change is long established in Australia, Japan and Korea, where roughly 80% to 90% of deaths came from NCDs between 1990 and 2010, according to the WHO Global Burden of Disease figures¹.

China has recently joined the developed world along this curve, with NCDs accounting for 85% of its mortality in 2010, compared to 74% in 1990. India is the only country in the group still trailing, but it has passed an important tipping point with NCDs growing from 40% of deaths in 1990 to 53% in 2010. This transition is expected to continue, according to Dr Srinath Reddy, president of the Public Health Foundation of India, who expects “a much sharper rise in NCDs here over the next two decades.”

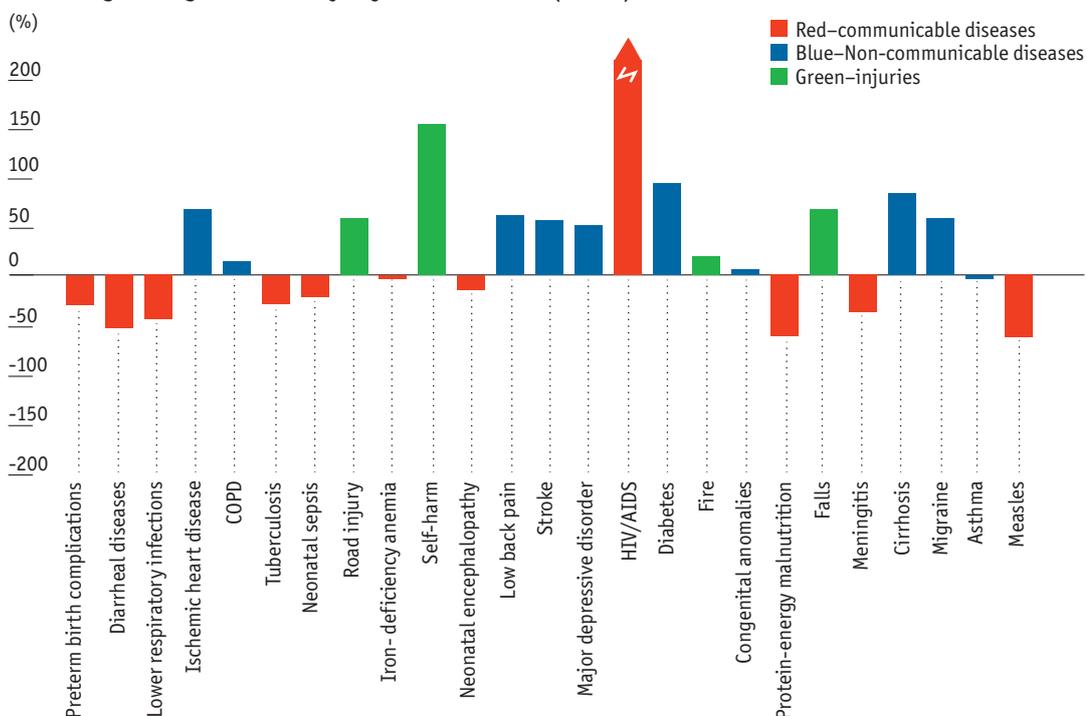
However, the concept of an epidemiological transition obscures as much as it shows. Infectious disease can remain a health issue, irrespective of economic development, and the factors behind each country’s transition can differ greatly.

As figure 2 shows, the shift in India’s disease burden is as much a result of a decrease in the incidence of major communicable diseases (in red) as it is due to an increase in NCDs (blue) and injuries (green). India’s, as well as China’s,

Figure 2

India’s epidemiological transition

Percentage change of Disability Adjusted Life Years (DALYs) in India from 1990 to 2010



epidemiological transitions may also be far from complete according to Mohammed Ali, an associate professor in the Hubert Department of Global Health at Emory University's Rollins School of Public Health, who noted that large numbers of people in those countries are rural residents who lack access to healthcare. "There is still a major transition to come as people urbanise and their chronic diseases are recognised," he said.

The rise of non-communicable diseases

The more economically developed nations present a similar picture when looking at the most common NCDs. Cancer, heart disease, respiratory illnesses and diabetes made up the largest NCD burden in South Korea, Japan and Australia in 2012, according to estimates from the WHO (figure 3).

In comparison, although China has roughly the same proportion of deaths caused by NCDs as South Korea, Japan and Australia, the specific diseases are markedly different. Cardiovascular disease accounted for 45% of all deaths in China in 2012, with more than half of those attributable to NCDs, while cancer's toll was about half of that. The burden of respiratory disease is also much higher in China than in wealthier countries, accounting for 11.3% of all deaths, the large majority of which is from Chronic Obstructive Pulmonary Disease (COPD). India's figures are lower because of its much larger communicable disease burden, but it still shows a similar pattern

to China, with heart disease and even COPD outpacing cancer.

One other striking difference between economically developed and emerging countries is the age at which NCDs kill. In South Korea, Japan, and Australia, the combined probability of dying from cancer, heart disease, diabetes, and COPD between the ages of 30 and 70 is just over 9%. In China this probability is 19% and in India, despite the higher numbers dying from communicable diseases, the figure is 26%.²

Mortality is just one measure of disease burden. Others, like disability adjusted life years (DALYs), take into account both the effect of time lived with a disability and of early deaths. This measure paints a similar picture to mortality, but it also illustrates the impact mental illness is having in all these countries (see box-out).

Beyond human suffering, the economic cost of the growth of NCDs, especially among the young, is likely to have a huge impact on national economies. China and India are particularly vulnerable, as highlighted by a 2013 study from the National Bureau of Economic Research. It estimated that the cumulative cost of mental illness and the four big NCDs would reach \$6.2 trillion in India between 2013 and 2030, and a staggering \$27.8 trillion in China, or roughly three times its 2013 GDP, due to its higher rate of heart disease.³

Figure 3: The rising tide of NCDs

Percentage of total deaths caused by selected NCDs by country, 2012 WHO estimates

	Australia	China	India	Japan	South Korea
Cancers	29.5	22.4	7.0	30.3	30.3
Total CVD	30.7	45.0	25.8	29.3	24.5
Stroke	7.5	23.7	9.0	10.1	10.5
Ischaemic heart disease	14.5	15.3	12.4	8.6	7.0
Respiratory Disease	6.9	11.3	12.7	6.3	5.2
Diabetes	2.9	2.3	2.3	1.2	4.3

Source: WHO Estimated deaths by cause, May 2014 and EIU calculations

Key NCD risk factors

Population ageing

Increases in life expectancy combined with significant falls in fertility rates in all five countries have resulted in marked population ageing, a process expected to continue in the coming decades.

Japan faces the greatest immediate challenge of all five countries, as it has the world's highest median age (47), with nearly a quarter of its population over age 65 (figure 4 and 5). Australia's population may be older than those in South Korea and China, but these two countries are catching up fast. China's population is predicted to have a similar proportion of people over age 65 as Australia within two decades. As Gordon Liu, professor of economics at the National School of Development at Peking University (PKU), and director of PKU's China Centre for Health Economic Research, noted, "we share most of the reasons for population ageing with other countries but our one-child policy makes our working age population smaller." China will trail behind Korea, which has one of the world's lowest birth rates—despite favourable government policies. India is the only country in the group with a fertility rate above the replacement level. Nonetheless, while its population is ageing slower than the other

countries', its increasing life expectancy means change will still be perceptible.

Ageing closely correlates with prevalence rates of many NCDs and the impact is already showing on broad measures of health outcomes. In all five of the countries, all-age mortality rates for NCDs are either holding steady or increasing but age-standardised rates—which adjust for the impact of older populations—have been dropping. This effect is particularly marked in Japan, the country with the most aged population. (figure 6).

Complicating matters further will be higher rates of multi-morbidity—or living with and needing to manage more than one chronic, usually non-communicable, disease—an issue that grows markedly as populations age.

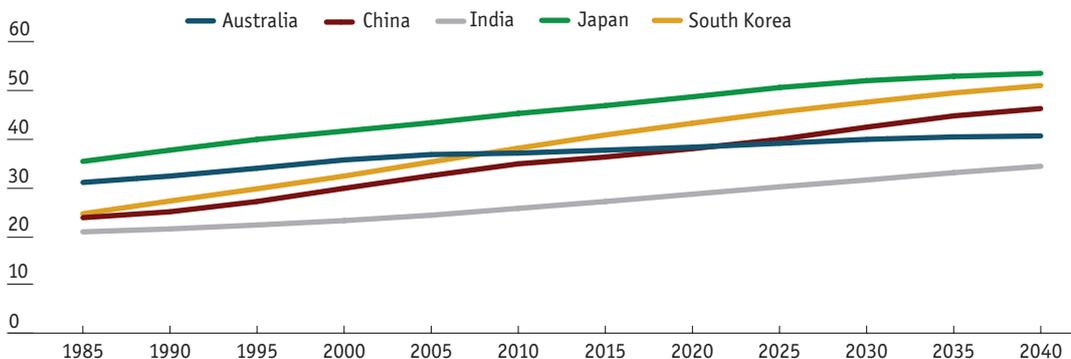
Although the older years of these extended lifespans—are unlikely to be disease free, they will not inevitably be unhealthy. Kenji Shibuya, head of the Department of Global Health Policy at the University of Tokyo, said data from the Global Burden of Disease study "suggest that there is a compression of [years of] morbidity across the globe." With proper management, the most harmful side-effects of NCDs can often be held at bay, but health systems will need to help ever more patients to do this as populations age.

