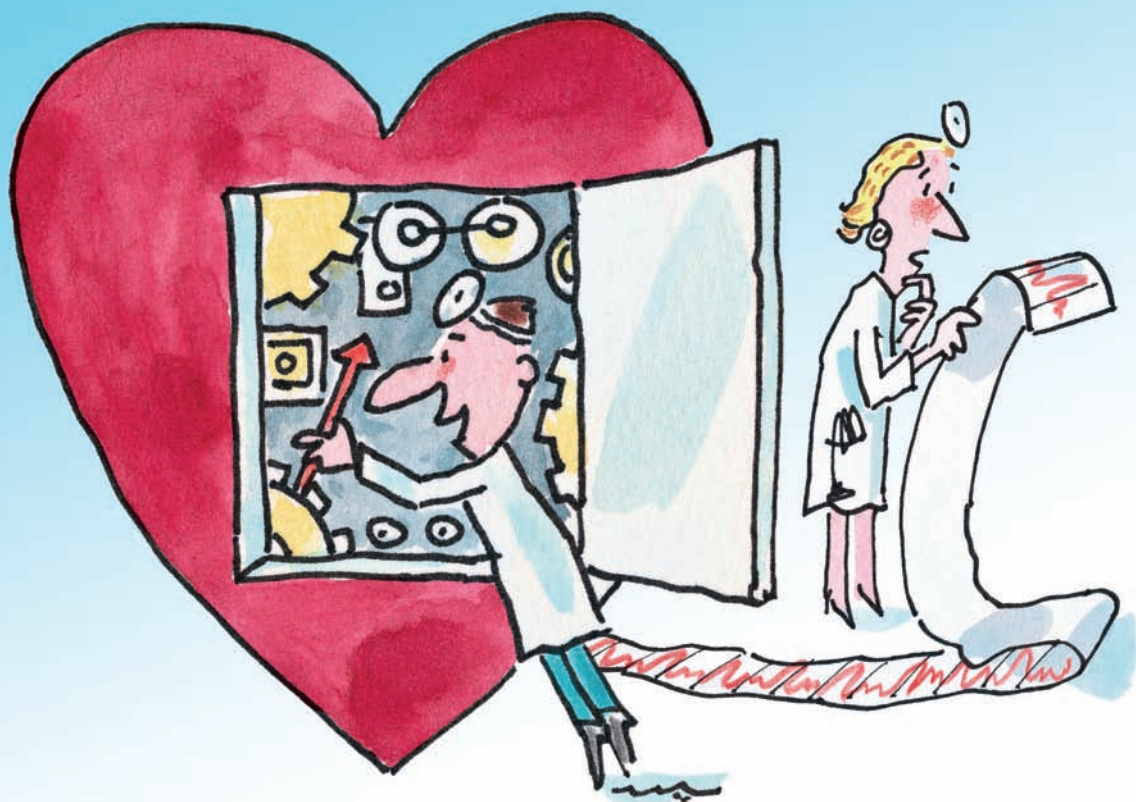




OECD Reviews of Health Care Quality

KOREA

RAISING STANDARDS



OECD Reviews of Health Care Quality: Korea

RAISING STANDARDS



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Foreword

This report is the first of a new series of publications reviewing the quality of health care across selected OECD countries. As health costs continue to climb, policy makers increasingly face the challenge of ensuring that substantial spending on health is delivering value for money. At the same time, concerns about patients occasionally receiving poor quality health care have led to demands for greater transparency and accountability. Despite this, there is still considerable uncertainty over which policies work best in delivering health care that is safe, effective and provides a good patient experience, and which quality-improvement strategies can help deliver the best care at the least cost. *OECD Reviews of Health Care Quality* seek to highlight and support the development of better policies to improve quality in health care, to help ensure that the substantial resources devoted to health are being used effectively in supporting people to live healthier lives.

Korea is an ideal place to start this new series. Few countries have had as remarkable an expansion in health coverage over the past three decades. That Korea has achieved this at modest costs relative to other OECD countries is all the more remarkable. However, it is for the magnitude of its looming challenges – an ageing population, rapidly rising costs and a growing chronic disease burden – that Korea is now pursuing further reforms. The challenges that Korea faces are common to many OECD countries, and will demand that policy makers re-orient health care to prioritise quality while containing costs. This report seeks to provide constructive advice to further these efforts, informed by the experience of OECD countries at large.

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Acronyms and abbreviations

ADL	Activities of daily living
AMI	Acute myocardial infarction
APN	Advanced practice nurse
CABG	Coronary artery bypass graft
COPD	Chronic obstructive pulmonary disease
CT	Computed tomography
CVD	Cerebrovascular diseases
DRG	Diagnosis-related group
DUR	Drug Utilisation Review
EDI	Electronic Data Interface
EQMASS	Quality Measurement of Stroke of Care System
GDP	Gross domestic product
GMP	Good manufacturing practices
HEDIS	Healthcare Effectiveness Data and Information Set
HIRA	Health Insurance Review and Assessment Service
ICD	Implantable cardioverter defibrillator
IHI	Institute for Healthcare Improvement
IND	the Investigational New Drug
IDF	International Diabetes Federation
IHI	Institute for Healthcare Improvement
KABON	Korean Accreditation Board of Nursing
KAMS	Korean Academy of Medical Science
KCDC	Korean Centre for Disease Control
KFDA	Korea Food and Drug Administration
KHA	Korean Hospital Association
KMA	Korean Medical Association
KNHANES	Korean National Health and Nutrition Examination Survey
KOIHA	Korea Institute for Healthcare Accreditation
KRW	Korea won
MAP	Medical Aid Programme
MIHWA	Korean Ministry of Health and Welfare
MRI	Magnetic resonance imaging
NECA	National Evidence-based Healthcare Collaborating Agency
NHI	National Health Insurance

NHIC	National Health Insurance Corporation
NSCR	National Strategic Co-ordinating Centre for Clinical Research
PCI	Percutaneous Coronary Intervention
SNUBH	Seoul National University Bundang Hospital
TIA	Transient ischemic attack
VIP	Value Incentive Programme

Executive summary

This report reviews the quality of health care in the Korean health system. It begins by providing an overview of the range of policies and practices and the role they play in supporting quality of care in Korea today (Chapter 1). It then focuses on three key areas: using health financing to drive improvements in the quality of health care (Chapter 2), strengthening primary care in Korea (Chapter 3), and improving care for cardiovascular diseases (Chapter 4). In examining these areas, this report seeks to highlight best practices and provide recommendations to improve the quality of health care in Korea.

Within less than 30 years, Korea has gone from having a limited medical infrastructure and a fragmented health financing system with several insurance schemes covering a relatively small share of the population to establishing a health care system characterised by universal coverage and substantial acute medical facilities. Even after achieving universal coverage in 1989, the pace of reform in the Korean health system has not slowed. At the turn of the century, the functions of prescribing and dispensing of pharmaceuticals were separated (the former to doctors and the latter to pharmacists), and the large number of autonomous insurance societies were consolidated into a single national insurer. A legacy of this continuous period of ongoing change is that efforts to improve the quality of care are not embedded in the Korean health system. At the provider level, quality of care is often driven by motivated individuals that choose to prioritise this. At the national level, policy makers have an institutional architecture that allows them to improve the quality of care, but often struggle to prioritise this over other objectives.

The Korean health system needs to shift its focus from an ever-continuing expansion of acute services to be prepared to deal with the rapid population ageing that Korea has begun experiencing and the rising incidence of chronic diseases. The financial starting point for dealing with these challenges makes health care reform in Korea all the more necessary: Korea is already experiencing growth in health care expenditure per capita that is amongst the fastest in the OECD, and double the average of OECD countries over the past decade. More spending does not necessarily lead to

higher quality. Indeed the opposite is possible – where the likely over-provision of health services to patients by Korea’s hospitals today is a significant concern for the quality of care. Policy makers should seek to introduce payment systems that encourage an appropriate amount of care being delivered to individual patients when they visit a hospital. These reforms ought to be combined with greater control of the overall budget for hospitals. In this way, policy makers can influence where money is spent, and channel spending growth to more cost-effective services beyond hospital doors. This will help patients avoid hospital admissions (or re-admissions) in the first place. The single insurer is Korea’s foremost institutional strength in achieving these reforms to improve quality, but doing so will require Korea’s single insurer to become a proactive purchaser and not simply a passive payor.

The key policy priority for improving the quality of care in Korea should be the development of a strong primary care sector. This will be critical to ensuring that the Korean health care system can support patients in co-ordinating their ongoing health needs across multiple health services and to help them undertake actions to moderate the risk of their condition. This will require investments to scale up the primary care sector – for example, by supporting the expansion of successful models of care, and higher remuneration for cost-effective patient services such as patient counselling and lifestyle modification. A stronger primary care sector will also require a larger, dedicated workforce of primary care professionals. These investments will need to be consistent with developing strong primary care institutions in the long term. At the most immediate level, best practice from OECD countries suggest that group practice can help improve the quality and co-ordination of care. These practices ought to be supported by regional institutions – which can provide the means for the insurer to channel specific resources to those communities most at need. To inform this, Korea will need better measures of quality of care along regional boundaries.

There is also considerable scope for targeted and high-impact initiatives to deliver improvements in the quality of care today. The most pressing is to develop better systems to monitor individual clinician performance, which can identify breaches in patient safety and provide a means for patients to provide feedback on the quality of care they experienced. This ought to be complemented with greater efforts to encourage clinicians to keep their skills up-to-date through continuing education. Korea already has a best practice system for hospital accreditation, but too few hospitals are being accredited. Efforts to extend the scope of accreditation beyond hospitals are commendable, and would be further enhanced by extending accreditation to primary care. Similarly, Korea has world class information technology, as

demonstrated in its Drug Utilisation Review. However, the application of this information infrastructure ought to be extended beyond pharmaceuticals. Patient histories should be made available (within a privacy framework) to help providers improve the appropriateness of the care they provide.

The various strengths and areas for improving the quality of care across the Korean health system at large are mirrored in the quality of care for cardiovascular conditions. While variations exist across the country, Korea's hospital sector delivers high quality cardiovascular care. This is likely to be the consequence of policies for cardiovascular care that reflect the same hospital-focused approach to health policy that Korea has for the system as a whole. The focus for the future ought to be outside hospitals: by preventing cardiovascular conditions through modifying risky behaviours, helping patients manage their condition before they are admitted to hospital, improving ambulance services and providing comprehensive rehabilitation to support recovery.

By pursuing a combination of policy reforms at a system-wide level and targeted reforms to address particular shortfalls, there is considerable scope to improve the quality of care in the Korean health system. This report contains the OECD's recommendations to help Korea do so.

Assessment and recommendations

Korea has undergone a remarkable increase in economic and human development over the past three decades. Rising standards of living have been accompanied by major improvements in the availability of health care services, underpinned by the rapid expansion of health insurance coverage. Remarkably, Korea today combines one of the highest life expectancies in the world with one of the lowest levels of health care expenditure amongst OECD countries (6.9% of GDP in 2009). Hospitals are more likely to be available, and equipped with cutting-edge medical technologies, than in most other OECD countries. Two decades of pursuing reform has not only expanded coverage but also delivered administrative savings through the consolidation of insurers under the publically-owned National Health Insurance Corporation. The development of the Korean health system over the past two decades serves as a model for countries seeking to deliver universal coverage for health care through social insurance at a reasonable cost.

Having now consolidated its achievements, Korea's health care system needs to shift its focus from simply supporting an ever-continuing expansion of acute care services. A health system operated along these lines will not be well prepared for the challenge of chronic diseases and disabilities that will come with Korea's wealthier and older population. Recent lifestyle changes, such as a shift towards more western diets, have resulted in a steady increase in the fat intake and increases in obesity levels (albeit from a low level). While low compared with other OECD countries, alcohol consumption is increasing. Smoking rates remain persistently high, with more Korean men smoking on a daily basis than in all OECD countries other than Turkey and Greece. These indicators of risky behaviours foreshadow the twin challenges of chronic disease and ageing that will continue to compound pressure on the health system. Health spending per capita in Korea has already been growing at nearly 8% a year since 2002 – the fastest amongst OECD countries and more than double the OECD average of 3.6% a year over the same period. Korean policy makers face a considerable challenge: continued increases in spending at these rates of growth are clearly unsustainable. Yet maintaining a system that is focused on acute care will only perpetuate high growth in health care spending.

Despite the rapid increase in investment and physical resources that Korea has experienced over the past years, it is not evident that the system is delivering proportionately higher quality care. Korea has some of the highest rates of potentially avoidable hospital admissions for the common respiratory conditions of asthma and chronic obstructive pulmonary disease (COPD). Similarly, admissions to hospitals of people suffering from high blood pressure (a potentially manageable condition) have increased steadily in recent years to now be the fourth highest amongst OECD countries. Within hospitals, the proportion of people who die within 30 days of being admitted into hospital for acute myocardial infarction in Korea is the highest amongst OECD countries. More generally, once admitted to hospital for inpatient care, a Korean patient is likely to remain there for more than twice as long as the average of nine days across OECD countries. These relatively poor outcomes are likely to reflect that Korea has had considerable policy challenges, and focused its efforts over past years on expanding coverage and reducing out-of-pocket costs. Looking ahead, the major challenge for Korea's health care system over the next decade should be to make quality of care and value for money the operating principles for health policy.