Figure 4

Median age of population

(including forecasts using median fertility projection)

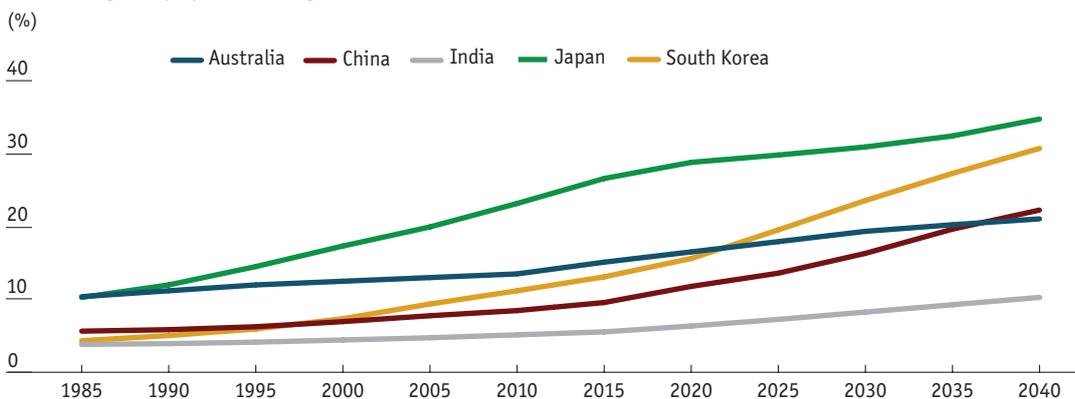
(Years)



Source: UN Population Division, World Population Prospects 2012

Figure 5

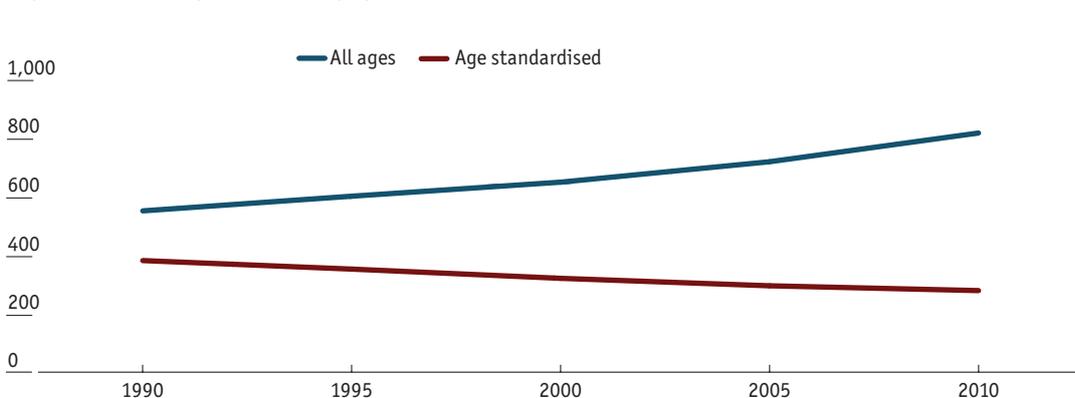
Percentage of population aged 65 and above



Source: UN Population Division, World Population Prospects 2012

Figure 6

Japanese deaths per 100,000 population from NCDs



Source: Global Burden of Disease figures taken from Institute for Health Metrics and Evaluation website, "GBD Compare", 2013, <http://vizhub.healthdata.org/gbd-compare>.

Lifestyle factors

The most frustrating element of many NCDs is the extent to which they are preventable through healthy lifestyle choices. The details, extent, and impact of these poor choices, however, tend to vary, helping to explain the differences in national NCD burdens (figure 7).

In all five countries, Global Burden of Disease figures indicate poor diet—in particular lack of fruit—is the major health risk.

Other issues, though, set them apart. High salt consumption is a particularly acute problem in China—Global Burden of Disease data indicate

that it caused around 10% of all deaths there in 2010—but is also a major issue in Japan, South Korea and to some extent India. Salt engenders hypertension—the second leading disease risk factor in China and Japan—and is associated with stroke, helping to explain why in these countries this is the predominant cardiovascular condition rather than heart disease.⁴

In Australia, total caloric intake is a more important issue and this, combined with a lack of physical exercise, is rapidly swelling waistlines. Over a quarter of adult Australians (28%) were classified as obese in 2011, according to OECD data. Christine Bennett, dean of the School of

Figure 7: Feeding death

Leading health risks and annual associated annual DALYs per 100,000 people, 2010

Australia	China	India	Japan	South Korea					
Dietary risks	1553	Dietary risks	3536	Dietary risks	4327	Dietary risks	1555	Dietary risks	1957
High body-mass index	1338	High blood pressure	2625	Household air pollution from solid fuels	3154	High blood pressure	990	Alcohol use	1665
Tobacco smoking	1290	Tobacco smoking	2062	Tobacco smoking	3141	Tobacco smoking	985	Tobacco smoking	1349
High blood pressure	963	Ambient particulate matter pollution	1763	High blood pressure	2726	Physical inactivity and low physical activity	584	High blood pressure	1034
Physical inactivity and low physical activity	702	Household air pollution from solid fuels	1502	High fasting plasma glucose	1916			High fasting plasma glucose	941
		High fasting plasma glucose	1089	Ambient particulate matter pollution	1817			High body-mass index	810
		Alcohol use	907	Occupational risks	1647			Physical inactivity and low physical activity	759
		Occupational risks	825	Childhood underweight	1369				
		High body mass index	816	Alcohol use	1358				
		Physical inactivity and low physical activity	780	Iron deficiency	1242				
				Physical inactivity and low physical activity	1223				
				Suboptimal breastfeeding	735				

Source: Institute for Health Metrics and Evaluation (IHME). GBD Compare

Medicine at Australia's Notre Dame University, describes the country's obesity epidemic as "probably the single most important health challenge facing Australia today."

Obesity rates are much lower among the other countries in this study, but recent changes in diet and transportation, often a result of rapid economic development, are causing concern. "Obesity is becoming a big issue in Korea, especially with the younger generation eating junk food," said Changbae Chun, general director

at the Korea Foundation for International Healthcare. India currently has the lowest obesity rates of all the countries examined, but Dr Shaukat Sadikot, president-elect of the International Diabetes Foundation, said obesity among children is also becoming a major health problem there. "Activity levels are way down. We used to walk to school, but now a car or school bus takes them. We also used to play in the school grounds for hours. Now that is gone and extra lessons to get great grades have taken its place!" he said.

Although body mass index levels are not as elevated in Asian countries as those in Australia, the medical consensus is that people of Asian ethnicity are more susceptible than Europeans to the negative effects of excess weight.⁵ This greater sensitivity helps explain the rapid growth of diabetes in India and China and, along with salt consumption, could also help explain the proportionally higher burden of cardiovascular disease in China compared to more developed countries.

Negative lifestyle choices are not inevitable. Dr Preetha Reddy, managing director of India’s Apollo Hospitals Group, said “it depends entirely upon us as a country as to how we can reverse this tide with appropriate measures taken now and urgently involving all stakeholders.” Changes in tobacco use show what might be possible. It remains a leading cause of heart disease, cancer, and chronic respiratory disease in every country in this study, but in the two decades after 1990 the fall in smoking rates (figure 8) resulted in a drop in the health burden which they inflict in the countries covered in this study of between 18% (in India) and 61% (in South Korea) as measured in age-standardised DALYs per 100,000 population.

Environment-related risks

Economic development is also creating a physical environment which is a further driver of NCDs. Increases in air pollution help explain the elevated levels of respiratory disease in both

China and India and each individual type of air pollution—ambient and household—in these countries is responsible for a greater number of DALYs per 100,000 people than smoking is in any of the wealthier countries, according to Global Burden of Disease figures.

Compounding these problems in developing economies is increased urbanisation. New migrants to cities often live close to sources of pollution, in conditions too unsafe to encourage exercise and with poor access to nutritionally balanced diets. The proportion of people living in cities in China has jumped from 31% to 56% over the past 20 years, and the UN predicts this will grow to 71% in the next two decades. Urbanisation rates in India are lower—they have grown from 27% to 33% over the same period and are predicted to reach 42%—but the trend is the same. “Current urbanisation, which is very unplanned and chaotic, will be a major propellant of NCDs,” noted Srinath Reddy.

Communicable diseases—the example of tuberculosis

Although NCDs make up the greater part of the disease burden in the countries covered in this report, the challenge of communicable diseases never goes away. China’s struggles with the SARS outbreak of 2003 and more recent difficulties in South Korea with MERS both show that emerging diseases can prove complicated for any country to handle, however economically developed. Existing diseases can also come back: a rise in

Figure 8: Reduced tobacco woes

Percentage of adults who smoke, both sexes

	1980	1996	2006	2012
Global	25.9	23.4	19.7	18.7
Australia	30.8	24.1	19	16.8
China	30.4	29.5	23.9	24.2
India	18.9	17.7	15.5	13.3
Japan	36.2	32.1	27	23.3
South Korea	36.1	31.7	25.6	23.9

Source: Marie Ng et al., “Smoking Prevalence and Cigarette Consumption in 187 Countries, 1980-2012,” *Journal of the American Medical Association*, 2014.

deaths from lower respiratory diseases in Japan is an ironic result of population ageing permitted by success against NCDs.

Communicable diseases, though, pose quite different problems for a country like India, where they remain relatively common, than for Australia, where they are more a potential than current threat. Examining how individual countries have managed one condition—like tuberculosis (TB)—can help illustrate these differences.

TB is a curable communicable disease, although treatment can be long and complicated and drug-resistance is a growing problem. India and China are both deemed high TB burden countries by the WHO and TB is one of the top three causes of communicable disease deaths and DALYs in both countries. Because of the high prevalence of the disease and population size in each country, India accounted for 24% of all TB cases in the world in 2013 and China for 11%.⁶

Both countries have National TB Programmes that follow the WHO-supported DOTS strategy—a policy combination that involves directly observed drug therapy as well as a variety of public health commitments on financing and treatment availability. Each country is making progress against the disease and estimated TB prevalence has dropped by over half in both since 1990. Mortality has seen a similar reduction in the same period in India, while it has declined to less than one-sixth of the 1990 value in China.⁷

However, as Blessina Kumar, chair of the Global Coalition of TB Activists notes, weaknesses in each country's approach to TB have created substantial drug resistance problems. "Obviously they [China and India] are not doing something right when it comes to addressing TB, or [they] would not have increasing numbers each year of multi-drug resistant (MDR) TB," she said.

In India, poor public treatment, which frequently exposes the patient to the widespread stigma surrounding the disease, has led to extensive use of private doctors for the condition. Until

recently, these doctors' practices have been largely unregulated and state officials believe they frequently use the wrong types and levels of medication, thereby inducing further resistance.

Despite the health insurance that now covers most of its population, China also has problems. Its healthcare coverage is not portable, so large migrant populations in urban areas - one of the groups most at risk - need to pay in order to be tested and diagnosed for TB, which results in under-diagnosis. Moreover, hospitals fund much of their budgets through drug sales and so often mis- or over medicate the disease.

As a result, each country has seen rapidly increasing growth in MDR-TB. In India, the number of notified cases has grown from 1,660 in 2009 to over 25,000 in 2013, although this is still far below the 62,000 new cases each year which the WHO estimates is the true incidence. China's estimated 54,000 unreported cases each year is slightly lower, but it only reported about 3,000 cases in 2013. The WHO has called MDR TB a "health crisis" and Ms Kumar agrees. "With the emergence of drug resistant TB, it is becoming extremely difficult. Almost every day we struggle with ensuring access to treatment for MDR TB patients." Both countries recognise that they have a problem but progress has been slow.

TB is much less of a problem in South Korea and Japan, but issues remain. South Korea has the highest incidence of TB in the OECD, at 97 cases per 100,000 population, while Japan's rate of 18 cases per 100,000 population is also several times higher than most developed countries. The WHO classifies both as intermediate-burden countries and the difficulty tends to be one of legacy. In most cases, human immune systems are able to wall off the TB bacillus, making the infection latent and harmless. However, about 10% of these latent infections eventually become active, typically when the immune system is compromised. TB was an extensive healthcare problem in Korea, especially during the Korean War, and it used to be Japan's biggest killer. Some remaining latent infections inevitably activate

over time. Once active, those infected are capable of infecting others.