Quality of care policies in Korea are patchy. This is reflected in three core challenges for improving the quality of care that consistently recur throughout this report:

- Korea does not have a strong community-based primary-care system. As a result, consumer preferences to seek out hospital care are reinforced by a fiercely competitive market of health care providers who, too often, deliver what is possible for them and not what is most appropriate for patients' long-term health.
- Governance of the health system does not sufficiently reinforce quality of care as a key priority. Policies to monitor and improve the performance of the system are often taken up unevenly across health care providers, and pockets of excellence are often driven by the initiatives of select providers and institutions.
- The health system does not make the most of the data available to it. Korea has the information technology infrastructure and data to help map shortfalls in performance and assess what works well and what does not. This information should be judiciously deployed to direct funding to areas that deliver high value for money and respond to health needs.

Notwithstanding these concerns, Korea's substantial health reforms to date have equipped it with an ideal institutional architecture from which to pursue further reforms. The single insurer provides Korea with the ability to

use its monopoly purchasing power to drive improvements in quality of health care. Equipped with better financing instruments, the single insurer could be harnessed to gradually improve the structure of health services in Korea to better meet the changing health care needs of its population. Doing so will be necessary to support Koreans more effectively as they live longer and more often, with multiple chronic diseases.

More immediately, Korea's National Health Insurance is facing the prospect of further deficits. This creates a unique window of opportunity for further reform. As with many other OECD countries, reform will need to be undertaken while government grapples with tight fiscal circumstances. This situation will be compounded by an ageing population and shrinking workforce. This report argues that prudent reforms are desirable, and that leveraging improvements in the quality of care ought to be a key objective. It seeks to highlight good practices and make recommendations on how further improvements can be made in the quality of care.

Effort is needed to strengthen the focus of governance on quality of care

Korea's quality of care policies have too often relied on motivated individuals and institutions to build pockets of excellence within the Korean health system. Too often, these individuals and institutions do not seem to work within a system whose governance demanded best practice or sought to disseminate it across the system. The Korean approach towards health care system governance is often grounded in the policy mindset of industry development: it encourages the growth of providers and competition amongst them, but often lacks the same focus on delivering broader social objectives which characterise insurance-based health systems across OECD countries. The focus of the health system is on product quality and less on system quality – each individual task may be done well, but they may not be the best choice of tasks, given the problems being addressed.

Encouraging a system-wide focus on improving the quality of care should begin with changing the focus of governance from reimbursing medical services to improving peoples' health. Korea could achieve this by broadening the current legal framework and creating an institutional "champion for quality". The current legal framework for health care in Korea centres around assuring the delivery of *insured* services. This is a narrower scope than the significant majority of OECD countries who locate governmental responsibility for the broader objective of protecting (and often improving) their citizens' health within their constitutions or key health legislation. The most immediate implication of this is that responsibility for quality assurance of the significant amount of health care delivered outside of the basic insurance basket is not clear. A further

consequence of this approach is reflected in the operations of Korea's Health Insurance Review and Assessment Service (HIRA), whose role today centres around quality assurance and auditing of claims for publicly reimbursed medical services.

There is scope for HIRA to play an expanded role and drive quality improvement for *all* services, not just those covered under insurance. This will require a sustained effort to change the culture of providers in the Korean health system to prioritise quality of care in their work. HIRA ought to take the lead on this: by providing feedback to individual providers and judiciously publishing information on the quality of care, HIRA should seek to establish itself as a champion for quality improvement across the system at large. This would build on HIRA's current responsibilities for evidence-based medicine (in collaboration with the National Evidence-based Medicine Collaboration Agency) and its loose links with organisations for health technology assessment and evaluating pharmaceuticals. Legislation to enforce such a framework for governing health care quality in Korea would be worthwhile.

Good policies for quality of care exist – especially in the hospital sector – but without monitoring of the quality of individual clinician performance, have less impact than they should

While both medical and hospitals associations have developed processes for hospital accreditation and clinical education, self-regulation of individual clinician practice is weak. Medical education and in-hospital training programmes for new doctors provide the bedrock of assuring quality of care in Korea. This is supported by a programme of continuing education provided by the respective medical and nursing professional bodies. Recent policy efforts by the Ministry of Health to seek the re-certification of medical professionals to improve continuing education completion rates and strengthen licensing are a welcome step to further improve the quality of care provided in Korea.

Perhaps the most alarming feature of the Korean health system is the lack of clear mechanisms to assure patient safety. Over the past two decades, health systems across OECD countries have sought to monitor individual clinician performance in order to identify undesirable trends in clinical practice and mitigate the situation. Such systems monitor breaches in patient safety (such as sentinel events) and provide a means for patients to deliver feedback on their experience of health care services (including on matters relating to quality). Efforts ought to be undertaken to build a comparable system in Korea as part of a national programme on patient safety. This

could build on some existing quality assurance mechanisms where individual hospitals have instituted their own procedures.

Such systems for patient safety typically have feedback mechanisms to assist medical associations in maintaining professional standards. Across OECD countries, medical associations often play an important self-regulatory role in investigating serious quality breaches and cases of potential professional misconduct, and if necessary, move to de-register a medical professional. It would be worthwhile for medical professional bodies in Korea to learn from the processes and systems that the Korean Nursing Association has put in place. There is a strong case for government to establish a mechanism to investigate such matters if medical professional bodies do not do so. A lack of action in this area will likely lead to strong growth in medical malpractice-related legal disputes. Already, these are estimated to cost 1% of health expenditure, growing at a rate of 15% a year.

As with most OECD countries, Korea has had a longstanding hospital accreditation programme that has seen some reforms in recent years. While Korea's new accreditation process is rigorous, it is not applied broadly enough within the hospitals sector and is only beginning to extend beyond it. Modelled after programmes in the United States, Chinese Taipei, and Australia, Korea's hospital accreditation process covers a large number of areas. It also pursues the worthwhile approach of using accreditation to enable it to act as a quality improvement partner with hospitals. However, at the end of 2011, accreditations undertaken to date have covered the 44 tertiary hospitals but only 12% of general hospitals (33 hospitals) and 0.6% of small hospitals (eight hospitals). While this may in part reflect the infancy of the new arrangements, the change from mandatory to voluntary accreditation has weakened its role as a strategy for quality assurance, particularly in the small and medium hospitals where accreditation is most needed. Accreditation ought to be linked to financing to provide the necessary pressure on more small and general hospitals to seek accreditation. Recent efforts to expand the scope of accreditation to include long-term care hospitals and psychiatric hospitals from 2013 are commendable. Beyond this, accreditation should also be extended to primary care facilities in order to institute a focus on quality throughout Korea's health care facilities.

A range of other policies can also be strengthened to improve quality of care. In recent years, Korea has sought to boost its capacity to develop clinical practice guidelines. One programme is run through the Korean Academy of Sciences. The other is government-sponsored and operates through clinical research streams. These programmes have usually been led by specialist research groups on different topics. While there is significant work being undertaken with research institutes and the National

Evidence-based Healthcare Collaborating Agency (NECA), the extent to which this is influencing clinical practice or decisions on financing care is limited. Establishing a process by which such agencies could feed into financing decisions and inform clinical standards would be a desirable development.

Korea has world-class information technology infrastructure and health care data – these should be harnessed to improve quality and drive policy

Korea has overcome many of the challenges other OECD countries have faced in recent years to build a world-leading health information technology infrastructure. In particular, Korea's Drug Utilisation Review is one of the most extensive systems for monitoring prescribing to be found amongst OECD countries. This system uses an individual identifier to check for when a patient has been provided with a drug that is likely to conflict or overlap with medications they are currently using. The system undertakes these tests both when drugs are prescribed at clinics and when sold at pharmacies. However, despite the substantial investment in advanced technological infrastructure to put this system in place, the system seeks to identify incompatibilities in the chemical composition of drugs rather than incompatibilities in the therapeutic function of drugs prescribed (the latter provides more scope to identify situations of unnecessary prescribing and pre-empt medication mis-management). Narrowing the scope of such a system unnecessarily constrains its potential impact, and efforts ought to be undertaken to make the most of this technology which exceeds in breadth and depth any other system in the world. Similarly, the eventual extension of this system to include major hospitals would be worthwhile in helping manage medication management issues and reduce costs.

More value can be extracted from data already available to HIRA. By linking claims information, quality indicators for clinical care and information available in registries, Korea could better analyse the performance of the health care system and tailor care to specific needs. For example, Korea currently has the capability to “follow” patients with multi-morbidities or those suffering from chronic health conditions to better understand which health care services they are using, how often, and their readmission and mortality prospects. The knowledge garnered from such monitoring could inform what services are best delivered to patients as a follow up to one of Korea's health-care screening programmes. Similarly, better information would be indispensable for improving the quality of cancer care, where registries could follow various cohorts of patients, their treatment outcomes and their mortality. The carefully orchestrated use of data on patient outcomes and services could also be used to provide

regional-level information – and help policy makers and consumers determine if the right (and enough) resources are being directed to those areas most at need.

Korea already has the technological capability to build a simple electronic patient history, and should do so. Individual patient identifiers form the basis of the Drug Utilisation Review and are recorded in claims services reimbursed under health insurance. This system for electronic recording of patient identifiers could form the backbone of a simple electronic patient history that records information on a person's medications and previous use of health services. In time, this could be extended to include electronic storing of diagnostic and other test results, potentially helping reduce the cost of duplicate services in the system today. There is a reluctance to undertake further efforts in this direction in Korea due to privacy concerns. Korea should look to efforts being undertaken in other OECD countries to accommodate privacy concerns, as this technology can deliver a considerable payoff in helping doctors improve the quality and appropriateness of the care they provide.

Improving the quality of information about what is being delivered in Korea's hospitals sector and how much hospitals are earning will help ensure that financing decisions are better informed. Systems already exist within hospitals today which separate services into those that are reimbursed by insurance and those that are paid directly by consumers. The government is not currently informed about the extent of the latter, and receiving this information could help national health insurance agencies understand the extent of utilisation of new technologies in the health system. As a longer term ambition, it would provide a means to determine the extent to which licensing of certain high-technology medical equipment – as is undertaken in France, the United Kingdom, Canada and Australia – ought to be considered to encourage appropriate utilisation and reduce costs. At the same time, improved financial reporting by hospitals would provide an indication of their operational challenges and what their cost pressures are. When combined with information available within government on public subsidies provided to these hospitals for the delivery of insured services, this could provide much-needed transparency on the extent to which hospitals raise revenues from sources outside of funds from public insurance. Given the substantial public investment in the hospitals sector, seeking further financial transparency is not an unreasonable expectation and should be made obligatory as a condition of insurance payments.

Strengthening primary health care in Korea

Tackling chronic diseases demands better primary-care services to help patients get appropriate care

Korea's rapid economic development, emerging lifestyle risk factors and ageing population will increase the prevalence of chronic diseases in the future. Korea has one of the fastest growing elderly populations and the lowest birth rates amongst OECD countries. At the same time, too many Koreans are presenting at hospitals for conditions that could have potentially been avoided. In 2009, there were around 326 000 admissions for hypertension, angina, diabetes, heart failure, COPD and asthma. Compared with other OECD countries, Korea ranks amongst the highest for potentially preventable admissions relating to COPD, asthma and uncontrolled diabetes. These unnecessary episodes, and the health care costs they incur, underline the need for targeted actions to ensure that chronic disease is properly managed within the community setting.

As is the case in many other OECD countries, older and poorer patients seeking Korea's health services are more likely to be living with more than one health condition and are likely to require care that straddles multiple health services and specialists. Dealing with such cases effectively demands better co-ordination of their care and support to help them undertake actions to help moderate the risk of their condition. The Korean health care system will need to adapt to support patients in co-ordinating their health needs across the multiple specialist services they may rely on, and ensure good continuity of care. Critically, it will need to help patients avoid acute care except where necessary. Currently, the system does the opposite – it encourages further diagnosis and the utilisation of the large hospital sector. This is medically undesirable, unnecessary, and expensive. A reliance on hospitals is exacerbated by a long-standing tradition of health-seeking behaviour which places a greater value on hospital-based care. Over-provision of treatment is a major quality of care issue in Korea.

Developing primary care must be the major investment priority for Korea's health system

Korea's community-based family medicine sector is woefully underdeveloped today. There is a need to shift away from the current version of "primary care" as a gateway to more complex surgical or medical procedures and towards the provision of evidence-based health promotion and prevention along with partnering with patients to help them select the appropriate services for their needs. Current remuneration levels make it hard to do this, making the practice of family medicine unattractive while

supporting the oversupply of other services with greater complexity. As a result, primary care providers feel a financial pull towards becoming mini-hospitals that provide surgical procedures, often when not appropriate or safe. Correcting this situation will require ongoing investment, specifically for primary care and preventative health services.

The bulk of this investment should be directed towards supporting the scaling up of effective models of primary care. A number of small-scale initiatives and demonstration projects that accord with best-practice models of primary care currently exist in Korea today, but they lack the financial support and the institutional backing to expand across the country at large. The critical characteristics which successful projects have in common include: a community focus, patient registration backed by financial support, outreach preventive services, continuity of care, patient follow up and information exchange with HIRA and the NHI. Many of these features figure prominently in OECD countries with strong primary care systems. A good example of a community programme is the Gwang Myeong registration project which focuses on diabetes and hypertension management (profiled in Chapter 3).

The broader development of such services could be supported by domestic policy makers specifying “best-practice characteristics” and financially supporting regional providers who can deliver services that accord with these characteristics in meeting local health needs. Such a policy should also be used to encourage the development of group practice amongst Korea’s 26 000 solo practitioners, making it easier for them to undertake care co-ordination and peer review. Where useful and appropriate, such an approach should build on existing infrastructure supporting mandatory coverage of screening services in communities across Korea – in essence, becoming “follow-up” services for patients with identified health needs. Over the long term, this will help establish a regional architecture for primary care that National Health Insurance agencies can use to identify and direct funding to areas most in need.

Strengthening primary care requires better information and increased efforts to build a primary care workforce

Encouraging controlled and appropriate referrals by primary care professionals could help reduce the over-utilisation of hospital services. Many OECD countries rely upon family doctors to help direct patients towards appropriate services – whether it be specialist care in a hospital or allied health services. While there is notionally a requirement to have a referral from a family medicine specialist or a general medical practitioner prior to visiting a medical specialist, gate-keeping in Korea is not enforced

strictly and patients can access acute services with relative ease. Many hospitals have also adopted practices such as establishing family medicine centres (or departments) on hospitals premises that could sometimes also serve as a “gateway” for patients into the hospital at large. Engendering a culture of controlled and appropriate referrals is a complex and long-term challenge for the Korean health system that will require a combination of better information, a better understanding of the value of primary care amongst health professionals, greater financial investment and a shift in remuneration practices.

The use of existing data to develop better measures of quality of care in primary care could be a useful tool to guide policy development and funding. The development of primary care quality measures will facilitate analysis of quality trends and will provide the information base for remedial action. Within its expansive data infrastructure, HIRA currently has the ability to monitor the number and type of patients presenting at hospitals with potentially preventable admissions. Such information could be invaluable in identifying areas where primary care services are not encouraging controlled and appropriate referrals. Similarly, HIRA is able to monitor the utilisation of ambulatory care in emergency departments. In pharmaceuticals, HIRA is able to monitor the prescribing of antibiotics, drugs of limited clinical value and the ratio of generic to branded drugs – information that could help map where quality shortfalls are occurring (and where unnecessary costs to the system are being incurred). Critically, HIRA has the ability to map the geographical differences in performance across Korea. Doing so along the lines of regional boundaries that align with the scaling up of primary care services (as recommended above) will provide National Health Insurance agencies with the tools to make regional assessments of needs or identify where shortfalls may be occurring. Such information could bring into focus the often higher needs and fewer resources in rural communities. More broadly, these indicators can bring the benefits of primary care into sharper relief and foster a culture of delivering higher quality care.

Efforts to develop a workforce of primary health care professionals will be essential to developing a stronger primary care system. The majority of new medical graduates in Korea currently prefer to gain a specialisation and often undertake most of their training in hospital-based settings. At the same time, independent medical professionals working in primary care often feel the need to deliver basic surgical and inpatient services to maintain their viability. While investment and a more pronounced role in the health system would help enhance the professional status of family physicians, Korea also needs to engender an awareness of the importance of primary care amongst its medical profession. Providing more medical students with the experience

of working in primary care could help impart an understanding of the role and importance of primary care. Policy makers should work with medical associations and universities to introduce a mandatory training rotation in a primary care facility. Such a programme (of limited duration) could build on existing training opportunities available in select schools. Critically, it would also help bolster the size of the primary care workforce, especially in rural areas where the number of community-based health professionals has been steadily reducing. Providing a modest training subsidy would support the development of a training culture in primary care practices across the country. At the same time, more immediate changes could be driven by further promoting advanced practice nurses, who could play a valuable role in supporting physicians' delivery of preventive health care, reviewing people at risk of developing chronic disease and planning co-ordinating care for patients with complex health care needs.

Using financing to drive improvements in quality of care

The significant hospitals sector is driving growth in health spending

Hospitals accounted for nearly half of all additional expenditure in Korea over the past decade. This is significantly more than in other OECD countries where hospitals accounted for around one third of additional health expenditure. Whether measured by the number of hospitals, beds or high-technology medical equipment, for the size of its population, Korea has one of the most substantial hospital sectors amongst OECD countries today.

In part, this reflects the fact that payments for health services that are not efficient and do not reward quality of care. Korea's fee-for-service payments reward doctors for delivering ever more complex care, but often at lower unit fees per service compared with many OECD countries. This is compounded by a fiercely competitive private market for delivering health care services. As providers have sought to compete by increasing volumes, complexity or delivering services outside the health insurance benefit basket (where prices are unregulated), the boundaries between services delivered in small doctors' clinics and in hospital outpatient departments have become increasingly blurred. This has come at the expense of properly funding community-based primary health care services. Within this market structure, doctors in Korea have to balance the desire to provide appropriate care with the need to generate revenue. The result is often higher costs. For example, this is reflected in Korea's exceptionally high lengths of stay for hospital inpatient services, which along with Japan are more than double the OECD average and significantly higher than the next highest country. A major challenge for financing is to build better incentives for appropriate care.

In a difficult budgetary environment, tackling burgeoning acute care services will improve quality and reduce costs

Quality can be improved and costs can be contained by reversing the incentives for over-provision and over-supply of hospital services. Hospital financing reforms have had a difficult history in recent years as Korea has sought to shift to paying a benchmark price per “case” delivered in a hospital (diagnosis-related groups, DRGs). DRGs reward service providers who are more efficient than the benchmark price and provide all with an incentive to moderate costs. After substantial negotiations, the current Korean DRG scheme was established and covers a handful of clinical categories. However, the non-participation of tertiary hospitals in this scheme has weakened its potential to drive quality and efficiency. DRGs ought to be introduced across the *entire* Korean hospitals sector to introduce price signals that encourage an appropriate amount of care per case – a focus that Korea’s hospitals lack today.

These reforms to hospital financing should be complemented with better safety and quality monitoring. Other OECD health systems such as Australia, Canada, France and the United States with these forms of payments have sought to establish appropriate admissions and discharge criteria and close surveillance of the intensity and volume of services delivered. Some of these countries also use financing systems to improve data collection on the quality of care, such as through recording secondary conditions and flagging conditions that are present on a patient’s admission to hospital. These measures would be worthwhile to collect even before a shift to DRG-based payment can be feasibly implemented in Korea. Indeed, while they have cited concerns over a deterioration in quality in resisting the introduction of DRGs, Korea’s tertiary hospitals are more likely than general and smaller hospitals to have already instituted the kind of quality management programmes and checklists needed to monitor and correct perverse outcomes. The challenge for policy makers is to encourage the use of such systems in the large number of small and medium-sized hospitals, who are likely to have already opted into DRG-based payments. Such quality monitoring will provide the information architecture needed to incorporate quality into purchasing, which ought to be institutionalised by giving National Health Insurance agencies a greater mandate to vary payments to hospitals (or groups of hospitals) on the basis of achieving a certain level of quality performance or delivering services more efficiently. Shifting from the current system based on retrospective reimbursement based on fees set annually to a dynamic and ongoing process of negotiation offers Korea an opportunity to make the most of the purchasing power of its single insurer.

DRG-based financing could also be used to develop better macro budgetary controls and influence the balance of funding between acute and primary care over time. DRGs not only specify a set of relative prices between different types of health care services, but also provide the ability to adjust the overall level of prices, which can be an important lever in influencing overall spending for hospital services. Health systems that use DRGs in OECD countries often specify (or target) an overall budget for acute care services in the year ahead – based on forecasts of the mix and volume of services within a given year. This helps signal the government’s overall appetite for outlays and helps manage the risk of providers increasing volumes. Within the institutional architecture of a single insurer, Korea is well placed to consider specifying an overall budget for acute hospitals. If budget overruns incur a credible penalty (such as no payment or discounted payment for services), such an approach could provide a system-wide impetus for additional efficiency. As a longer term ambition, this could also be used to influence the allocation of funds between acute and primary care sectors in Korea.

More appropriate care should begin with making primary care the core financing priority

Driving more appropriate care will require National Health Insurance to shift the centre of financial gravity in the Korean health system from hospitals to primary care. With a single insurer, Korea is well positioned to use its purchasing power to drive improvements in the quality of care. However, health financing in Korea is currently embedded in the psychology and operational model of fee-for-service payments. For National Health Insurance to become more of a proactive purchaser – rather than a passive payor – this will need to change. National Health Insurance will need to develop the tools needed to direct funding for services to patients or areas most at need. This should be directed at effective primary care services, which hold the potential to provide care that is better suited to the rising population health challenge of people living with multiple chronic diseases, and potentially at a lower cost.

To establish primary care as an institutional priority, investments to scale up primary care in Korea should become a distinct component of National Health Insurance expenditure. Policy makers ought to have the financial freedom to assess and invest in proposals that represent best value for money in delivering high-quality primary care. Locating funding within National Health Insurance would align new investments with the institutional imperative of reducing longer term payouts by the single insurer. This would build on current efforts to make the National Health Insurance more responsible for programmes to support the management of

patients with chronic disease. On a broader level, it would help foster an operating culture where the insurer is seen as a financial agent capable of delivering system change to improve quality of care, and not simply as a payment clearinghouse. In the same manner in which the gradual expansion of insurance helped underwrite the development of Korea's hospitals sector, the National Health Insurance should now be harnessed as a major source of financing for the development of a stronger primary care sector in Korea. Korean policy makers may wish to consider hypothecating a gradually increasing proportion of NHI revenues towards this purpose. On-going financial commitment will be critical to change the structure of health care service providers in Korea over time.

Institutional reform of this nature is a long-term objective. In the immediate future, Korean policy makers should increase financial support for prevention and patient self-management of chronic disease. This will require developing an effective means of incentivising primary care professionals to derive a greater proportion of their income from the delivery of physician education and counselling, and reducing their reliance on minor surgical procedures, referrals for diagnostic tests and prescribing drugs as a source of income. A modest starting point for broader financing reform could be to address the structure of fee-for-service payments in Korea, which currently pay hospitals a premium per service delivered on the basis of their size (*i.e.* larger hospitals get paid more for the same service than smaller hospitals). This is a substantial outlay that rewards providers to pursue capacity expansion. Redirecting some of this investment towards rewarding hospitals – irrespective of their size – that deliver high-quality and appropriate services would deliver better value for money. At the same time, there exists scope for policy makers to pilot the use of “bundled payments” that prospectively combine payment for a hospital admission as well as a reasonable number of pre- and post-admission services. This could provide a financial incentive for hospitals to invest downstream, into less clinically intensive rehabilitation services and to substitute complex and acute care services with cheaper (and more appropriate) family-based medical care.

Pay for performance in Korean hospitals has had moderately encouraging results, and may be usefully extended to targeted areas

The introduction of a pay for performance scheme in Korea's 43 tertiary hospitals is one of the more innovative policies to use financing to drive improvements in quality of care across OECD countries. Korea's Value Incentive Programme targets improvements in two areas of comparatively poorer performance compared with other OECD countries: acute myocardial infarction and the proportion of caesarean deliveries. Hospitals participating

in the programme have improved acute myocardial infarction treatment performance and outcomes over the three years since the programme was established. Similarly, data indicate an observable reduction in caesarean sections. Most notably, data suggest that there has been a decrease in the variance in performance amongst hospitals and significant improvements amongst the lowest performing group.

Absent a formal evaluation at this early stage, this targeted pay for performance programme appears to be a useful way of collecting data and incentivising targeted improvements in the quality of care. The Value Incentive Programme benchmarks the relative improvements in performance of each of Korea's tertiary hospitals through collecting indicators associated with good clinical processes, the impact of hospital interventions on mortality and reductions in caesarean deliveries relative to anticipated levels. The collection and publication of data involved in this programme provides an innovative example of the kind of information that policy makers and consumers ought to have available to assess the quality of care. The reputational effects of this data alone may be a strong impetus for hospital managers to improve performance, particularly in Korea's highly competitive hospital market. However, in the absence of a formal evaluation, it is difficult to judge the extent to which the pay for performance programme has driven improved performance, or on the contrary merely mimicked a trajectory of gradually improving performance that existed prior to the introduction of the scheme. The study of the US programme on which Korea modelled this scheme suggests that the introduction of pay-for-performance led to an improvement in quality outcomes amongst participating hospitals relative to their peers, but that differences dissipated after five years. This is consistent with other international evidence suggesting that *targeted* pay for performance schemes can help drive improvements over a specified period. Furthermore, it is unclear whether the pay for performance scheme incentivises activity without the adverse effects of leading providers to modify behaviour to maximise payments. For this reason, the Korean balance of modest financial incentives and a strong focus on data collection may be the virtue of this programme.

Improving care for cardiovascular diseases

There is a paradox in quality of care outcomes for cardiovascular conditions in Korea

Quality indicators for cardiovascular care paint an interesting paradox in Korea when compared with other OECD countries. In general, Koreans are less likely to die from acute myocardial infarction (AMI), but those Korean

patients who are admitted to hospital for AMI are likely to face amongst the highest case-fatality rates amongst OECD countries. At the same time, Koreans are more likely to die of stroke than those in many other OECD countries, but fatalities from stroke once in hospital, are much lower in Korea compared with other OECD countries – in hospital 30-day case fatality rates are 1.2 per 100 patients compared with an OECD average of 5.2 per 100 patients.

In most OECD countries, in-hospital fatality rates across the two acute manifestations of underlying vascular conditions – AMI and stroke – are both either relatively good, or relatively bad. For example, Denmark, Norway and the United States report amongst the lowest rates of OECD countries for both conditions. Population-based mortality *trends* also tend to be similar – they are either good or bad across the two conditions. Furthermore, countries with high population-based mortality rates will also often have high case-fatality rates, though care is needed in inferring that high case-fatality rates in hospitals are a principle *cause* of high population-based mortality rates.¹

However, this Korean paradox suggests there are two issues around the quality of cardiovascular care in Korea. The first is whether the high case-fatality rates reflect poor quality hospital care. Trends in OECD countries have shown an overall decline in case-fatality rates over the past ten years, suggesting quality improvements in acute care delivery can make a difference. The second is whether policies to reduce cardiovascular disease outside the hospital sector are being delivered appropriately.