In Korea in particular, although mortality figures have fallen, incidence has remained stubbornly stable and even began to rise during the previous decade, a result in part of a lack of attention between 1995 and 2010. In 2011, the government quadrupled the budget of its TB programme. Even as these countries address their current high NCD burden, they cannot afford to ignore ongoing TB issues.

Australia has different issues again, with very low, steady levels of TB that have stayed at a prevalence of around seven to eight cases per 100,000 since the 1980s. As Australia's TB incidence is mainly confined to immigrants and aboriginal Australians, it focuses on outreach to high risk groups and has also improved its pre-immigration screening for the disease.

Although India, and to some extent China, still need to address existing disease issues, even wealthier countries must remain vigilant lest they leave openings which allow illnesses to spread.

Mental Illness: A long ignored NCD gets some attention

In healthcare, what gets measured, matters. According to WHO estimates from 2012, in terms of mortality, the direct burden of mental illness appears small in the countries in this study (figure 9). Almost all the deaths in this category arise from alcohol and drug abuse—addiction is a sub-category of mental illness in the figures. Low mortality is partly because classification of data obscures some of the problem: suicide, for example, is treated separately in global accounts.

However, the nature of the disease also affects the data. Mental illness tends to first develop when individuals are young and in most cases does not kill but persists over time. The figures for Years Lived with Disability (YLDs) give a starkly different picture to those of mortality and, in each of the five countries, between 20% and 30% of YLDs are from mental illness, with most of the burden from depression. In terms of DALYs, which balance YLDs and early mortality, the figures are somewhere in between.

DALYs and YLDs were introduced in the 1990s to measure health burdens along with mortality figures, and thus highlighted the extent to which this previously little-

acknowledged mental health issue was a problem.

Regardless of the figures, Professor Chee Ng, director of Asia-Australia Mental Health based at the University of Melbourne, said discussion about mental health is difficult. "Generally mental health is often stigmatised and not an attractive topic, unlike cancer or cardiovascular disease" says Professor Chee. "It has been hard to get the attention of politicians and the public even though the facts are there." Similarly, Dr Srinath Reddy said of India, "Mental illness is a major problem. It has been swept under the carpet for years but sporadic surveys suggest a growing harm."

In China and India, the situation remains stark, with mental health care largely non-existent and of a very poor standard. In the former, a 2012 Lancet article reported that an estimated 173 million people have a diagnosable mental health condition, of whom 158 million have never received any care. China has less than one psychologist per half a million people and, although it officially has around 1.5 psychiatrists per 100,000, only a fifth of these are fully qualified. India, meanwhile, has only 0.3 psychiatrists per 100,000 and one

Figure 9: Matters of the mind: Ignorance is bliss?

Mental health burden as proportion of total using different healthcare measures 2012

	Australia	China	India	Japan	South Korea
Deaths	1%	0%	0%	0%	0%
DALYs	13%	9%	6%	8%	14%
YLDs	25%	27%	22%	20%	30%

Source: WHO

psychologist per two million people.¹⁰ Institutional care provision can be even more worrying. The title of a recent Human Rights Watch report on 24 women's psychiatric hospitals in India—"Treated Worse than Animals"—accurately described its findings.

Difficulties with mental health care take a different form in Japan and Korea. The global consensus is now that those who are ill in this way should be treated largely in the community, not in hospitals. There, rather than receiving medical treatment for the biological symptoms of their conditions, those affected should obtain integrated medical, social, and employment services to help move toward "recovery"—a state in which patients can lead what they consider a meaningful life within the larger society.

Japan and Korea have been slow to move from the older, psychiatrist-controlled, institution-based medical model to a community-based, recovery one. The number of psychiatric hospital beds in Japan has dropped slowly, but at 2.7 per 100,000 people it's still nearly 60% higher than the next OECD country, and more than four times the average. In contrast, the number of such beds in South Korea has tripled over the last 20 years and the OECD has criticized the country for excessively long hospitalisations and involuntary admissions.¹¹

Professor Ng said that while the situation in Australia is comparatively good, a lot more needs to be done. "Its mental health system supports universal and affordable access to quality mental health, pharmaceutical and hospital services, while helping people to stay healthy through health promotion and illness prevention activities," he said. It also has examples of innovative, community-based service programmes which integrate mental health and other social services and foster good cooperation between relevant stakeholders. That said, "we still have a long way to go to address the growing mental health burden," he adds.

Despite the problems of mental health care in most of these countries, Professor Ng and others interviewees find reasons for optimism. Governments have realised that the issue needs addressing, and major reforms have recently been announced or are taking place in China, India, and Japan.

Dr Reddy also sees recent Indian reforms as a positive development, but he warns that "legislation only gives the framework but not the capacity to implement. There is still a great shortage of psychiatrists, psychologists and others." Nor are problems absent in wealthier countries. Professor Ng notes, "Progress is being made, but change takes time."

2

What does good look like?

Underlying the concern about the increase in NCDs is an acknowledgement that these diseases present particular challenges for most healthcare systems, which have historically focussed on acute, short-term care. Many NCDs require lengthy, potentially life-long management and Dr Srinath Reddy notes that effective healthcare that can treat such patients “will require a fair amount of revamping.”

A system that integrates prevention and healthcare, that is centred on empowered patients and organised through primary care providers has obvious benefits for management of NCDs. Furthermore, the basics of this effective care are similar for all countries, regardless of income, because they revolve around strategy more than medical technology. “In a specialist system everyone wants the next thing that goes bang,” said Professor Sanchia Aranda, president-elect of the Union for International Cancer Control “But you can improve outcomes by systematically applying what we already know. You don’t need new toys.”

Prevention

Disease prevention holds obvious attractions but sounds easier than it is. It begins with educating people about healthy choices. However, as Professor Shibuya points out, “changing individual behaviour is very hard,” in the face of social and environmental determinants. Another strategy therefore frequently draws more attention. Dr Srinath Reddy says prevention needs to be looked at across multiple response levels. “A lot of good can be done by population measures which don’t have high cost,” he said.

“Population prevention”—or laws, regulations and taxes that constrain the ability of individuals to make bad health choices—can cost less but frequently involves regulation, which can lead to resistance. Any prevention efforts can be completely undermined when the population is not convinced of the need to change. Effective prevention therefore also needs to change minds so that new laws are seen as an aid to better health rather than a hindrance to lifestyle choices.

Access

Access to healthcare needs to be comprehensive. India and China have the most obvious access problems in the countries in this study, especially in rural areas. Both have made important efforts to make universal healthcare a reality rather than a goal but continue to struggle. More economically developed countries, also have problems. Structures within health services can be complex for patients to navigate, according to Professor Bennett, sometimes making it difficult for them to get “the right care in the right place at the right time and over time.”

The patient at the centre

The consensus on effective NCD management is that patients must be partners in care rather than simply recipients of it. The Kaiser Permanente Triangle (figure 10) estimates that 70% to 80% of NCD patients could be best served by self-management supported by occasional consultation with health care providers. Only those with more serious complications should have more intensive services. The reason is

simple, according to Professor Juliana Chan, CEO of the Asia Diabetes Foundation. “Patients with diabetes will see their doctor three to four times a year. That’s only an hour’s treatment: patients have to learn how to look after themselves with support from their care teams.” Kin-ping Tsang, chair of the International Alliance of Patients’ Organisations goes further. “Patients should be involved at all levels and all points of the healthcare sector. Otherwise, healthcare professionals and governments may not meet the needs and preferences of patients,” he explains.

Patient empowerment, though widely accepted in principle, will require behavioural change by both patients and doctors, which can be difficult to achieve in practice. Mr Tsang said that patients must understand that they are “partners and stakeholders” in their care which will require more education. Dr Ali adds that “health education and literacy alone won’t change outcomes—knowing about your illness is one thing, but you still need to have the means and the motivation to change how you live in terms of incorporating healthful activities like eating a balanced diet, exercising, and adhering to medications and healthcare visits.” Getting more engaged patients also requires cultural change, says Dr Vivian Lin, director of health sector development at WHO Western Pacific: “In most countries when people get sick they want to be cured; they’re not necessarily going to be very

strongly oriented towards keeping themselves well. People don’t necessarily see disease prevention as a priority in their lives.”

Doctors, especially specialists, also need to start treating patients as partners, a shift that will be a particular challenge for Asian nations, according to Mr Tsang. “The culture is that the medical doctor and other healthcare professionals are king. Patients are not in a horizontal position with other stakeholders, but vertical - and lower. This needs to change,” he said.

Patient-centred care also looks at the patient’s entire set of medical—and sometimes even broader social—needs collectively, in an integrated way, rather than treating diseases in isolation.

Primary care focus

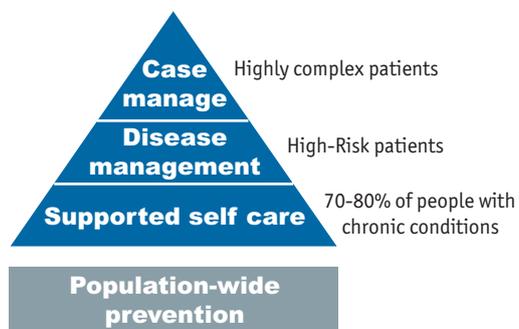
The key to achieving effective care coordination in every country in this study is for NCD management, and healthcare as a whole, to have a strong primary care focus. When working well, this can assist with opportunistic education and early detection as well as overall care management.

Achieving this, though, is not necessarily straightforward. Physicians do not always understand the needs of NCD patients. Problems can also arise from the structure of the health system. In several of the countries in this study general practitioners do not have a gatekeeper role, while patients and peers tend not to think highly of their services; in Japan they are not even a recognised specialty. Dr Lin explains that in such situations, “to develop a primary care workforce and get a community to believe that it is a quality workforce is not easy.”

What might make matters easier is primary care that is not physician-led. Professor Chan explains that “doctors have to know how to transfer knowledge to, and support, other health care professionals, such as nurses who are on average four time less expensive,” and are able to free up

Figure 10

The ‘Kaiser Triangle’, illustrating different levels of chronic care



Source: NHS and University of Birmingham.

physicians for more complex cases. Dr Srinath Reddy believes simple technology can also help build better primary care. “We don’t need doctors for all of this, although they may need to step in. Instead, it can be done using technology enabled front line health workers who can interface with population.” Such shifts, though, can run into resistance from doctors worried about their status.