Acute care is usually delivering high-quality cardiovascular care, but there are variations in quality across the country

It is unlikely that the divergence in in-hospital case-fatality rates for cardiovascular care (notably AMI mortality rates) reflects bad performance in Korean hospitals. The Korean Government's review of care quality for cardio- and cerebrovascular diseases (CVD), as well as performance data collected by both HIRA and the Korean Centre for Disease Control (KCDC), suggests that quality of care for AMI and stroke in hospitals is amongst the best in OECD countries. After arrival to the appropriate hospital unit, care delivered in Korea is likely to be consistent with clinical guidelines and best practices in other OECD countries. This is demonstrated by good performance in process indicators such as the administration of aspirin upon arrival to the hospital and appropriate prescriptions at the time of discharge in the case of AMI. While the volume and capacity of acute and elective cardiovascular interventions such as PCI's and CABGs has been increasing significantly over the past few years in Korea, a clear relation

between volumes and patient outcomes is difficult to establish. These indicators of performance and recent capacity expansions suggest that neither low capacity, nor poor processes are likely explanations of high in-hospital case-fatality rates for AMI relative to other countries.

Instead, the most plausible explanation of the apparently poor performance of acute care for AMI is actually a failure in the non-acute care sectors. The case mix of patients presenting to Korean hospitals is likely to be characterised by advanced stages of AMI and more complex conditions. Consistent with this review's major conclusion of an underdeveloped primary care system, it is likely that insufficient care and support provided *outside* hospitals (in primary care for prevention and in post-acute rehabilitation) is the cause of poorer hospital outcomes. This is likely to be reinforced by the absence of cardiac rehabilitation services leading to a higher numbers of readmitted patients.

The contrast between high-quality hospital care and weaker out-of-hospital care for CVD reflects policy. While the government has had a proactive strategy to improve quality of care for CVD through strengthening prevention and in-hospital care, more effort has been directed at assisting certain hospitals in adopting best-practice care delivery models for CVD. The Korean government's Comprehensive Plan for CVD is the major national policy that seeks to drive improvements in the quality of care for cardiovascular conditions, most notably though advocating for the creation of regional cardiovascular centres. Ideally, these centres ought to serve as vertical institutions offering services ranging from health promotion (with tailored consultations with a specialised physicians) to care in the acute phase and rehabilitation. However, in implementation most of the financial assistance to designated regional centres has been directed at new services (such as 24-hour emergency stroke units) or operation and maintenance costs associated with acute CVD care. Investments in the prevention and health promotion work streams are more marginal.

Only a selected number of institutions have received financial and technical assistance to develop stroke units and enhanced facilities under Korea's Comprehensive Plan for CVD. Efforts have been made to support hospitals located outside of Seoul: nine institutions (including three university hospitals) have been designated as regional centres since 2008. While this has helped to create pockets of excellence, it has not made significant progress in improving the quality of cardiovascular care across the acute care sector at large. While they have often invested in high-technology medical equipment, many Korean hospitals have not established stroke units, which are a comparatively simple innovation that can make a substantial difference in improving the quality of CVD care. Today, half of tertiary hospitals and 90% of general hospitals do not have stroke units.

Furthermore, given the broad dispersion of those living in rural areas across the country, the small number of centres that have benefited from the Comprehensive Plan for CVD is unlikely to have made major progress in helping reduce significant disparities that exist between rural and urban areas. For most people living in rural areas, whether their closest hospital happens to be equipped with a stroke facility (and/or other acute cardiovascular intervention facilities) is likely to be a major determinant in the quality of their acute cardiovascular care. Efforts should be undertaken to rebalance the focus of financial investments away from equipping a small number of hospitals with very sophisticated technologies towards establishing care pathways for acute cardiovascular conditions and stroke units across the system at large. This would help address inequalities between regions and between tertiary and general hospitals.

Pre- and post- acute care should be the focus of improving quality of care for cardiovascular diseases

Improving cardiovascular care outside of hospitals ought to be the policy priority to help improve cardiovascular care outcomes for Koreans. The Korean population is currently experiencing substantial changes in lifestyles, such as an increased consumption of trans-fats and salts, which presage likely future rises in the prevalence of particular chronic conditions relevant to CVD. Korea also has one of the most rapidly ageing populations, with the proportion of those aged 65 among the total population projected to reach 37% by 2050 (today, the share of those aged 65 and older is 11% of the total population). With the principal risk factor for CVD being older age – even in the absence of symptoms or very high levels of hypertension, diabetes and smoking – this is likely to drive an increase in the prevalence of CVD across Korea.

Focusing on prevention and proactive primary care services to modify these risky lifestyle behaviours and support patients in managing their health would help reduce the burden of cardiovascular conditions (and the burden of diabetes) in the future. Current prevention policies in Korea mainly revolve around two screening programmes organised by the National Health Insurance Corporation and the Ministry of Health and Welfare. While this forms a solid basis for identifying patients, there is a need to build on these programmes by establishing formal mechanisms to help co-ordinate care and deliver case management to those patients at risk in the long run. Korea ought to consider establishing registration for patients at risk as part of broader efforts to strengthen primary care (as noted above). A select few initiatives, such as those in Daegu city and Gwang Meong-si, have demonstrated the capability to help organise health care in a patient-centered way and secure high levels of satisfaction amongst both patients and

medical professionals. The success of these programmes lies in regular monitoring of risk factors to help patients avoid a general deterioration of health prior to hospital admission.

Supplementing this, efforts ought to be made to minimise intervention time and the lag between the onset of a stroke or AMI and the arrival of a patient to hospitals. An evaluation of ambulance services details high reported times – of up to six hours – between the onset of AMI and stroke and arrival in hospital and pointed to the need to act on two key challenges. Firstly, to raise public and patient awareness in identifying the onset of a stroke and AMI and seeking care rapidly. Secondly, to enhance the quality and responsiveness of ambulance services (especially in rural areas) that could help ensure that therapeutic interventions such as thrombolysis (when indicated) is performed more quickly, thereby offering patients a higher chance of survival.

Establishing formal rehabilitation processes for AMI and stroke would also be a high value for money investment in Korea. Providing comprehensive rehabilitation care is fundamental to the recovery of patients who have suffered a heart attack, a coronary artery bypass graft operation or a stroke. By assisting patients in exercise, education and psycho-social health, rehabilitation can help prevent secondary complications, reduce mortality and improve patients' health outcomes. Rehabilitation care in Korea is supported by two avenues: National Health Insurance provides funding for stays in long-term care hospitals (which mainly provide sub-acute care) and long-term care insurance supports extended stays in long-term care facilities for patients assessed to have ongoing care needs. In general, rehabilitation care in Korea is at an early stage of development and there are few institutional facilities that provide rehabilitation services exclusively for patients who have survived an AMI or stroke. The recent growth of long-term care hospitals is a welcome development in helping expand these critical services. Policy makers should consider building on this by seeking to support community-based rehabilitation (especially home care services for patients who have to live with the consequences of a stroke) as part of National Health Insurance and not simply for the smaller group of people that have long-term care insurance. Community-based rehabilitation services are often able to be delivered more cheaply than in a hospital setting, which may also help make them more financially accessible to patients discouraged by high out-of-pocket costs. This represents a value for money investment in improving cardiovascular care in Korea. It will help reduce readmission rates and holds the potential to reduce unnecessary expenditure on expensive cardiac interventions

Concluding remarks

The strengths and weaknesses in the quality of cardiovascular care in Korea mirror those of the Korean health care system at large. In Korea's substantial achievement of expanding health coverage over the past two decades, value for money has often been secondary to health care industry development. This has delivered world-class hospitals to the bulk of the population (those in major cities), but has also entrenched the primacy of acute care in the Korean health care system.

The Korean experience provides some important lessons to other countries, both those of the OECD and other middle income countries seeking to deliver universal health coverage. Foremost, strong budgetary controls are important. Without budget constraints or regulation on supply, the well-organised hospital sector can quickly come to dominate health services delivery at the expense of quality. Secondly, governments ought take early action to develop primary care infrastructure and entrench gate-keeping by primary care professionals as a norm in the health system. Lastly, governments and insurers should demand accountability for – and improvements in – the quality of care for the substantial payments they make to health care providers.

Korea's challenges are not unique – most OECD countries are grappling with reorienting their health care systems towards enhancing cost-effective primary care and preventive health services that support people in making good lifestyle decisions, living healthier lives and avoiding visits to hospitals. However, the tendency for over-delivery of hospitals services is now so entrenched in the Korean health care system that Korea faces increases in health care costs that outpace its OECD counterparts.

Korea is fortunate to be able to face this challenge from a position of lower overall levels of spending, but must act to ensure that additional health care spending goes to the right places. This report argues that transitioning to a health care system that is better placed to deliver high-quality care into the future will require a continued focus in three areas: building a stronger community-based primary care system; using information to target services more effectively and assess whether taxpayers are receiving value for money; and re-orienting the focus of policy making to deliver continued improvements in health, not just health insurance.

Policy recommendations for improving the quality of care in the Korean health system

The challenge for the Korean health system over coming years will be to shift its focus towards supporting the rising number of people living with chronic disease and multiple morbidities. To achieve this, quality of care should be embedded as a key objective of further reforms. This will require changes to:

1. Improve governance and quality of care strategies by:
 - Establishing systems to monitor individual clinician performance to identify undesirable events such as breaches in patient safety. This should be complemented with a means for patients to provide feedback on their experience of health care services and report medical errors.
 - Seeking that medical professional associations investigate quality breaches and professional misconduct, including recommending de-registration to the Minister for Health and Welfare in instances of serious misconduct.
 - Requiring that general and small hospitals undertake accreditation and continuing to expand accreditation into long-term care hospitals, as well as establish a programme for the accreditation of primary care facilities.
 - Bolstering the development of clinical practice guidelines and establishing a process by which guidelines can influence financing decisions.
 - Making the most of the Drug Utilisation Review by checking for compatibility amongst therapeutic groups, and over time, expanding it to include drugs delivered in major hospitals.
 - Better utilising available data to analyse the performance of the health system and tailor care to the needs of patients. For example, HIRA should provide information on patient outcomes and services on a regional level, to assess if resources are being directed appropriately.
 - Building a simple electronic patient history using information and technology already available to HIRA, and by working to accommodate privacy concerns.
 - Establishing HIRA as an institutional champion for quality of care in the Korean health system that is responsible for assuring the quality of all health care services (including those not covered by insurance), providing feedback to individual providers and publishing information for consumers.
2. Strengthen primary care’s capacity to prevent disease and support those suffering from chronic conditions by:
 - Making the development of a community-based, family-medicine sector the foremost investment priority in the Korean health care system.

**Policy recommendations for improving the quality of care
in the Korean health system (cont.)**

- Directing the bulk of new investment towards scaling-up effective models of primary care by specifying “best-practice characteristics” and supporting regional providers who can accord with these characteristics in meeting local health needs. Where appropriate, this should build on existing infrastructure for screening services across Korea and encourage the adoption of group practice.
 - Using financial investments in primary care to support the long-term establishment of a regional architecture for primary care that can help National Health Insurance agencies identify and direct funding to areas most at need.
 - Developing better measures of quality of care in primary care to guide policy development and funding, including regional assessments of needs and shortfalls.
 - Establishing a mandatory training rotation in a primary-care facility as part of medical education in Korea, and considering a modest training subsidy to support such a programme.
 - Expanding the number of advanced practice nurses and better utilising their skills in working with physicians to deliver primary care services.
 - Investigating methods to further encourage controlled and appropriate referrals by primary care professionals.
3. More effectively use financing to drive improvements in quality of care by:
- Expanding DRG-based financing across the entire Korean hospitals sector and across as many services categories as clinically feasible.
 - Complementing DRG-based financing with appropriate admissions and discharge criteria, quality measures such as present-on-admission flags and close surveillance of the volume and mix of services being delivered.
 - Better embedding quality into purchasing over time by giving National Health Insurance agencies a greater mandate to design payment structures and to customise payments to hospitals on the basis of improving quality or efficiency outcomes.
 - Using DRG payments to consider specifying an overall budget for hospital services. This should be supported by credible penalties for overruns and in the long term, be used to influence the allocation of funds between acute and primary care.
 - Making investments to scale up primary care a distinct component of National Health Insurance expenditure, and consider the hypothecation of a gradually increasing proportion of revenues towards this purpose over time.

**Policy recommendations for improving the quality of care
in the Korean health system (cont.)**

- Increasing financial support for primary care services to support prevention and patient self management of chronic disease (such as physician education and counselling), and reduce the reliance on minor surgical procedures, diagnostic tests and prescribing as a source of income.
- Redirecting current incentives, which increase fee-for-service payment by the size of hospital, towards rewarding hospitals on the basis of the quality of care they deliver.
- Piloting the use of “bundled payments” that prospectively combine payment for a hospital admission as well as a reasonable number of pre and post-admission services, to encourage hospitals to invest in less clinically intensive rehabilitation services.
- Formally evaluate the Value Incentive Programme to inform the further use of pay for performance to improve the quality of care in targeted areas on an intermittent basis.
- Improving transparency in the Korean hospital sector by reporting services not reimbursed by insurance to government and strengthening financial disclosure obligations on major hospitals.

4. Improving the quality of care for cardiovascular diseases by:

- Undertaking greater investment in promoting good health and preventing cardiovascular diseases.
- Rebalancing the focus of investment away from equipping a small number of hospitals with sophisticated technologies and towards establishing cardiovascular critical-care pathways and stroke units across the system at large.
- Establishing registration for patients at risk in order to deliver regular monitoring services and follow-up services.
- Raising public and patient awareness in identifying the onset of a stroke and AMI in order to seek care rapidly.
- Enhancing the quality and responsiveness of ambulance services (especially in rural areas).
- Expanding rehabilitation capacity in the Korean health system, including through community-based rehabilitation by a broad range of health professionals.