This is not just a prescription for NCDs

A growing NCD burden may require a revamping of healthcare systems, but the changes are likely to help across the board as, broadly speaking, such an approach is effective for all conditions, including communicable disease. Professor Aikichi Iwamoto, chair of Japan’s National HIV Surveillance Committee, notes that one difficulty in dealing with the HIV/AIDS epidemic in much of Asia is “health systems in many countries are more adjusted to acute infections where people are cured by antimicrobials in five days,” than to chronic ones. Similarly, Ms Kumar believes that the biggest reason for the weakness of TB efforts is that they have been too physician-dominated and medicalised. She continues, “we need a complete change in how we think about TB, with solutions that are not just medical but are more people-centred, patient-centred.”

Dr Ali says although such a system is feasible, we need “to think in a more integrated fashion as we move forward managing the double or triple burdens of disease that these countries face in an efficient way,” rather than appearing to rob resource allocation from other diseases to pay for high profile and increasingly high cost NCDs.

Where change is most needed

Each element of an NCD-friendly health system can bring some benefit, but evidence shows that they work best together. “The direction you have to take is integration of prevention, long term care, medical care, etc.,” explained Professor Shibuya. None of the five healthcare systems this

report examines has fully created such an ideal, and this section examines the major challenges facing each.

Australia

Australia combines one of the world’s longest life expectancies with widespread chronic disease: 77% of residents have at least one such condition. The country has various valuable assets to manage its current disease load, including an established, universal-access healthcare system called Medicare; a strong emphasis on primary level care; and a hospital system that provides effective treatment for both chronic and acute patients. Its healthcare system is not an undue economic burden—spending on health makes up 11.5% of GDP, slightly over the OECD average—but Australia does have several notable weaknesses which reformers have been trying to address in recent years.

Fragmentation

According to Professor Bennett, the biggest challenge the Australian health system faces is connecting the different elements of care together, whether it be care in the community, in people’s homes or in hospitals. “People need help with navigating the complexity and getting connected care,” she said.

Part of the issue in Australia comes from constitutional divisions that make coordination of healthcare intrinsically difficult. The national government has responsibility for overall national health policy and funding Medicare. The latter includes the Medicare Benefit Scheme which subsidises general practice and medical specialist care out of hospitals and the Pharmaceutical Benefits Scheme. Individual states are in charge of public health and managing public hospitals, while both federal and state governments have a role in funding hospitals.

The other driver of fragmentation is too great a focus on providers rather than patients. This creates confusion for patients and leads

to lower spending on prevention, a problem common across many developed nations. A major government-commissioned review of Australia's healthcare system conducted in 2009 highlighted the issue. "Usually the patient...must find a way of seeing multiple health professionals while navigating across various locations, rather than health professionals functioning as a team, practising together and providing care around the whole needs of a person," the report says¹². Professor Bennett, who chaired the commission that conducted the review, says this still holds true in Australia today.

A lack of political consensus

The 2009 report initiated substantial political discussion on Australian healthcare reform, which culminated in a National Health Reform Agreement in 2011. The agreement was designed to strengthen integration and created a number of new bodies to improve healthcare delivery and integration, including the Australian National Preventative Health Agency. However, a change of government in 2013 saw the new cabinet roll back or discontinue much of the agreement. As Professor Bennett notes, "a challenge when you are a healthcare reformer is to make the changes that are implemented durable." This will continue to be a problem until politicians agree about the best way ahead.

China

The Chinese government has implemented extensive healthcare reform in recent years and most people can now access at least basic care. However, several on-going problems impede the effectiveness of healthcare providers in dealing with the country's NCD-heavy disease burden.

Primary care problems

One core element of China's healthcare reform was to move primary provision toward the centre of healthcare by encouraging greater use of local health centres and clinics, and local county hospitals. Investment followed and between 2009 and 2011, the government spent RMB47.15

bn (roughly \$7.4 bn at the time) on improving the infrastructure at 25,000 village clinics, over 2,000 community health centres, and a similar number of county hospitals.¹³

Since the reforms began, though, primary providers are not seeing the development of any gatekeeping or coordinating role. Instead, while the number of people going to large, urban tertiary hospitals has increased substantially, use of local, primary care facilities has been left unchanged and first line, county hospitals have been underused.¹⁴

The first factor driving this incongruous resource usage is a search for quality. According to Mr Liu, the large state system employs the best doctors in the best hospitals and has long discouraged these physicians from having any community-based practices of their own. "When good doctors are all locked into the big state hospitals and people see no good ones in the community, most people would rather go to the hospital, not just for inpatient and outpatient needs, but even for follow-up checks and prescriptions," he said. This results in large numbers of frustrated patients who wait for short consultations with overworked medical personnel, who can see up to 70 or 100 patients per day.¹⁵ "In clinics you see most staff and doctors are hungry," Liu added. "They don't have patients."

Another driver is monetary. Although most Chinese now have some form of health insurance, more than 800 million rural and unemployed urban residents are covered mostly for inpatient care in hospitals, according to Mr Liu.

Funding also blurs the line between primary and other care. Hospitals receive just 9% of their income from state subsidies. Most of the shortfall comes from mark-ups on drug sales and charges for services. This creates incentives for hospitals to over-prescribe medication and high-cost devices and to offer services that could be delivered more cost-effectively in community-based outpatient clinical settings.¹⁶

Mr Liu said this was a serious issue, particularly for NCDs. "What you need with a chronic disease can be best provided by a clinic, but now most patients would go to the big hospitals for even regular check-ups and prescriptions," he said. "We need a major change in how we organise services from hospital-centred to community-based."

The high cost of healthcare

The expansion of insurance coverage has led to a lower proportion of healthcare spending coming out of patients' pockets, but it has not solved the cost problem. All major insurance programs require substantial co-payments and a 2013 survey by Horizon Research Consultancy, an independent Chinese market research firm, found 87% of respondents said health care was more expensive now than it was before the reforms.¹⁷

The rate at which people experience catastrophic healthcare expense—defined as having to devote more than 40% of disposable income after food to medical care—has also remained at around 13% of the population annually, according to a number of academic studies. One of these, for the Bulletin of the WHO found, that 7.5% of all Chinese "non-poor households" were becoming poor as a result. Not surprisingly, these cost constraints are resulting in sub-optimal care.¹⁸

A decline in doctor-patient trust

China's healthcare problems reduce the chances for a collaborative relationship between medical personnel and patients, and cause enormous frustration for the sick. As the China Internet Information Portal, a government news organisation, put it "doctors and nurses are experiencing a crisis, and so is doctor-patient trust."¹⁹

This "crisis" is reflected in government figures. The number of incidents of patient violence against doctors in all Chinese hospitals rose from 20.6 annually in 2008 to 27.3 in 2012, according to the Chinese Hospital Association.

The violence is just the tip of the iceberg of declining confidence. A country-wide poll of

several hundred thousand people by *China Youth Daily* in November 2013 found that 67% of respondents did not trust doctors' professional diagnosis or treatment recommendations.²⁰

The Chinese government understands the on-going weaknesses in the system and has identified further changes, such as strengthening primary care, but continued efforts to build a system that can address China's healthcare needs will have to address patient frustrations and perceptions as much as supply issues.²¹

India

Some excellent health care facilities exist in India, a number of which commonly feature in international case studies on how to provide effective, high quality, specialist care accessible to rich and poor alike. The Narayana Hrudayalaya Heart Hospital, the Aravind Eye Care System and three Apollo Reach Hospitals all use innovation, cost efficiencies, and cross subsidisation to provide care to a wide range of patients, regardless of income.

As successful as they are, these examples are the exception in India, where healthcare as a whole is struggling to address its current disease burden. The key issues India faces are a lack of doctors, high costs and an epidemiological shift to NCDs, all of which leave the country with major healthcare challenges.

Lack of access to affordable care

The India Planning Commission estimated that the public health system, which currently provides only a minority of the country's care, lacked 600,000 doctors and 1 million nurses in 2008. With only 0.6 doctors per 1,000 population and 0.7 hospital beds per 1,000 people, numbers well below its emerging-market neighbour China (1.5 doctors and 2.6 beds per 1,000 people respectively), these figures are not surprising. Medical personnel are also concentrated in the cities, which leaves much of rural India, where the majority of the population lives, very poorly served.

What is available does not come cheap when compared to Indian incomes. Although the EIU estimates that total per capita healthcare spending will be only \$72 in 2015, three-quarters of that is from private sources. Most of this non-government spending—82% in 2012 according to the WHO—is directly out-of-pocket and the Indian government estimates that catastrophic healthcare costs drive as many as 63 million Indians, or roughly 5% of the population, into poverty annually.²²

According to EIU data, even a simple check-up at a family doctor consumes an average of 36% of monthly personal disposable income, a disincentive that has obvious implications for prevention and early diagnosis, let alone chronic disease management. Dr Sadikot notes that, “In India, the number of people with diabetes has reached 62 million, but half do not even know they have it.”

Lack of readiness for the emerging NCD burden

Although NCDs now make up over half of India’s disease burden, the healthcare system is unprepared to deal with them. The Indian government’s new draft National Health Policy says that “the effort against the growing burden of non-communicable diseases are nascent or initial steps [sic], with considerable distance to traverse before they become universal in outreach.” On mental health, the draft candidly admits to “a sad state of neglect.”²³

Dr Preetha Reddy agrees, describing the present health system as focussed on acute, episodic care. “Preventive care at the primary level is very weak; insurance covers inpatient curative care primarily,” she said. “Centres for long-term, chronic care are just about beginning to be set up, but are still largely for episodic treatment, like dialysis.”

The private sector could help fill some of the healthcare gaps in the secondary and tertiary sectors, according to Dr Preetha Reddy. However,

the large burden healthcare costs place on the average Indian and the shortage of trained doctors and nurses mean the state will need to find a way to pay for any large expansion of healthcare.

The national government is aware of this need. It has announced plans to double healthcare funding to around 2.5% of GDP and is considering declaring health care a fundamental right.²⁴ But the government has not said how it will find the promised money amid on-going austerity, which resulted in a nearly 20% cut to health spending in the previous budget.

Japan

Japanese healthcare has been an undeniable success story since the establishment of universal provision in 1961. Not only does the country have the world’s longest life expectancy, its healthcare spending as a proportion of GDP (10.5%) is close to the OECD average. Despite this record, concern is growing: in a 2010 poll 74% of respondents were somewhat or very worried whether they or their family would be able to get high quality care when needed.²⁵ Professor Shibuya notes that the system developed 50 years ago, when the population was young and the economy was booming, “now requires a comprehensive overhaul.”

Financial sustainability

Healthcare spending in Japan has risen rapidly in the past five years, increasing from 9.6% of GDP in 2010 to 10.5% in 2015. Japanese data shows that ageing has accounted for about half of the total growth in medical expenses since 1990 and the EIU forecasts that healthcare spending will continue to rise in the future, albeit more slowly.²⁶

Although much of Japanese healthcare is funded by social payments, about 10% comes directly from the government and it is ill placed to address rising costs after years of economic stagnation.²⁷ Japan’s debt to GDP ratio is 234% - the highest in the OECD and well above

Greece's (171%), according to the EIU - and although recent reforms have tried to place more responsibility for healthcare costs on private sources, a more efficient healthcare system is also needed.

Governance by providers

Traditionally the Japanese government has used control of the national fee schedule as its main instrument of healthcare policy, leaving governance to providers. The resultant, doctor-dominated environment has not always led to ideal levels of provision.²⁸

Japan has a low number of doctors (2.2 per 100,000) by OECD standards, partly due to strong opposition from the medical association to expanding their ranks, but one of the highest rates of physician consultations—around 14 per person annually, or more than one per month by everyone in the country. This frequently results in long waiting times for short interactions and allows little time for the complex cases common with NCDs. Certain specialities are also under-served, including radiology and diabetology, and the projected lack of nurses and carers to look after the aging population has led to government support for research into robots to fill these roles.²⁹

A hospital-focussed system

The Japanese healthcare system is far more hospital-based than those in other developed countries. It had 12.7 acute hospital beds per 1,000 people in 2014, the highest in the OECD and about triple the average. Patients also tend to stay longer, with the average stay of 18.5 days also the highest in the OECD and almost three times the mean.

Ageing again exacerbates the situation. Although the government has been trying for nearly a decade to create long term care facilities for the aged, hospitals too often remain long-term residences for the elderly, which is a costly solution. This and unusually long stays by international standards for various,

sometimes minor, ailments has led to an ironic situation: despite high bed numbers, ambulances often struggle to find space for patients with emergencies.

Despite the high numbers of in-patients, most hospital activity is actually out-patient. Individuals do not require referrals for care and primary care has traditionally been blurred with secondary and tertiary provision at hospital run clinics. Indeed, many of the country's large private hospitals started out as small private clinics that grew in size to rival public peers.³⁰ General practice is also not a recognised medical speciality in Japan and so GPs do not play a gatekeeper role, nor facilitate care coordination.³¹

As a recent OECD report noted, Japan's aging population makes primary care essential. "Keeping people healthy, economically and socially active will demand a health system that offers proactive, coordinated and personalised care to individuals with one or more chronic diseases. Strengthening primary care will be central to meeting these challenges."³² The lack of general care may, for example, explain the country's low rate of diagnosis for hypertension and poor control among those who are diagnosed.³³

Next steps

The government has introduced an extensive reform package with a vision for the health service in 2025. This will include, among other things, a much greater role for prevention, and closer integration of medical care, as well as medical and social care for an ageing population.

The roadmap, however, is less clear than the desired destination. "The government has passed a law, but the big question is who will do what and how. Will doctors become GPs? Will they do everything, or have specialists? Who will provide long-term care? There are major questions to be answered. It is a very political process," said Professor Shibuya.

South Korea

South Korea has built a comprehensive, universally accessible health care system very quickly, with its population receiving universal health care only in 1989 following the institution of National Health Insurance (NHI). Treatment is not free and co-payments for outpatient care range from 30% to 60%, although those with lower incomes pay less and a cap exists on overall annual spending to prevent catastrophic individual costs. The results have been largely positive and South Korea has achieved the largest increases in life expectancy in recent years of all five countries in this study.

These efforts have not ignored NCDs. South Korea was a cancer-control pioneer in the Asia-Pacific region. Similarly, nation-wide screening has been conducted for a long time for the main NCDs, according to Changbae Chun. Nevertheless, as it wrestles with its own rapidly ageing population and a substantial NCD burden, the country faces several important challenges.

A physician-dominated system

Many of the challenges in South Korea's medical system are similar to those in Japan. The number of doctors (1.7 per 1,000) is kept very low by international standards because of pressure from the Korean Medical Association. This results in short consultation times. Each doctor sees over 7,000 patients per year, on average, the highest level in the OECD and three times the mean.³⁴ Similarly, much care is hospital-based, with a blurred line between clinics and hospitals: it is not uncommon for the clinics to have acute care beds. Hospitals stays average 17.5 days, more than twice the OECD average, which also reflects a more institution-based approach to care, driven in part by the country's pay-for-service funding model.

According to Mr Chun, primary care is the biggest change needed for better NCD management. "At present, most people use hospitals to get service for their NCDs. We need a programme that emphasises primary care." Unfortunately,

primary physicians lack a gatekeeper role in an already undifferentiated system and the position of primary care has weakened in recent years. Moreover, it is unpopular with patients who perceive the service available as poor and unsatisfactory.³⁵ Large hospitals, which attract patients via their out-patient departments, also tend to oppose primary care gatekeepers.³⁶

This is leading to unnecessary hospitalisation for NCDs. For example, the OECD reports that Korea has one of the highest rates of potentially unnecessary admission for COPD and asthma, and that admissions for hypertension—a condition usually controllable through community-based management—have risen steadily and are now the fourth highest in the OECD.³⁷

The need to shift from care expansion to quality

Given its relatively short history of universality, South Korea's healthcare system is a work in progress. On-going expansion of NHI coverage is driving up costs. Although healthcare spending is still below the OECD average as a proportion of GDP, total healthcare spending rose at 8% per year between 2002 and 2012, more than double the OECD average. Looking ahead, current government policy favours still further increased investment for cancer, heart disease, and stroke.

However, monitoring of quality of outcome and even patient-safety is less common than in most other developed countries, which can lead to some worrying results. For example, although its institutions are typically furnished with technologically advanced equipment, the proportion of people who die within 30 days of being admitted to hospital for a heart attack in Korea is greater than in any other OECD country.³⁸ Better quality will not be only in the patients' interests, but also in the providers'. South Koreans are also becoming better educated healthcare consumers and are increasingly looking at quality metrics put online by the country's Health Insurance Review and Assessment Service before selecting treatment teams, according to Mr Chun.

Too little focus on mental health

All five countries in this study under-provide care for those living with mental illness, but the burden is particularly acute in South Korea. This is especially apparent in the frequency of suicide, which is the fourth leading cause of death after cancer, heart disease, and stroke, according to Statistics Korea. The suicide rate, which at 28.4 per 100,000 is the third largest in the world, roughly doubled between 2000 and 2011, according to the OECD.

Similarly, the proportional burden of mental illness to the overall load of years lived with disability is 30%, which is above that for the other countries in this study. Looking at risks, alcohol use—often associated with mental illness

as both cause and effect—leads to more DALY's per capita in South Korea than in any of the other five countries covered, and is the second biggest health risk after diet identified by Global Burden of Disease studies.

However, rather than providing community-based, integrated care, South Korea has responded with more long-stay institutions. Not only is it one of the few countries in the developed world to see a substantial rise in the number of long-stay psychiatric hospital beds, roughly three-quarters of residents in those institutions have been involuntarily admitted, usually at the formal request of family members.³⁹ Mental illness clearly requires more attention in South Korea. 

3

Examples of change in practice

No magic formula can instantly create a health system ideally suited to the evolving disease burdens of any country, including the five in this study. Instead, this section looks briefly at various ways that different health systems are trying to address important elements of their current challenges, as well as what lessons these experiences might hold.

Prevention that works

The idea of prevention is inherently attractive in countries where avoidable NCDs are growing in prevalence or already dominate the healthcare burden. However, simply telling people what is healthy frequently fails to yield any benefit and effective strategies require more thought.

Community outreach in South Korea

The Gangdong District of Seoul is achieving successful prevention by going into the community rather than waiting for individuals to access medical care.

In 2007, the district's local Public Health Centre began working with local government and community stakeholders to create a model for distributed health-counselling centres, which were eventually established at 16 of Gangdong's 18 Community Service Centres.

Each counselling facility is run by a nurse, who can help individuals over 30 years old to assess their NCD risk by doing a five point health check including abdominal circumference, blood pressure, blood sugar, neutral fat, and HDL cholesterol. The nurse can also provide advice on

healthy diets and lifestyle, and refer clients to community-based exercise groups or classes, as well as to healthcare providers where needed.

Taking health into the community in this way appears to be serving a need previously unmet by traditional medical care: 65,000 people have registered since the program began, roughly one-fifth of the target population. In terms of prevention, participants are also listening to the advice they receive. Of those registered, 32% showed improvement in hypertension and blood pressure, as well as weight loss, within the first six months. Other local governments in Korea are looking to replicate Gangdong's success.⁴⁰

Tobacco Control in Australia

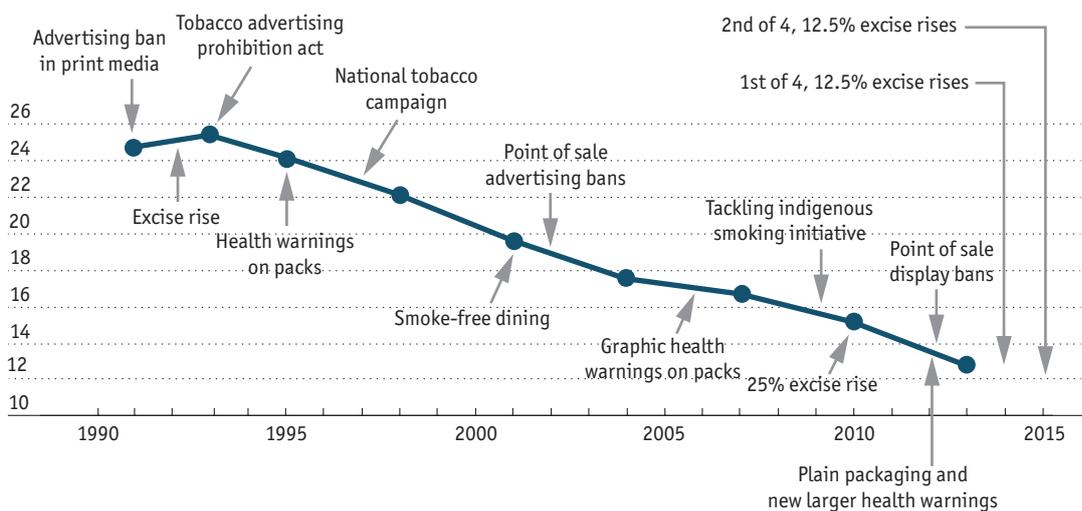
Australia has long been at or near the forefront of tobacco control. Its first government-funded anti-tobacco advertising campaigns began at the state level as early as 1971, and the national level in 1972. Thereafter it instituted, usually ahead of most other countries, the combination of bans on advertising and public consumption of tobacco now common in much of the world.

Most recently, it was the first jurisdiction in the world to mandate the introduction of plain packaging for cigarettes—a slightly inaccurate term for boxes that have no branding on them but do have graphic health messages about the dangers of smoking. The country's cigarette prices, already high by international standards, are also being increased further through a series of four annual excise tax hikes of 12.5% each, which began in 2013.