Note

1. Population-based mortality is an indication of overall population health, dependent on social and economic health determinants, preventive care and access to secondary care. While case-fatality rates are intended to indicate the quality of hospital care – hospitals admitting a higher proportion of complex and more advanced disease cases will possibly have worse outcomes. In the absence of a proper international method for adjusting for differences in case mix, it is difficult to make robust international comparisons.

Chapter 1

Quality of care in the Korean health system

This chapter provides an overview of policies and strategies to improve the quality of care in the Korean health system. It seeks to describe key quality of care policies and benchmark the extent to which Korea has deployed various policies that are commonly used across OECD countries to assure the delivery of high quality health care. In doing so, it is broadly based on a framework that categorises policies according to those that are system wide, which assure inputs into health care, which monitor the quality of services delivered and which promote continuing improvements in quality. As a health care system characterised by a heavy reliance on private provision of services and a significant acute care sector, quality of care policies in Korea are more often driven by pockets of motivated individuals or institutions. Efforts to build in system-wide policies are often still under development, and in some cases could benefit from additional support or regulation to encourage their adoption.

The past decades have seen a rapid expansion in health care in Korea. Whether measured by an increase in the number of health professionals, health care facilities or by ever-expanding new technologies and treatments, Korea has experienced amongst the most rapid developments of a modern health care system in living memory. This rapid expansion has been underpinned – and in significant part financed – by ongoing government efforts to expand health care coverage for most basic services to all Korean residents.

By providing gradually expanding coverage, health insurance in Korea has underwritten secure financing for a market of predominately private health care providers. This heavy reliance on private provision has been supported by the regulatory policies of successive governments which have sought to encourage the growth of an industry of advanced curative care service providers. Although attention has been given to quality of care, a system-wide approach where measuring quality is considered to be a means of improving value in health care is still under development.

The principal focus of this chapter is to describe and benchmark the extent to which Korea has deployed various policies that are used across OECD countries to assure the delivery of high quality health care. In doing so, the chapter will seek to profile:

- Whether, and how, the governance of the Korean health system embeds quality of care into its operation;
- Whether inputs into health care – people, technology and physical infrastructure – are used appropriately to deliver high quality of care;
- Whether policies are in place to monitor the quality of services delivered; and
- Whether policies are in place that allows the health system to be responsive in driving continuing improvements in the quality of care.

This chapter (and this report) will outline the institutional architecture of the Korean health system only in so far as it is useful to understanding how it drives the quality of care. For a broad overview of the structure, institutions and financing of the Korean health system and previous reforms, the *OECD Review of the Korean Health System* (OECD, 2003) and the *European Observatory's Health Systems in Transition* report on the Republic of Korea (European Observatory, 2009) are useful sources of information.

1.1. Context and framework for categorising quality of care policies

Rapid increases in life expectancy in Korea in recent years mask increasing concerns about the quality of care for major chronic conditions

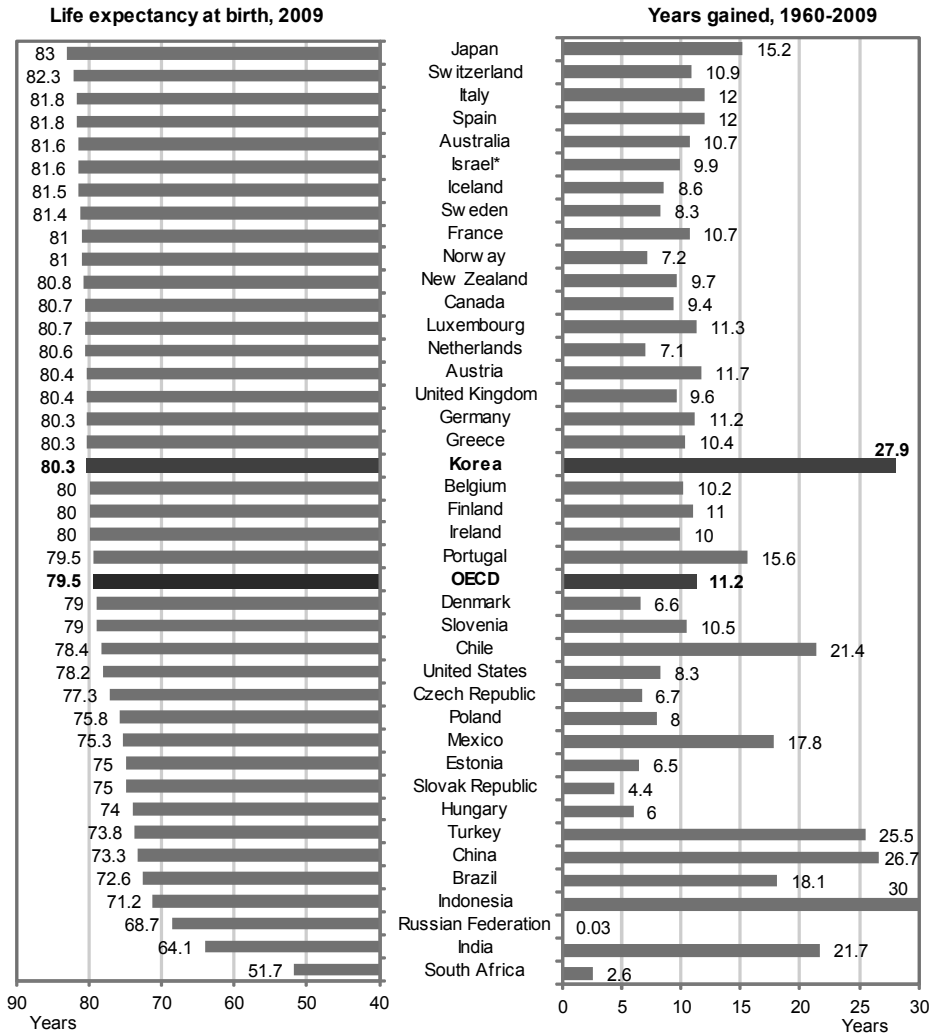
Korea has achieved major increases in life expectancy in recent years. With a life expectancy at birth of 80.3 years, Korea is slightly higher than the OECD average of 79.5 years. As shown in Figure 1.1 below, life expectancy in Korea has increased by 27.9 years between 1960 and 2009 – the largest increase amongst OECD countries. It is likely that these major gains in life expectancy reflect the significant increases in economic development experienced in Korea over past decades.

Measures of the quality of health care services in Korea suggest that there is room for improvement relative to other OECD countries, particularly in caring for chronic diseases such as chronic heart failure, diabetes, COPD and asthma. A useful indicator of the quality of primary care services delivered in a country is the reported admissions for uncontrolled diabetes. When properly controlled, through compliance with medication and dietary measures, a diabetic patient should be able to avoid an unplanned hospital admission (for example, through a diabetic coma). Continuous monitoring of diabetes patients can be properly done by primary care services. Korea has the third highest reported admission rates for uncontrolled diabetes amongst OECD countries (after Hungary and Austria), with 127.5 uncontrolled admissions per 100 000 population. This is more than two and a half times higher than the average of 50.3 admissions per 100 000 population observed across OECD countries that report this data (Figure 1.2).

Korea also reports higher levels of unplanned admissions rates for respiratory conditions such as chronic obstructive pulmonary diseases (COPD) and asthma when compared to other OECD countries. The unplanned admission rate for asthma was 101.1 per 100 000, twice as high as the OECD average (Figure 1.3). As with admissions with uncontrolled diabetes, unplanned readmissions for these two respiratory conditions can often be reduced through appropriate care in primary care settings with scope for most exacerbations to be handled without need for hospitalisation. Together, Korea's performance on these three indicators suggests that there is considerable scope for improvement in the quality of primary care relative to other OECD countries.

Figure 1.1. Life expectancy across OECD countries, 2009

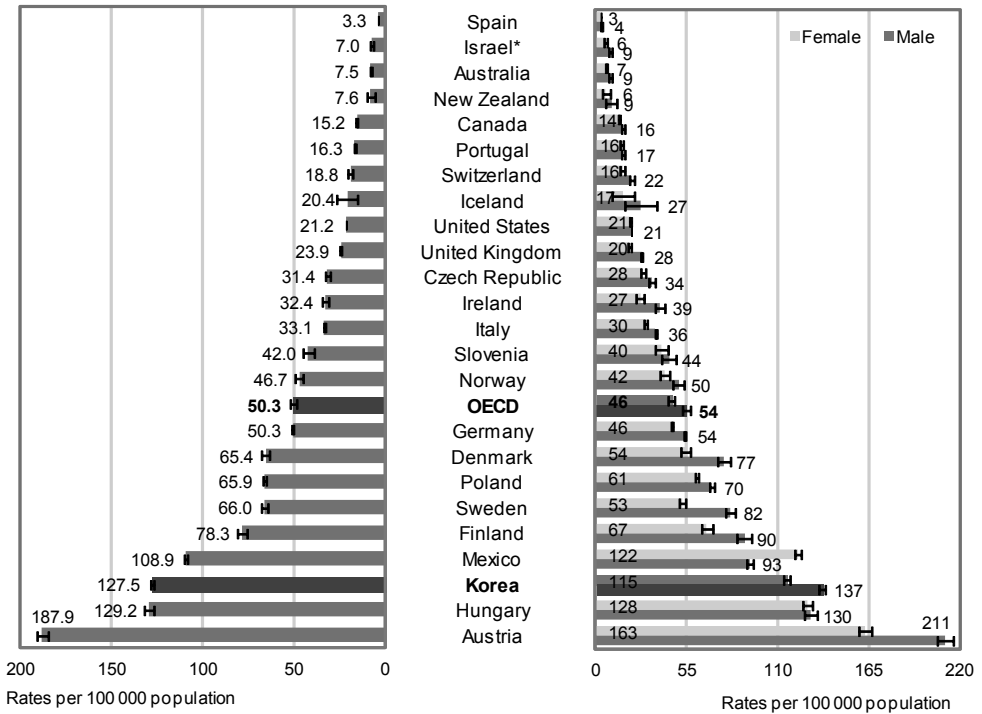
Life expectancy at birth, 2009 (or nearest year), and years gained since 1960



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

Figure 1.2. Uncontrolled diabetes hospital admission rates across OECD countries, population aged 15 and over, 2009 (or nearest year)



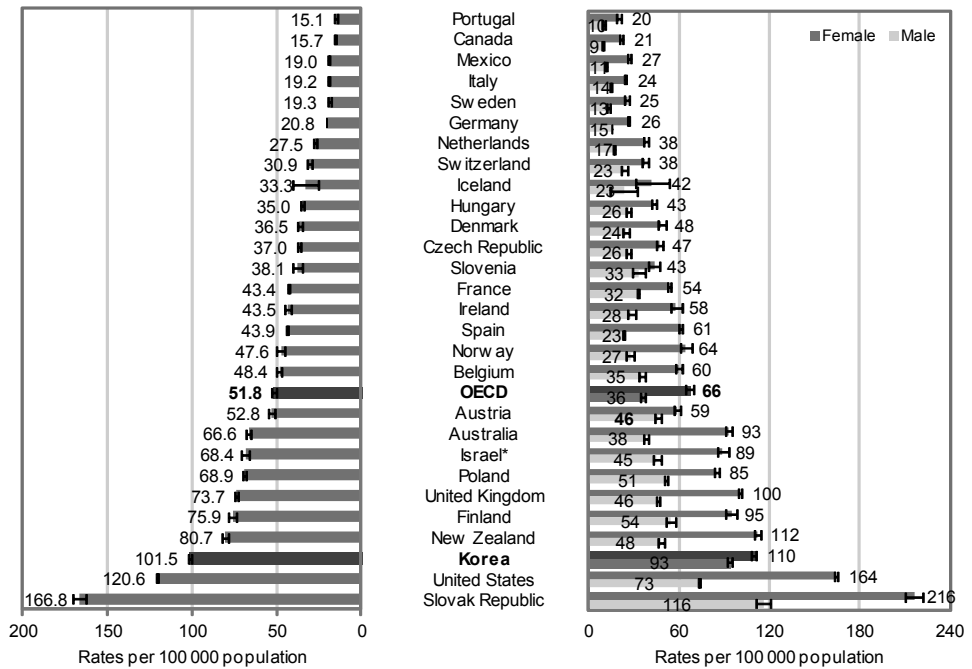
Note: Rates are age-sex standardised to 2005 OECD population. 95% confidence intervals are represented by H. The 95% confidence interval shows the range or boundary of precision for a particular figure. In this instance, the confidence interval suggests that the true admission rate for uncontrolled diabetes will lie within the boundary or range described by the interval most of the time.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

Korea’s performance on the quality of care in the hospital setting also suggests considerable room for improvement. A useful measure of quality of care delivered in an acute setting is the in-hospital fatality rate for acute myocardial infarction (AMI). Most industrialised countries have made significant progress in reducing mortality from coronary artery disease over the past three decades, with most of the reduction attributable to lower mortality imputed to AMI from better acute health care.