Figure 11

Decline in smokers

Smoking prevalence rates for 18 years or older and key tobacco control measures implemented in Australia since 1990



The results have been impressive. In the mid-1970s, 38% of Australian adults smoked but by 2013 just 13.3% of those over 18 smoked daily. Meanwhile, Australia's age-standardised mortality rates from lung, bronchial and tracheal cancers fell by 26% between 1990 and 2010, while those from COPD fell by 38%, according to Global Burden of Disease data.

Teasing out what worked among the country's many tobacco control efforts is difficult. First, the precise impact of any specific measure can arouse controversy given the economic and social stakes. For example, higher tobacco taxes can provide an incentive for higher levels of smuggling, but the actual extent is a matter of debate. Recent industry-funded studies by KPMG show a rise in the use of contraband tobacco to over 10% of total consumption, but the Australian government considers the figures flawed.⁴¹

Second, it is difficult to measure the exact impact of any individual intervention. For example, plain packaging was introduced along with a substantial cigarette tax hike. An academic analysis found that, while overall tobacco

consumption declined after the law was changed, lower cost cigarettes grabbed a larger part of the market.⁴² Third, as the chart in Figure 11 of prevalence rates for smokers aged 18 years or older shows, the decline in the number of smokers seems to be steady rather than influenced dramatically by any specific measure.

Taking the longer view, the success of tobacco control in Australia points to two key attributes. The first is consistency. Smoking rates saw an extended pause in their decline in the 1990s and, in the years before this, advertising efforts against tobacco had slackened and taxes were stable. A national government effort to reinvigorate the anti-tobacco campaign followed and the number of smokers resumed its steady drop.⁴⁴

Just as important has been comprehensiveness. According to Dr Bennett, success has come from "a multi-pronged approach, with lots of different interventions in sequence and parallel." Academic research supports this, with one examination of public health strategies to combat smoking published in the *BMJ Tobacco Control* journal concluding that "consistent and

inescapable messages from multiple sources appear to be key to success."⁴⁵

The push for universal healthcare in China

The Chinese government abandoned piecemeal healthcare change in 2009 and began a major new reform programme targeting five areas: expanding health insurance coverage; strengthening the primary care system; improving public health provision; establishing a compulsory essential medicines list with controlled prices; and reforming public hospitals. The reforms originally had a budget of \$124 billion, but by 2014 the country had spent around \$480 billion, with no financial end in sight.

As discussed earlier, these changes have not been universally successful. In particular, funding systems undermine good intentions in the areas of primary care and hospital reform, and a similar dynamic appears to be playing out with medications.⁴⁶

However, some very real gains have been made as a result of the reforms. The most frequently cited benefit, and what Gordon Liu calls the reform's "great success", is the now near-universality of health insurance. As of 2012, 95% of the population had some healthcare cover, up from just 80% in 2008 and 30% in 2005. The government's goal is to reach 98% by 2015.

Problems remain, as the health insurance benefits are far from comprehensive and many Chinese still face high costs. The financial benefits are also being felt more in urban areas—where insurance companies had a larger role even before 2009, and where the benefits are more substantial—than in rural ones.⁴⁷ True universality will take time.

Nevertheless, without these reforms, the situation would be far worse. As figure 12 shows, although out of pocket spending per person has been increasing, total per capita spending—which includes that by governments and insurers—has risen far faster, especially in urban areas. Rural residents have seen out-of-pocket spending growing slightly faster than income, but the Chinese living in cities, which is roughly half the population, have seen a decrease in health costs as a proportion of their overall spending.⁴⁸

The reforms have also resulted in greater usage of healthcare facilities and the number of doctor visits per person rose from 3.7 annually in 2008 to 5.1 in 2012. Similarly, the number of hospitalisations per 100 people grew over the same period from 8.7 to 13.2, an increase of over half.⁴⁹ Although hospital visits have grown much faster than primary provision, a number of key basic care indicators have also improved. Vaccination rates for measles, diphtheria, and tetanus were a bit above 90% before the reforms, but are now nearly universal, according to the World Bank. The proportion of women who had five or more antenatal visits during pregnancy also rose from 53% in 2008 to 63% in 2011, while the number choosing a hospital delivery increased from 90% to 96%, according to data from China's National Health Services Survey.

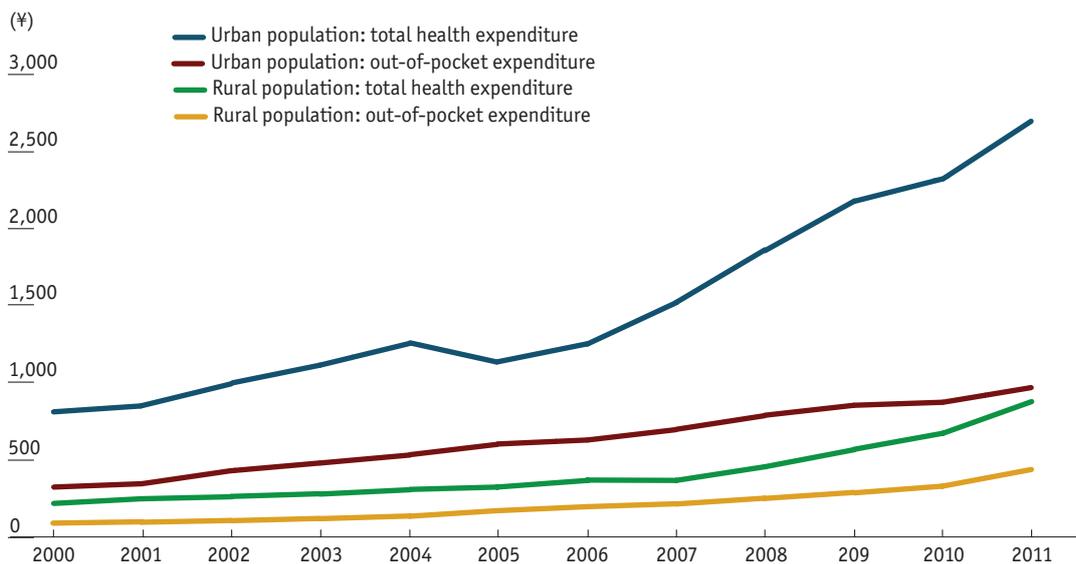
In both cases, the biggest gains were among women who lived in poorer, rural areas, showing that Chinese health reform is providing a level of better access to health care in places where the need has been greatest—a central element of universal health care.

However, as Lixin Jiang of the National Centre for Cardiovascular Disease in Beijing notes, there is still much work to do. "There has been a lot of improvement in the health system, especially with the increase in basic insurance, but there is also a huge challenge," she said.

Figure 12

Urban and rural health costs

Total and out of pocket payment per capita (Chinese yuan) by the urban and rural population in 2000-2012.



Patient Self-Management at the Centre

The Flinders Program is an effort to find better ways to support patients in their own self-management of chronic diseases.

It began in the late 1990s to improve the coordination of care for patients with major chronic conditions and multiple morbidities. Part of a broader, multimillion-dollar national programme, the first South Australian Coordinated Care Trials required a substantial amount of input from patients on their medical problems and the appropriate goals of their care. The degree of coordination they then received was based on a mathematical formula that linked the number of hours of oversight by a health professional to the clinical severity of their condition.

It soon became apparent that healthcare personnel were not following the formula and Professor Malcolm Battersby, director of the Flinders Human Behaviour and Health Research

Unit in South Australia, asked clinicians why. They said that it was the ability of patients to self-manage, not the clinician's view of the severity of a patient's condition, which defined how much co-ordination they were receiving.

This answer changed the course of the whole programme and lead Dr Battersby and his team to find ways to better support a patient's ability to self-manage. Their early research showed that a generic understanding of what good self-management involved, and how to achieve that, was missing. As a result, the Flinders team researched and defined seven principles of effective self-management. Using these principles, the researchers then developed tools to help clinicians and patients reach this self-management goal.

Drawing on cognitive behaviour therapy, the resultant Flinders Program begins with a meeting between the patient and a relevant healthcare worker that uses three different tools to identify issues, strategies and goals and to create an effective partnership. The first is a questionnaire completed by patients, self-rating their ability to

carry out twelve elements of self-management. The second tool is an interview by the health professional designed to explore the same twelve questions with a focus on discovering barriers to self-management. This process identifies which of these elements will become issues on the care plan. Finally, both parties complete the Problems and Goals Assessment—the third tool—in order to understand the biggest issues facing the patient. After working through these different steps—which usually takes around an hour—the two then create a joint care plan with agreed goals and interventions to be completed over the next year.

This scheme has shown itself adaptable to patients from a variety of cultural and socio-economic backgrounds. On the other hand, explained Dr Battersby, there can be a cultural difficulty with certain clinicians. “All of us as health professionals have been trained to solve problems, so it is a bit of a paradigm shift to sit down and ask ‘What do you think is the best way of doing such and such?’” he said. “That’s why we really focus on open-ended questions, listening and exploring what the person thinks. Who is in control of that interview is important.”

Establishing such a partnership and truly listening, however, is essential to supporting individuals as they manage their conditions. Not only does putting the patient’s views at the centre make it more likely that people will feel invested in their care plans, it can also make those plans more realistic by revealing the patient’s own over-riding priorities, which may not even be medical. An outside analysis of the Problems and Goals Assessments created during the programme found that only 70% of the issues raised in them related to the main medical problem, with the remaining 30% being psychosocial and other issues. Downplaying or ignoring that 30% is a recipe for failed disease management. Dr Battersby said this is the central element of self-management support: not to tell the patients what to concentrate on and how to do better but to “find out what you—as the

patient—think first, get on your page, prioritise what you want to work on and then, sooner or later, we’ll try to bring your medical problems into it,” and offer to work on them together.

Evidence from research trials so far indicates that the Flinders Program leads to improved health outcomes in a range of contexts, including Australian military veterans with co-morbid alcoholism and other psychological issues; cancer survivors; people with sleep apnoea; and individuals who need to undergo regular haemodialysis.⁵⁰ If results from larger trials continue to bear out its worth, the project may give concrete meaning to the oft-expressed wish for patient-centred care.

Innovative use of information and communication technology

For a field that relies so heavily on the application of science, healthcare is notoriously poor at using innovations from non-medical fields. However, two cases in the countries covered by this study point to innovative ways that information and communication technology (ICT) can help medical personnel better address healthcare burdens.

Big Data in Japan

In 2000, the Japanese Society for Cardiovascular Surgery (JSCVS) and the Japanese Association for Thoracic Surgery (JATS) collaborated to establish the Japan Cardiovascular Surgery Database. It holds comprehensive details of issues and complications on every operation recorded, allowing detailed analysis of the effect of interventions. Although the database started out with information from only five reporting centres, by 2013 it covered most cardiovascular operations in the country.