Figure 1.3. Asthma hospital admission rates across OECD countries, population aged 15 and over, 2009 (or nearest year)



Note: Rates are age-sex standardised to 2005 OECD population. 95% confidence intervals are represented by H.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

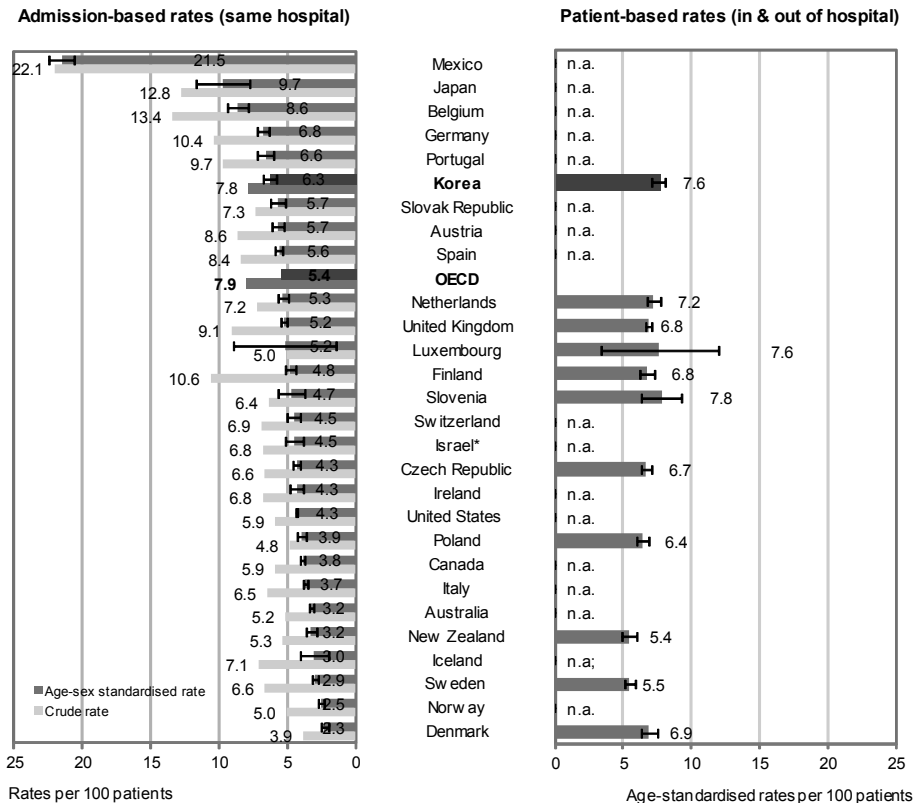
Source: OECD Health Data 2011.

In recent years, numerous studies have shown that a considerable number of AMI patients fail to receive evidence-based care. The in-hospital fatality rate for AMI in Korea ranks amongst the highest in the OECD, at 6.3 per 100 patients in 2009 (Figure 1.4). The OECD average is 5.4 per 100 patients and Korea’s rates are higher than countries such as the United Kingdom at 5.2 per 100 patients, the United States at 4.3 per 100 patients or Australia at 3.2 per 100 patients). Korea’s relatively poorer performance in this area signals that improvements can also be made in the quality of acute hospital care.

Quality issues have gained importance across the OECD in recent years as they not only suggest that more could be done to improve patient outcomes, but also that outcomes can often be improved for similar levels of investment. Indeed, quality of care policies ought to be a particular concern for Korea as it faces alarming increases in national health expenditure.

As with other OECD countries, Korea faces the challenge of needing to improve population health in a more constrained budget environment. This challenge also needs to be met within a demographic context of an ageing population and a decline in fertility. The share of population aged over 65 in Korea is expected to reach 38.2% in 2050, much higher than the forecast for other developed economies (Korean Bureau of Statistics, 2006).

Figure 1.4. Admission-based and patient-based in-hospital case-fatality rates within 30 days after admission for AMI across OECD countries, 2009 (or nearest year)



Note: Rates are age-sex standardised to 2005 OECD population (45+). 95% confidence intervals are represented by H.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

A framework for categorising quality of care policies

The description and profile of quality of care policies in this chapter are structured according to a framework for categorising quality policies. This framework is detailed in Table 1.1 below. A policy questionnaire was drafted and sent to the relevant public authorities in Korea, with the information provided and materials gathered during the Secretariat's country study tour serving as the basis for this chapter.

Table 1.1. Types of health care policies that influence health care quality

Policy type	Examples
Health system design	Accountability of actors, allocation of responsibilities, legislation
Health system input (professionals, organisations, technologies)	Professional licensing, accreditation of health care organisations, quality assurance of drugs and medical devices
Health system monitoring and standardisation of practice	Measurement of quality of care, national standards and guidelines, national audit studies and reports on performance
Improvement (national programmes, hospital programmes and incentives)	National programmes on quality and safety, pay for performance in hospital care, examples of improvement programmes within institutions

1.2. Health system design

The overall legislative and institutional architecture for quality of care in Korea focus heavily on regulating inputs into health care. The bulk of Korea's legislative framework and regulatory institutions focus their efforts on training good doctors and assuring that health care facilities and technologies are safe. The focus of policy efforts on inputs into health care does not appear to be matched by strong regulatory oversight on the actual process of delivering care: the way doctors practice or the appropriateness of the technologies they choose to use in their practice.

Legislative framework

Korea has developed a comprehensive legislative framework to support and improve quality of care over recent years. The key pieces of legislation are the *Framework Act on Medical Services* and the *National Health Insurance Act* (2000). The former is the more broad-reaching on quality requirements for health care services (refer to Box 1.1) and the latter stipulates the role of the Health Insurance Review and Assessment Service (HIRA). In addition to these two pieces of legislation, a separate legal framework exists for emergency care quality control, the *Emergency Medical Service Act*.

Box 1.1. Korea’s Framework Act on Medical Services

The focus of the Framework Act on Medical Services is to regulate the quality of health care facilities and medical professionals. In general, the legislation focuses significantly on hospitals. The Act stipulates:

- Recognition of degrees and requirements for training and licensing physicians (including medical doctors, dentists and oriental medical doctors) and nurses.
- Continuous medical education, by stipulating that a medical professional ought to participate in supplementary training programmes following their graduation, with the purpose of managing and improving quality.
- Powers for the Minister for Health to revoke or suspend a licence when a medical professional violates other articles in the Act relating to issues such as safe appliance of medical techniques and drug prescriptions.
- The role of accreditation as a means to improve quality of care. The head of a health facility of the size of a hospital or larger that wishes to receive accreditation may voluntarily apply for it (see Section 1.3 for further information on accreditation of smaller health care facilities).
- Mandatory hospital infection control committees and the responsibility of providers for reducing hospital infections.
- Regulation for assessing new health technologies to assure their quality and safety (including the National Evidence-based Healthcare Collaborating Agency). However the Act does not specify the method of the evaluation of new health technology, such as whether cost-effectiveness analyses should be undertaken.

The Framework Act on Medical Services also provides the basis for patient rights in the Korean health system, in contrast to the many other OECD countries which seek to assure patient rights through independent legislation. The Act states that patient rights and safety criteria should be part of the accreditation standards for hospitals. Patient safety criteria are defined to include: the accuracy of communication among medical professionals including verbal prescriptions, the accuracy of execution of surgery and invasive treatments, activities to prevent patient falls and the practice of hand hygiene. Patient rights criteria are defined to include: patient privacy, protection of safety and rights of elderly and other vulnerable patients, complaint handling and written consent for treatment procedures. In addition to being sought indirectly through accreditation standards, the range of areas covered under Korea’s definitions of patient safety and patient rights are narrower than other OECD health systems. In recent years, OECD countries such as Denmark and the Netherlands have undertaken efforts to place a patient perspective at the centre of efforts to drive quality, often through

independent legislation that places patient rights and patient safety at the centre of overall efforts to improve quality of care across health care providers.

The *National Health Insurance Act* is the second important piece of legislation for regulation of quality of care provided in Korean health care facilities. This Act specifies the medical benefits to which Koreans are entitled, the institutions that are allowed to provide services that attract a benefit, the evaluation of the appropriateness of charges, and the reasonableness of medical care benefits. In doing so, it defines the scope of care providers and care services to which Koreans can turn to. The Act also stipulates the role of the HIRA, which was established in 2000 as the key government institution responsible for evaluating quality of care provided under the National Health Insurance Act. The act also stipulates in details how claims and payment of medical care benefits can be made.

Throughout the two major pieces of legislation described above, the quality of care delivered by large health care services (such as hospitals) receives more attention than smaller clinics. This is likely to reflect that the legislative framework was established alongside successive reforms to gradually expand health care coverage in Korea and develop a hospital sector. In this context, the major focus of this legislation has been to implicitly assure quality by ensuring that providers meet basic requirements that make them suitable to receive reimbursement for services financed by National Health Insurance.

A concern that emerges out of this kind of institution regulatory approach is that, the quality of care across the multiple services people may draw on can often receive less focus. Indeed, helping promote integration across multiple services, co-ordination and the continuity of care are increasingly the major service delivery challenges for systems that have to serve people who are living longer and more often with multiple chronic diseases. While the ability to prescribe co-ordination and continuity of care for patients through legislation is limited, the current Korean legislative framework does not oblige health care providers to consider continuity of care beyond the boundaries of their own facilities. More directly, the law seems to regard oversight of quality of care as a role the government ought to undertake because care is provided and reimbursed under government-funded national health insurance, rather than recognising that improving quality of care is an important thing in its own right and an obligation for all the key institutions in the Korean health care system. The practical implication of this legislative orientation is that services delivered outside of the insurance basket do not receive the same level of oversight for their quality. Korea could benefit from re-orienting current legislation from

focusing on quality across the health system, and not just for insurance products subsidised by public insurance.

Institutions responsible for quality of care in Korea and their key policies

As in many other countries, the origins of quality of care in Korea have emerged from proactive efforts by professional bodies. For example, the history of hospital accreditation in Korea can be traced back to the Korean Hospital Association and the Korean Medical Association collaborating (mandated by the Ministry of Health in 1966) to accredit training hospitals. The Korean Hospital Association established a hospital standardisation programme in 1981 which mainly targeted the major teaching hospitals. On the basis of these earlier efforts to accredit and certify qualified medical services, since the 1980s, Korea has made significant steps towards defining a policy framework on the quality of care. Consistent with the focus of legislation, as described above, executing quality policies in Korea are to a large extent the responsibility of health care service providers and their professional bodies such as the Korean Medical Association and the Korean Hospital Association. The Ministry of Health and Welfare is responsible for overseeing quality of care *at large*, by executing and upholding the Framework Legislation on Medical Services and by mandating HIRA to undertake certain critical functions related to quality assurance for National Health Insurance. The role of patient or consumer organisations seems less prominent than in some other OECD countries.

Functionally, HIRA has evolved to come to sit at the centre of assessing quality and driving improvements in the Korean health system. This has emerged from the authority provided to HIRA in July 2000 to systematically assess whether benefits financed under health insurance are being adequately delivered by health care providers. HIRA conducts quality assessments for medical benefits by examining the appropriateness and cost effectiveness of medical and pharmaceutical services provided to insurees and their dependents.

Over the years HIRA has set up world-class information infrastructure that at present provides it with unique data on quality of care. In addition to unique performance measurement capacities, HIRA has more recently been expanding its activities into co-ordinating several national quality improvement efforts. The gradual growth of HIRA's operations is described in the history detailed in Table 1.2. Many of the policies profiled in this table are discussed throughout this report.

Table 1.2. Brief history of the implementation of quality of care policies by HIRA

2000	The National Health Insurance Act introduces the quality assessment functions.
2001	Medical service quality assessment and criteria for the pay-for-performance of medical care benefit costs were enacted <ul style="list-style-type: none"> - Assessment of social welfare corporate medical care institutions, stem cell transplantation, and Caesarean section - Prescription, antibiotics and injection prescription rates, medication cost per day of administration (total quantity assessment)
2002	Computed tomography (CT), haemodialysis assessment commenced <ul style="list-style-type: none"> - Prescription (number of drugs per prescription was added), assessment based on disease
2003	Assessment of blood transfusion, total knee arthroplasty, intensive care units, mental hospital within medical aid <ul style="list-style-type: none"> - The weight of high priced prescription was added to the prescription assessment
2004	Assessment of ischemic heart disease commenced <ul style="list-style-type: none"> - Preparations containing adrenal cortical hormones for respiratory diseases were added to the prescription assessment
2005	Disclosure of the listings of high performing institutions with injection prescription rates begins. <ul style="list-style-type: none"> - Disclosure of the listings of institutions with a lower rate of risk-adjusted caesarean section was started. - Prescription of NSAID and steroids for osteoarthritis were added to the prescription assessment
2006	Disclosure of the listings of all institutions subject to an assessment of their injection prescription rate was begun. <ul style="list-style-type: none"> - The web-based assessment data collection system was introduced. - Acute stroke was assessed. - A progressive method of assessment was introduced
2007	Enactment of demonstration project criteria for the flexible payment of medical care benefit costs. <ul style="list-style-type: none"> - The demonstration project for the flexible payment of medical care benefit costs was started (acute myocardial infarction, caesarean section). - Statistics Korea approved the assessment result of caesarean section - Quality assessments of surgical volume indicator, use of prophylactic antibiotics for surgery, and acute myocardial infarction were conducted. - Research for the local development of treatment guidance concerning prophylactic antibiotics for surgery was requested. - Research for the development of clinical practice guidelines related to prophylactic antibiotics for surgery.
2008	The demonstration project criteria on the reduced payment of medical costs were published. <ul style="list-style-type: none"> - Quality assessment of long-term care hospital - Statistics Korea approved the assessment result regarding the use of prophylactic antibiotics for surgery.
2009	Itemised assessment outcomes compiled and graded. <ul style="list-style-type: none"> - The composite assessment result by institution was published - The scope of assessment was extended to include chronic diseases (hypertension assessed). - Haemodialysis and mental hospital within medical aid were assessed. - Statistics Korea approved the assessment result of acute myocardial infarction and acute stroke. - Additional payments were granted to 1st grade and quality-improved institutions under the HIRA VIP demonstration project.
2010	Expansion of public reporting on hospital quality (consisting of 52 indicators in 11 assessment areas): <ul style="list-style-type: none"> - Surgical costs and length of stay by institution for 38 kinds of surgeries - Quality assessment for hypertension - Approval from the National Statistics Office regarding the assessment results including long-term care hospitals and hemodialysis. - Preliminary assessment for diabetes and colon cancer

Source: Comprehensive Quality Report of National Health Insurance 2010, HIRA.