The aim of the database is to improve quality by standardising care around best practice and the results have been positive. A study of the first

adopters of the programme found that, between 2004 and 2007, the ratio of patients who died within 30 days of their procedures compared to the number who would have been expected to do so given the complexity of their cases declined by 24%. Institutions that had not been involved with the database for as long saw less improvement during those years, suggesting that the outcomes came at least in part from using data to improve procedures.⁵¹

Other specialities have noticed, according to Professor Shibuya. Since 2011, the National Clinical Database has been harnessing big data in other fields of surgery and this new database now covers 95% of all surgeries in Japan. More striking—copying another innovation originally made by cardiovascular surgeons—by 2017 medical board certification committees will evaluate the clinical practice of new applicants and renewals in light of these surgical databases.⁵²

The use of big data is not limited to operations. The Japan Diabetes Clinical Data Management Study Group has, since 2001, been analysing information submitted on the care of tens of thousands of patients with diabetes to discern best practice and improve quality. According to Professor Shibuya, this “kind of system has changed the mind set of doctors and improved population outcomes.”

Point of care diagnostics in India

Advanced use of technology is not limited to wealthier countries. India is turning to mobile technology to improve healthcare outcomes. It is testing a new portable device, called The Swasthya Slate, that piggy-backs on mobile telephone networks and enables users to conduct 33 different medical tests, ranging from detecting dengue fever to monitoring heart rate and blood sugar levels, using android-based mobile devices.

The Slate’s particular strength is that it can allow contact between a user—either a front-

line health worker or even a patient—and a GP or specialist who can quickly review the results. The Slate can also give protocol-driven advice on steps to take, depending on test outcomes.

Field test results have been impressive, according to its creators. In a trial in a small Punjabi city, the device enabled community-based health workers to screen four times more pregnant women for preeclampsia than had been tested in the previous year. The capacity it gave for quicker diagnosis also meant all affected individuals survived with treatment: in the previous year 80% of those diagnosed had died. With Norwegian government funding, India is now rolling out broader use of the Slate for maternal, reproductive, and child health care in parts of Jammu and Kashmir.

Although its trial has focussed on a narrow part of India’s disease burden, the Slate’s broad range of point-of-care tests makes it a highly versatile tool to address a wide variety of conditions. Dr Srinath Reddy, whose Public Health Foundation of India helped develop the device, said its “potential for non-communicable diseases is huge,” with many of the tests standard for the care of chronic conditions. Not only could it help community health workers diagnose and assist in the management of such conditions, if prices fall it could even provide more integrated care for patients. For example, a person with diabetes might be able to do a range of tests which the device itself could communicate to relevant specialists. The latter, in turn, could then interact with the patient through the device.

Reshaping care

A doctor-dominated, hospital-based healthcare system is not ideal, either medically or financially, for addressing current and expected disease loads in any of the five countries covered in this study. Two examples of efforts to introduce different systems show the potential of innovation, as well as its problems.

Long-term care insurance in Korea

Faced with a rapidly ageing population and the prospect of increasing levels of “social hospitalisation”—the costly use of hospitals as default long-term nursing facilities—Korea introduced mandatory long-term care insurance (LTCI) in 2008. Under the scheme, anyone over age 65 can apply to have their level of need assessed based on their physical and mental capacity, not on income. Applicants are classified into one of several categories, and those who face the sufficient constraints on daily living receive economic support based on the scale of their difficulties. Funding is given directly to providers, all of which are private, and which may be either institutional facilities or firms that provide services in the home. In both cases there is a co-pay (15% for in home services, 20% for institutional ones) although subsidies exist for those less able to pay.

The LTCI scheme has been successful in a number of ways. First, it has fostered a large private market, with the number of providers nearly doubling between 2008 and 2012. It has also remained in surplus, in part by starting with a restrictive set of benefits—it does not provide rehabilitation services, for example. It also began with supporting a small proportion of the elderly population—just 3.1%—but this had expanded to 5.8% by 2012 and the government expects to increase it to 7% by 2017.⁵³

The impact of LTCI on National Health Insurance is less clear because LTCI covers largely social care while the universal healthcare system provides medical cover for the same individuals. A study looking at more than three million hospital stays during the period before and after the introduction of LTCI found that, for those individuals whose LTCI benefits included institutional care, the average length of stay decreased by around a third—although the analysis indicated that this was only partly due to LTCI. On the other hand, those whose cover did not qualify them for institutional care—the small majority of those receiving LTCI benefits—saw a slight increase in time in hospital.⁵⁴

More surprising, another study found that increased spending by LTCI on services for the elderly correlated with increased outlay on healthcare.⁵⁵ The problem seems to be a lack of coordination between the two systems. Among the elderly, coordinated health and social care is a necessity: over 90% of LTCI patients have at least one chronic condition and home nursing visits are the least used of LTCI’s standard services because of a lack of systemic assessment of the need for such care. Moreover, economic incentives make it unappealing for doctors to work directly with long-term care facilities.⁵⁶ Worse still, they are legally not allowed to provide any medical services to these facilities, other than prescribing medications to residents. More comprehensive management of NCDs would require the elderly to contract directly with ordinary healthcare providers outside of the LTCI.⁵⁷ For LTCI to truly live up to its potential, better integration with healthcare is necessary.

Accredited Social Health Activists in India

Since 2005, the Indian government’s National Health Mission has been training Accredited Social Health Activists (ASHAs) to address poor healthcare provision in rural areas. These are women chosen by the villages in which they live to receive basic training programmes so that they can: be a first healthcare contact for the village, even able to dispense certain basic medicines; promote awareness and provide healthcare education for the community; and act as a link between the village and the formal healthcare system. Although they do not receive a salary, ASHAs are paid small amounts for specific, individual actions, like bringing a pregnant woman to have her baby in a healthcare facility or a child in for immunisation.

The programme is now huge, with roughly 900,000 trained ASHAs and they have been extremely valuable in specific areas. According to recent academic research, within three years of their introduction into Indian states that had the poorest overall health outcomes, ASHAs

increased the proportion of children receiving certain basic vaccines by 14 to 22 percentage points and reduced the number who got no vaccinations by up to 16 percentage points, depending on the state. The study found that their major contribution was raising awareness of the need for, and availability of, vaccinations.⁵⁸ ASHAs have also done a good job in terms of maternal health care, according to Dr Reddy, and have been particularly effective in increasing the extent of antenatal care used.⁵⁹

The danger is overestimating what ASHAs as a group can do without greater investment.

Although properly trained ASHAs could make a positive contribution to NCD care, a variety of studies suggest that the current level of medical education for ASHAs is insufficient even to complete their present tasks. A substantial minority of these workers also feel they are already not paid enough for the work they do, although this varies by state.⁶⁰

ASHAs are an excellent idea and they have already brought benefits to Indian healthcare but expanding their role will require more money and better education.

Conclusion

Shifting landscape

The five countries in this study are highly diverse and it's therefore no surprise that an examination of each nation's health burdens, approach to addressing problems, and ideas for change show marked differences. However, a number of themes repeatedly appear.

NCDs will be the main challenge of the future.

Non-communicable diseases already make up the majority of the health burden in all five countries and dominate it in four, with India likely to catch up soon. This does not mean that health systems can ignore infectious diseases - that is a recipe for their resurgence—but it does mean a greater focus on the needs of NCD patients is essential.

All of the health care systems need work in order to address this challenge. Health systems in all of these nations were created to address acute conditions and none has fully made the transition to provide the best care for NCDs, or even some long-term infectious diseases. The problems are most obvious in India and China but wealthier countries still have important weaknesses.

Prevention remains under-used. Prevention is difficult, but the large majority of NCDs can be stopped before they start. Every country needs to find ways to address its distinct set of risks,

be they fat, salt, underactivity, pollution, or tobacco, to name a few. Effective prevention means thinking beyond traditional healthcare, whether by going into the community or taking a whole of government approach that gives a consistent set of messages and incentives.

New structures and tools are necessary. The region's largely overworked doctors are too few to address current health loads in most countries. Doctor-dominated care is also too expensive for dealing with large numbers of NCDs. A greater focus on primary care is an important first step where this is under-used, but is only part of the story. Greater use of other health care personnel, such as specialist nurses or community health care workers, the development of institutions better placed to provide care such as long-term care institutions for the elderly, and even non-medical technology can all lead to better outcomes at lower cost.

Organisation has to be around the patient not the provider. Patient-centred care is too often just a pious aspiration. Now it is a necessity in order to meet the healthcare challenges facing every country. Patients must be given the ability to care for themselves as much as possible, which will mean them being partners in, rather than more or less passive recipients of, care. This will require cultural change to varying

degrees. In particular, medical practitioners will have to learn how to work with, and listen to, patients better and the latter will need to take responsibility for understanding and managing their conditions. Without this, secondary prevention—and reduction of the NCD burden—will be a Herculean task.

Finally, for all the weaknesses of health care in each of the five countries, it is important to remember that people in every one of them are living longer, healthier lives, and improvements

are continuing in each. The message is not one of despair, but the need for change.

As Dr Lin explains, the current health burden, especially the growth of NCDs “is very costly for health systems, for individuals, for families, for workplaces. We can help make people’s lives better. A continuum of care needs to be in place,” he said. It’s the transition in our thinking and our approach, rather than just an epidemiological transition that’s important. We can do better.”