1.3. Inputs into health care in Korea

Professional certification and licensing of doctors and nurses

As is the norm across OECD countries, Korea's policies to train and license medical doctors and nurses are a fundamental pillar of assuring quality of care. These policies seek to regulate both the numbers of doctors and nurses and their competencies, and form the basis for providing good quality of care. The effectiveness and safety of services provided is highly dependent on the (evidence-based) knowledge and skills of health care professionals. Policies for training and education generally differ significantly across OECD countries – in their curriculum, who is responsible for training at different stages, and how trained professionals are certified. In addition to education at the beginning of a career, compulsory continuous professional training helps ensure that the knowledge and skills set of medical professionals remains current. In many countries, obligations for continuous professional education are part of policies to assess professional performance and relicensing or re-certification arrangements. This section will briefly describe key features of the Korean system for medical education and certification.

Korea's universities provide initial academic training in medicine, as is customary in OECD countries. This is delivered by one of Korea's 41 universities which have a College of Medicine. During and following their university studies, medical students most often train in Korean teaching hospitals. There were 275 teaching hospitals in Korea in 2011, a significant increase from 60 in 1957. These teaching hospitals today provide instruction for 3 877 interns (compared to 838 interns in 1975) and 4 063 first year residents (compared to 708 first year residents in 1975). There has been a steep increase in the numbers of trained medical workforce in Korea over the past decades. The average annual growth in practising doctors in Korea between 2000-09 of 4.3% is among the highest across OECD countries and topped only by Chile and Turkey (OECD, 2011a). However, Korea's 1.9 practising doctors per 1 000 population in 2009 was still low compared to an OECD average of 3.1 practising doctors per 1 000 population. It is likely that the steep increases in medical graduates in Korea reflect a catching up with numbers that other OECD countries have achieved over a longer period of time.

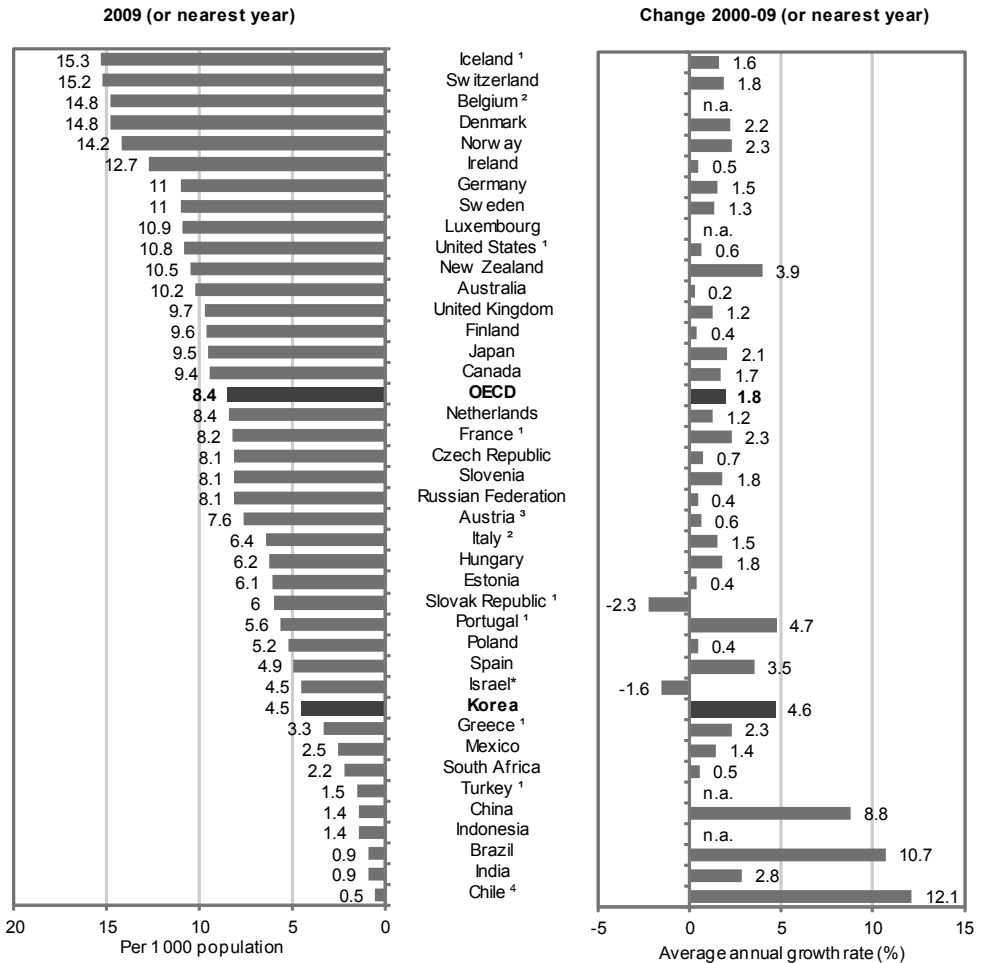
Medical education in Korea is organised in either a six- or eight-year programme, as in most OECD countries. After passing the national examination to become a medical doctor, physicians can do a one-year internship which leads to another national examination, which is then followed by four-year residency training. Although residence programmes

of four years are the norm in Korea, there are some examples of shorter programmes such as for family medicine. Overall, the model for medical training bears many similarities with the United States.

As with other OECD countries recognition as a medical specialist in Korea requires further education and licensing. A doctor seeking to be a medical specialist must undertake training in an institution designated by the Ministry of Health and Welfare and pass national examinations for medical specialists administered by the Korean Medical Association (KMA). The Korean Hospital Association (KHA) supports this process by accrediting training institutions and establishing an annual number of trainee positions. The accreditation of the teaching hospitals is undertaken by a Hospital Accreditation Council consisting of the KHA, the KMA, the Korean Academy of Medical Science (KAMS) and the participation of relevant medical specialist associations. Following training, medical specialists face an exam that is conducted by the KMA. The Ministry of Health and Welfare maintains its broad influence in specialist education through regulating the number of new specialty degrees and issuing licences to practice medicine to individual practitioners. Under the presidential Decree on qualification and licensing of medical specialists, the Ministry is able to stipulate criteria for specialist training institutions such as the mix of specialties available and the sufficient volume of patients to be an effective training setting. Once a medical professional has completed their education and professional licensing requirements, assessing their ongoing professional performance is the responsibility of the KMA and their workplace. As of 2010, there were 26 recognised specialties in Korea, accounting for a total of 73 500 registered medical specialists. This is around 72% of the total number of doctors. This profile is comparable with many other OECD countries where specialists constitute the majority of registered doctors (OECD, 2011).

Education for nurses in the Korean health system distinguishes between university and college educated nurses, as in most OECD countries. As of 2010, 173 universities/junior colleges have a department of nursing and 14 183 students were admitted to nursing programmes. The nurse workforce has experienced one of the largest increases in OECD countries in the past decade (Figure 1.5).

Figure 1.5. Practising nurses per 1 000 population, 2009 and change between 2000 and 2009 across OECD countries



1. Data include not only nurses providing direct care to patients, but also those working in the health sector as managers, educators, researchers, etc. (adding another 5-10% of nurses).

2. Data refer to all nurses who are licensed to practice.

3. Austria reports only nurses employed in hospitals.

4. Chile includes nurses working in the public sector only.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

In order to become a nurse, a Korean student must undertake a three or four-year programme of study, either at a university or a college (the duration of the programme depends on the school). As with doctors, nurses have to pass a national exam at the end of their training. At present 290 000 nurses are board certified and registered by the Korean Nursing Association. There has been an increasing trend towards the professionalisation of nurses over the past decade. This is reflected in the increasing number of graduate masters programmes in nursing, which are now offered by 40 graduate schools, which train 813 students a year and have trained 8 339 nurses on graduate level so far. Furthermore, 34 graduate schools have been providing doctoral courses in nursing to a total of 1 529 graduates so far. In addition to specialisation in their education, nurses in Korea increasingly have the opportunity to specialise in their practice. Under Korean legislation, a person who wishes to be recognised as an advanced practice nurse (APN) should pass a national certification exam. There are currently thirteen specialisation areas for nurses in Korea, over which 11 998 specialist nurses work (HIRA, 2011). As with medical specialists, a system of bi-annual accreditation of training institutions for nurses is undertaken by the Korean Accreditation Board of Nursing (KABON). This professionalisation of the nursing profession is a positive development in meeting the growing need for better trained nurses given the more complex health needs of the population. Ensuring an adequate mix of health care professions such as physicians and nurses is an important ongoing task for Korean health care policy makers, not only for assuring the quality of care but also for overall efficiency by making sure that care is provided by professionals with an appropriate level of competency.

Continuous medical education is currently available in Korea for both doctors and nurses, but the extent to which professionals are undertaking this education is unclear. Each year, the Ministry of Health and Welfare provides guidelines for continuous medical education which inform both the Korean Medical Association and the Korean Nurses Association who act as gatekeepers for courses undertaken by their respective members. The two associations currently report on the results of these courses, but with courses not obligatory or linked to the overall registration system, there is little information about the extent to which health professionals actually undertake these courses. Whereas many OECD countries (such as Australia, the United Kingdom New Zealand and the Netherlands) link continuous professional education to re-certification as a health care professional, this is currently not a formal requirement in Korea. The Ministry of Health and Welfare is currently planning to introduce a “license report programme” that would make it mandatory for health care professionals to report their licence status on a regular basis and undertake continuous medical education. This would increase the transparency on whether the qualifications of professionals are up-to-date.

This programme is expected to be implemented in 2012, and would provide a worthwhile means to improve continuous medical education compliance rates. Establishing such a re-licensing policy will provide an important lever by which the ministry can proactively improve the knowledge and skills of Korea's medical workforce.

Accreditation of health care institutions

Accreditation of health care institutions has been a key policy for assuring the quality of care in Korea, but is mainly undertaken by large tertiary hospitals. The Korea Institute for Healthcare Accreditation (KOIHA) is currently responsible for the execution of an accreditation programme for health care facilities. The accreditation programmes by KOIHA are developed in accordance with international standards and can potentially play an important role in assuring quality of care. The programme is modelled after the accreditation programmes in the United States (Joint Commission for the Accreditation of Health Care Organisations), Chinese Taipei (Joint Commission on Hospital Accreditation) and Australia (Australian Council on Healthcare Standards). While accreditation programmes in some form or another have existed in Korea for some time, it is only in 2004 that accreditation became part of key health legislation in Korea. Initial efforts by government to introduce a mandatory accreditation programme for hospitals faced resistance by providers.

In 2010, the approach towards accreditation was changed to a voluntary programme with generic standards on hospital performance and a stronger focus on the accreditation agency being a quality improvement partner to hospitals. The accreditation methodology is based on a detailed scoring system of standard-based items, explicit minimum criteria and uses the joint commission-based tracer method. The present programme focuses on hospitals with more than 30 beds and has customised approaches for larger and medium-sized hospitals. There is allowance within the operating framework for hospitals to be “conditionally accredited” as one of the outcomes of the process – this is especially relevant for smaller hospitals as a means to encourage their participation and help them improve quality of care over longer periods of time.

At present, accreditation activities for acute care have mainly addressed the larger tertiary hospitals (that are also assessed as part of the accreditation for training institutions). By December 2011, accreditations had been undertaken across all 44 tertiary hospitals, 12% of the general hospitals (33 hospitals) and only 0.6% of smaller hospitals (eight hospitals) (HIRA, 2011). In adopting an accreditation approach that should be more amenable to providers, the present system has not had much success in reaching general hospitals and smaller hospitals. This could reflect that there are currently few incentives (or penalties) in place to encourage smaller

hospitals to receive accreditation. This may be exacerbating differences in quality of care between large tertiary and secondary institutions and their smaller counterparts. At the very least, absent more extensive coverage of accreditation, the extent of the differences in quality across the Korean hospitals is likely to remain unknown to Korean policy makers and consumers. While KOHIA and government are pursuing worthwhile efforts in seeking to develop accreditation programmes to include long-term care (which will have an accreditation system from 2013), dental care, and mental health facilities, they should make a renewed effort to get more hospitals to seek accreditation. Likewise, introducing accreditation for primary care providers in Korea would be a worthwhile way of establishing more extensive standards on quality of care.

Korea should also proactively link accreditation programmes with clinical best practice guidance. For example, the work of the KAMS in establishing practice guideline programmes in Korea is not reflected in the standards developed for accreditation. Likewise, accreditation programmes have some, but not extensive, links with the quality of care indicators that HIRA collects. Establishing stronger relationships between HIRA, programmes for guideline development and the accreditation of hospitals would be a worthwhile way of injecting consideration of best practices in medical effectiveness, safety and patient centeredness into the accreditation process. As a longer term ambition, Korea could look towards accreditation of a group of different health care providers working together to achieve continuous and integrated care for a defined population (accreditation of an integrated health care delivery system), such as the Healthcare Effectiveness Data and Information Set (HEDIS) programme in the United States.

Pharmaceutical and medical devices

As is common practice across several OECD countries, the Korean Government undertakes efforts to assure the quality of new technologies and pharmaceuticals and protect its citizens from unsafe products. The quality and safety of pharmaceuticals is generally assessed on entry into the health care market. To a lesser extent, this also occurs for medical devices. Quality assurance in this area is usually executed in collaboration with industry, professional bodies and health care institutes.