- ¹ Global Burden of Disease figures taken from Institute for Health Metrics and Evaluation website, “GBD Compare”, 2013, <http://vizhub.healthdata.org/gbd-compare>. Unless otherwise stated mortality and DALY figures are age-standardised.
- ² WHO, *Global status report on noncommunicable diseases 2014*, 2014.
- ³ David Bloom et al., “The Economic Impact of Non-communicable Disease in China and India: Estimates, Projections, and Comparisons,” *National Bureau of Economic Research Working Paper 19335*, August 2013.
- ⁴ See Hirotsugu Ueshima, “Cardiovascular Disease and Risk Factors in Asia: A Selected Review,” *Circulation*, 2008.
- ⁵ For the WHO’s view, see WHO Expert Consultation, “Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies,” *Lancet*, 2004.
- ⁶ WHO, *Global Tuberculosis Report 2014*, 2014.
- ⁷ Detailed TB figures are from the WHO Global TB Database (<http://www.who.int/tb/country/data/download/en/>) and EIU calculations.
- ¹⁰ Yu-Tao Xiang et al., “Mental health in China: challenges and progress,” *Lancet*, 2012. Data on number of mental health workers from WHO Global Health Observatory Data Repository, <http://apps.who.int/gho/data/node.main.MHHR?lang=en>
- ¹¹ S O’Connor, *Mental Health in Korea: OECD Review and Recommendations: proceedings of the International mental health seminar, 2012*. For bed numbers see OECD Health Statistics 2014 – Frequently Requested Data, <http://www.oecd.org/els/health-systems/oecd-health-statistics-2014-frequently-requested-data.htm>
- ¹² National Health and Hospitals Reform Commission, “A Healthier Future For All Australians: Final Report,” 2009
- ¹³ Zhu Chen, “Progress and Prospect of Health Care Reform in China,” Address to Harvard China Fund, May 2012, http://hcf.fas.harvard.edu/files/hcf/files/chenzhu-keynote-may8_1.pdf
- ¹⁴ Changjiao Sun et al., “Challenges Facing China’s Public Health and Primary Health Care in Health Care Reform,” *Journal of Vascular Medicine & Surgery*, 2014.
- ¹⁵ Frank Langfitt, “In Violent Hospitals, China’s Doctors Can Become Patients,” NPR, 6 November 2013; Christopher Beam, “Under the Knife: Why Chinese patients are turning against their doctors,” *New Yorker*, 25 August 2014.
- ¹⁶ “Physician, heal thyself” *The Economist*, 1 February 2014.
- ¹⁷ Yanzhong Huang, “What Money Failed To Buy: The Limits Of China’s Healthcare Reform,” *Forbes Asia*, 4 March 2014.
- ¹⁸ Ye Li et al., “Factors affecting catastrophic health expenditure and impoverishment from medical expenses in China: policy implications of universal health insurance,” *Bulletin of the World Health Organization*, 2012; QH Wu, et al., “Effect of health insurance on reduction of catastrophic health expenditure in China,” *Chinese Journal of Health Policy*, 2012; *Zhonghua Wang et al.*, “Catastrophic health expenditures and its inequality in elderly households with chronic disease patients in China,” *International Journal for Equity in Health*, 2015.
- ¹⁹ Liu Qiang “Healthcare reform rolls on: What’s next?” 10 November 2013, China.org.cn, http://www.china.org.cn/china/third_plenary_session/2013-11/10/content_30553575.htm
- ²⁰ “87.4%受访者期待重建医患信任 [87.4% of respondents expect to rebuild trust between doctors and patients],” *China Youth Daily*, 12 November 2013.
- ²¹ “More measures expected in China’s healthcare reform,” *China Daily USA*, 17 October 2014.
- ²² “63 million people faced with poverty due to healthcare expenditure,” *Times of India*, 4 January 2015.
- ²³ Ministry of Health & Family Welfare, “National Health Policy 2015,” 2015.
- ²⁴ “Modi Government Wants To Make Health Care A Fundamental Right, Days After Slashing Health Budget,” *International Business Times*, 8 April 2015.
- ²⁵ Health Policy Institute, Japan, “2010 Public Opinion Survey on Healthcare Policy,” http://www.hgpi.org/handout/2010-02-15_25_787459.pdf
- ²⁶ Yukihiko Matsuyama, “Aging and the Governance of the Healthcare System in Japan,” Breugel Working Paper, 2014.
- ²⁷ Shibuya et al., “Future of Japan’s system of good health at low cost with equity: beyond universal coverage,” *The Lancet* 2011.

- ²⁸ For full discussion, see Hideki Hashimoto et al., “Cost containment and quality of care in Japan: is there a trade-off?” *The Lancet*, September 2011.
- ²⁹ “Difference Engine: The caring robot,” *The Economist*, May 2013.
- ³⁰ Michael Reich et al., “50 years of pursuing a healthy society in Japan,” *The Lancet*, 2011.
- ³¹ Nabutaro Ban and Michael Fetters, “Education for health professionals in Japan—time to change,” *The Lancet*, 2011.
- ³² “OECD Reviews of Health Care Quality: Japan—Raising Standards Assessment and Recommendations,” 2014.
- ³³ For poor control of hypertension, see Nayu Ikeda, “What has made the population of Japan healthy?” *The Lancet*, 2011.
- ³⁴ Randall Jones, “Health-care Reform in Korea,” OECD Economics Department Working Papers No. 797, 2010.
- ³⁵ Minsu Ock et al., “Perceptions of primary care in Korea: a comparison of patient and physician focus group discussions,” *BMC Family Practice*, 2014.
- ³⁶ Randall Jones, “Health-care Reform in Korea,” OECD Economics Department Working Papers No. 797, 2010.
- ³⁷ OECD, “Health Care Quality Review: Korea,” 2012.
- ³⁸ OECD, “Health Care Quality Review: Korea,” 2012.
- ³⁹ S O’Connor, “Mental Health in Korea: OECD Review and Recommendations: proceedings of the International mental health seminar,” 2012; Korean Alliance on Mental Illness, “Parallel report to the UN Committee on the Rights of Persons with Disabilities: The critical situations of people with psychosocial disabilities in Korea,” 2014.
- ⁴⁰ “Community-based NCD prevention in the Republic of Korea”, *WHO Features*, 2014; “Seoul’s Gangdong-Gu Office operates Health Counseling Center,” Gangdong-gu Office Press Release, February 2015.
- ⁴¹ KPMG, “Illicit tobacco in Australia 2014 Half Year Report,” 2014; Sir Cyril Chantler, “Standardised packaging of tobacco,” 2014.
- ⁴² Michelle Scollo et al., “Changes in use of types of tobacco products by pack sizes and price segments, prices paid and consumption following the introduction of plain packaging in Australia,” *Tobacco Control*, 2015.
- ⁴³ Chart from Australian Department of Health, “Tobacco key facts and figures,” updated February 2015. <http://www.health.gov.au/internet/main/publishing.nsf/Content/tobacco-kff>
- ⁴⁴ For a history of anti-smoking efforts, see Australian Government Preventative Health Task Force, *Australia: The Healthiest Country by 2020 Technical Report 2 – Tobacco control in Australia: making smoking history*, 2009.
- ⁴⁵ John Pierce et al., “What public health strategies are needed to reduce smoking initiation?” *Tobacco Control*, 2012.
- ⁴⁶ Yang Li et al., “Evaluation, in three provinces, of the introduction and impact of China’s National Essential Medicines Scheme,” *Bulletin of the World Health Organisation*, 2013; Yan Song et al., “Effects of the National Essential Medicine System in reducing drug prices: an empirical study in four Chinese provinces,” *Journal of Pharmaceutical Policy and Practice*, 2014.
- ⁴⁷ Qun Meng, “Trends in access to health services and financial protection in China between 2003 and 2011: a cross-sectional study,” *The Lancet* 2012.
- ⁴⁸ For a detailed discussion of the differing financial impact, see Qian Long et al., “Changes in health expenditures in China in 2000s: has the health system reform improved affordability,” *International Journal for Equity in Health*, 2013.
- ⁴⁹ Bernhard Schwartländer, “China Health Care Reform: Who Gains and Who Loses?” World Health Organization Presentation, Beijing, China, September 2014.
- ⁵⁰ Malcolm Battersby et al. “A randomised controlled trial of the Flinders Program™ of chronic condition management in Vietnam veterans with co-morbid alcohol misuse, and psychiatric and medical conditions,” *Australian and New Zealand Journal of Psychiatry*, 2013; Sharon Lawn et al., “A pilot study of a healthy lifestyle self-management intervention with cancer survivors,” *Asia-Pacific Journal of Clinical Oncology*, 2013; S. Garner et al., “Flinders chronic disease management program for moderate-severe OSA – Can we do more than treat the OSA?” *Journal of Sleep Research*, 2011; Jessica Chan et al., “A pilot study to assess the efficacy of the Flinders Program of Chronic Condition Self-management on the health and wellbeing of haemodialysis patients,” *Renal Society of Australasia Journal*, 2014.
- ⁵¹ Hiroaki Miyata et al., “Effect of benchmarking projects on outcomes of coronary artery bypass graft surgery: Challenges and prospects regarding the quality improvement initiative,” *The Journal of Thoracic and Cardiovascular Surgery*, 2012.

- ⁵² Arata Murakami et al., "The National Clinical Database as an Initiative for Quality Improvement in Japan," *Korean Journal of Thoracic and Cardiovascular Surgery*, 2014.
- ⁵³ Yongho Chon, "The Expansion of the Korean Welfare State and Its Results – Focusing on Long-term Care Insurance for the Elderly," *Social Policy & Administration*, 2014.
- ⁵⁴ Kyung-Rae Hyun et al., "Does long-term care insurance affect the length of stay in hospitals for the elderly in Korea?: a difference-in-difference method," *BMC Health Services Research*, 2014.
- ⁵⁵ Jaeun Shin, "Long-Term Care Insurance and Health Care Financing in South Korea," KDI School of Public Policy and Management Working Paper 13-08, 2013.
- ⁵⁶ Im-Oak Kang et al., "Role of Healthcare in Korean Long-Term Care Insurance," *Journal of Korean Medical Science*, 2012.
- ⁵⁷ Chang Won Won, "Elderly long-term care in Korea," *Journal of Clinical Gerontology & Geriatrics*, 2013.
- ⁵⁸ Tanvi Rao, "The Impact of a Community Health Worker Program on Childhood Immunization: Evidence from India's 'ASHA' Workers," 2014, Available at Social Sciences Research Network <http://ssrn.com/abstract=2444391>
- ⁵⁹ Manish Singh et al., "Utilization of ASHA services under NRHM in relation to maternal health in rural Lucknow, India," *South East Asia Journal of Public Health*, 2012; Deepthi Varma et al., "Increasing Institutional Delivery and Access to Emergency Obstetric Care Services in Rural Uttar Pradesh," *The Journal of Family Welfare*, 2010.
- ⁶⁰ Nirupam Bajpai and Ravindra Dholakia, "Improving the Performance of Accredited Social Health Activists in India," Columbia University Global Centers South Asia Working Paper 1, 2011; Hema Bhatt, "A Rapid Appraisal of Functioning of ASHA Under NRHM in Uttarakhand, India," report for École polytechnique fédérale de Lausanne Cooperation & Development Centre, 2012; Saurabh Shrivastava and Prateek Shrivastava, "Evaluation of trained Accredited Social Health Activist (ASHA) workers regarding their knowledge, attitude and practices about child health," *Rural and Remote Health*, 2012.

While every effort has been taken to verify the accuracy of this information, The Economist Intelligence Unit Ltd. cannot accept any responsibility or liability for reliance by any person on this report or any of the information, opinions or conclusions set out in this report.

LONDON
20 Cabot Square
London
E14 4QW
United Kingdom
Tel: (44.20) 7576 8000
Fax: (44.20) 7576 8500
E-mail: london@eiu.com

NEW YORK
750 Third Avenue
5th Floor
New York, NY 10017
United States
Tel: (1.212) 554 0600
Fax: (1.212) 586 1181/2
E-mail: newyork@eiu.com

HONG KONG
1301 Cityplaza Four
12 Taikoo Wan Road
Taikoo Shing, Hong Kong
Tel: (852) 2585 3888
Fax: (852) 2802 7638
E-mail: hongkong@eiu.com

GENEVA
Rue de l'Athénée 32
1206 Geneva
Switzerland
Tel: (41) 22 566 2470
Fax: (41) 22 346 93 47
E-mail: geneva@eiu.com