The Korea Food and Drug Administration (KFDA) is a governmental agency that was created in 1998 to assure the safety, hygiene and efficacy of food and drugs. The KFDA executes regulation of both pharmaceuticals and medical devices. The KFDA is responsible for assessing drugs to establish the extent of their biological equivalence with other treatments and is also responsible for research on how clinical trials are conducted, under the Investigational New Drug (IND) programme established in 2002. In order to

ensure that pharmaceuticals in the Korean health care system continue to remain clinically appropriate, the KFDA has also undertaken a re-examination process for newly approved drugs which is conducted 4-6 years after the receipt of approval. This seeks to monitor and identify side effects that may not have been discovered during the development phase.

Similar policies are also executed to assure the quality of medical devices, including application of “good manufacturing practices” (GMP) for medical devices by manufacturers and device importers that has been gradually expanded to shops/companies that sell the devices (Medical Device Act, 2004); legal structures that regulate clinical studies on medical devices; legal requirements for tracking, recall and repair of devices (Medical Device Act, 2004); a one-stop medical devices licensing review process and the development of a database on safety and adverse effects of medical devices. This set of policies is fairly similar to what can be found in other OECD countries. In particular, the recent development of the database is an important component of the further strengthening of patient safety, in shifting from a focus from producing safe devices towards the safe use of devices.

Mechanisms to assess whether drugs should be reimbursed by public insurance have been strengthened over the past decades through the establishment of a positive drug list and through the introduction of pharmaco-economic evaluations. The positive list for pharmaceuticals was introduced in December 2006, as a part of Korea’s Drug Expenditure Rationalisation Plan. Under this programme, only those drugs that are proven to have clinical and economic value can be listed and attract reimbursements under the National Health Insurance plan. The positive listing system follows an extended period of using a process of official notification based on a negative list between 2000 and 2006 (which meant that all drugs approved by KFDA could be automatically reimbursed), however very few drugs were actually included on this negative list. The positive list system was introduced following reforms to shift the reimbursement of medicines on the basis of market prices. This market-price reimbursement system adjusts the price of listed medications based on the bi-annually reviewed transaction price of each drugs. As a result of successive government reforms, the number of drugs listed for reimbursement has dropped from 21 740 in 2006 to 14 900 in 2009. The drugs that are included in the positive list are decided with the assistance of a committee formed by HIRA and pricing decisions are taken by the National Health Insurance Corporation. In a worthwhile effort to simultaneously assure the clinical and economic value of pharmaceuticals that attract a public benefit a total of 73 pharmaco-economic evaluations were performed to underpin reimbursement decisions between 2000 and 2009. Korea has also developed a world leading information technology system for assuring the appropriate use of pharmaceuticals (Box 1.2).

Box 1.2. Korea's National Drug Utilisation Review Programme

Korea's Drug Utilisation Review (DUR) is one of the most innovative policies across the OECD for utilising information technology to help drive quality in pharmaceutical prescribing on a national level. Established in 2008, Korea's DUR uses a purpose built programme that is integrated with HIRA's claims database to monitor the prescribing of drugs and check for their clinical safety and appropriateness at the point of prescription and sale. The DUR is computer-based programme in most medical service providers and pharmacists, and was extended to include tertiary hospitals from January 2012.

The system was put in place in order to tackle adverse events based on medication errors, double prescribing and incompatibility of drugs prescribed to the same patient. The DUR system uses a unique patient identifier to track the medication history of a given patient. When a patient visits a medical institution, the patient's prescription from the doctor is sent to HIRA where information systems test the new prescription against the individual's medication history (principally) for contra and overlapping indications. Should there be a conflict, the doctor is notified about this at the point of prescription. This system is reinforced by a similar check being undertaken when a patient purchases a pharmaceutical from a pharmacy, with the pharmacist being informed of any conflicts. Pharmacies send back completed forms for dispensing if no conflict occurs, or if necessary, they note changes to treatment plans both to HIRA and to the patient's medical service. All medical institutions are subject to a yearly assessment based on billing claims.

While the comprehensiveness of this system is thorough, results show that it has managed to avert around 2% of prescriptions as contra-indications and 0.1% of prescriptions as overlapping. These surprisingly low results (relative to high observed admissions for medication mismanagement for hospitals) are likely to be partly explained by the clinical specification underlying the DUR. Currently, the DUR applies a strict test for chemical conflicts between different types of drugs, rather than more broadly defined test that checks overlapping and contra-indications between drugs from similar therapeutic groups (*i.e.* drugs that maybe branded differently but play similar clinical functions). Korea ought to consider expanding the specification of drugs in the DUR to ensure it is getting maximum value for money for its investment.

Similarly, the Ministry's efforts to expand the DUR since January 2012 to cover prescriptions in inpatient facilities in hospitals is worthwhile reform to help get maximum impact from this technology. These efforts will build on a system that is already a pioneer for reducing adverse medication effects, double prescribing and incompatibility of drugs on a broad basis. Over the longer term, the system could also evolve to develop the capacity to provide providers with feedback on their prescription patterns.

1.4. Health system monitoring: standardisation and measurement of practice

National policies on the development and use of practice guidelines

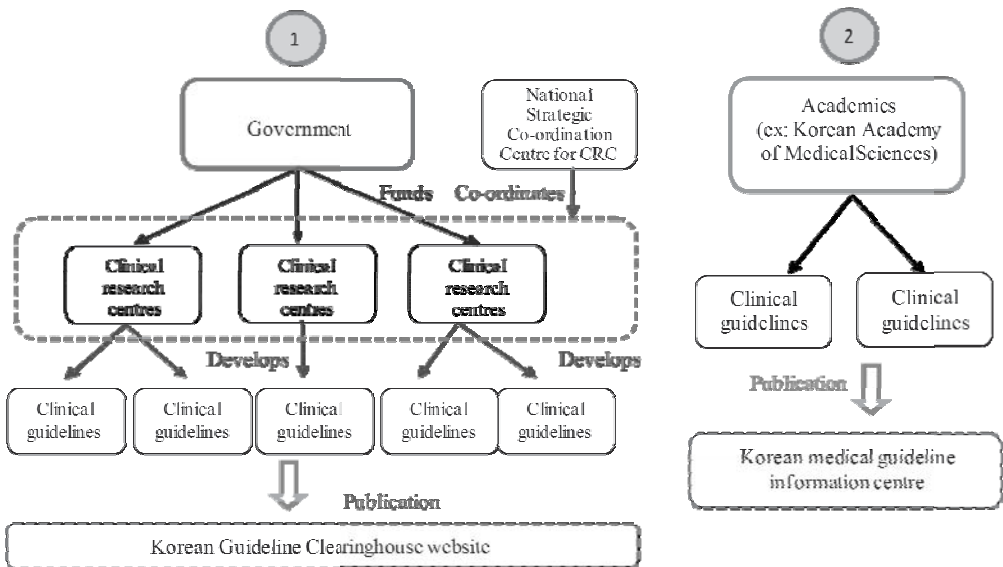
Clinical practice guidelines have increasingly been adopted as a tool for driving improvements in the quality of care. Practice guidelines seek to combine the scientific evidence base with the collective professional experience of medical professionals to encourage the standardisation of best practice approaches to care. Initially, practice guidelines were based on consensus statements formulated by experts. Since the 1990s, the growth of “evidence-based medicine” has introduced approaches to systematically assess and appraise existing scientific literature, and have become the basis of guideline development in most OECD countries. Since then, guidelines have increasingly sought to be cognisant of the importance of cost effectiveness and placing patients at the centre of their care. The increasing of scope and the professionalisation of guideline development has seen many OECD countries establish national organisations to work with professionals in developing and disseminating guidelines, such as the National Institute for Health and Clinical Excellence in the United Kingdom and Haute Autorité de Santé in France. With a number of different organisations often involved in informing practice guidelines – patient groups, research centres, specialist organisations, health care payors – several countries have different national guideline programmes run by different organisations.

A focus on developing guidelines is relatively new in the Korean health system. The two main actors responsible for the development of clinical guidelines are the government and academics (*i.e.* the Korean Academy of Medical Sciences). Figure 1.6 provides a high level map of the role of the different bodies involved in the development of clinical guidelines in Korea.

Since 2004, clinical research centres in Korea have specialised in specific disease areas. These research centres were established as part of the Clinical Research Support Project. The broader aim of the clinical research centres and its co-ordinating body, the National Strategic Co-ordinating Centre for Clinical Research (NSCR), is to promote and co-ordinate clinical research in the respective areas –with the development of practice guidelines being one of the spin-offs of this clinical research. The various research centres focus on areas such as ischemic heart disease, COPD-asthma, liver cirrhosis, depression, diabetes, dementia, stroke, appropriate use of antibiotics and rheumatoid arthritis. Guidelines that are developed by these clinical research centres are made available on the website of the Korean Guideline Clearinghouse. There is a Clinical Practice Guideline Support

Team within the NSCR with the role of making sure that practice guidelines are developed based on standard formats and methodologies. The Support Team develops and promotes guideline development methodologies. The overall activities of these centres are building on the work of the National Evidence-based Healthcare Collaborating Agency (NECA). In addition to these government funded initiatives, KAMS also plays a role in the development of practice guidelines (having developed about 40 guidelines). Since January 2008, the KAMS has been operating the Korean Medical Guideline Information Centre that functions as a clearinghouse for developed guidelines and the methodology used.

Figure 1.6. Process for the development of clinical guidelines in Korea



Source: HIRA (2011), “Response to the OECD Questionnaire on Quality of Care in Korea, Health Insurance Review and Assessment Service”, Seoul (unpublished).

While the development of guidelines in Korea has become more important in recent years, it is unclear whether these guidelines are actually driving changes in clinical practice. It is evident – through the proliferation of centres and research institutions involved in clinical research – that there is a growing interest in clinical guidelines within a selected circle of specialists and academics. Though guidelines are easily available on the internet (such as on the Korean Guideline Clearinghouse and the Korean Clinical Practice Guideline Information Center website), there appears to be little support to encourage medical practitioners to use these guidelines.

Further research on how best to encourage the use of practice guidelines in Korea would be worthwhile, as would mechanisms that specify best practice care (as specified in guidelines) in financing health services. These types of programmes have become more common in the past decade in countries as France, Germany, the Netherlands and the United Kingdom. It is also unclear about the extent to which practice guidelines are responsive to societal concerns about delivering appropriate care in a context of limited resources. By linking key quality of care indicators collected by HIRA (or those indicators used in accreditation) with practice guidelines, Korea could encourage the dissemination and systematic use of clinical guidelines amongst the medical profession beyond a limited group of experts and motivated clinicians. With significant emphasis having already been given to setting up multiple national programmes for guideline development, the challenge now is to translate the intellectual capital already available into delivering quality health care services.

Monitoring of quality of care by HIRA

Medical records are traditionally the key source of information to monitor the quality of health care. Korea has a long history of using of electronic medical records in hospitals combined with a well developed Electronic Data Interface (EDI) billing system. The large majority of health care service providers in Korea use this EDI system, in 2010 this was in place in 99% of the 2 859 hospitals, 92% of the 54 211 clinics (including dental and oriental medicine clinics), 96% of the 21 096 pharmacies and 100% of the 3 469 health care institutions providing public health services. Electronic billing is based on an individual's national identification number which provides the basis for unique patient identification.

As a result of this information technology and data collection capabilities, HIRA can use its administrative information to calculate a broad series of quality of care indicators. The information infrastructure and its technical specifications in areas such as data quality control and timeliness are amongst the best in the world, and could be considered a benchmark for other countries. In addition to regular information provided through billing systems, HIRA makes an explicit effort to measure a range of quality of care indicators. The table on the history of HIRA activities provided earlier in this chapter illustrates the extent, scope, detail and coverage of the efforts over time. The presently reported indicators on quality of care are all in line with the international literature but there are only very few countries who are able to report these with such a broad coverage and level of detail whilst assuring the data quality. This information is used to provide feedback to health care providers and to the government about performance, and is also published for the general public.

Table 1.3 summarises three of HIRA's ongoing assessment programmes at the moment – on inpatient care (AMI, stroke, prophylactic antibiotics for surgery, caesarean section), long-term care and outpatient care. While efforts to measure quality of care have concentrated on these three key areas, HIRA's data collection capabilities extend beyond this and cover all providers, including clinics, for prescription of drugs, caesarean sections, haemodialysis and mental health care. Another impressive feature of data collection system is the availability of a broad range of indicators covering outcome, structure and process.

Table 1.3. Ongoing quality of care assessment programmes and institutions assessed by HIRA

Areas of assessment		Assessment institutions					Domain of assessment		
		Tertiary hospital	General hospital	Hospital	Clinics	Long-term care hospital	Structure	Process	Outcome
Inpatient care	Acute myocardial infarction	•	•				•	•	•
	Acute stroke	•	•				•	•	
	Use of prophylactic antibiotics for surgery	•	•	•				•	
	Caesarian section	•	•	•	•				•
	Surgical volume indicator	•	•	•	•		•		•
	CABG	•	•				•	•	•
Outpatient care	Prescription	•	•	•	•			•	
	Hypertension*	•	•	•	•			•	
Long-term care	Long-term care hospital					•	•	•	•
	Mental hospital within medical aid*	•	•	•	•		•	•	•
	Hemodialysis*	•	•	•	•	•	•	•	•

* 2010 new quality assessment items.

Source: HIRA (2011), *Comprehensive Quality Report of National Health Insurance 2009*, Health Insurance Review and Assessment Service.

In addition to the indicators listed in Table 1.3, HIRA also undertakes surveys to complement its administrative information. This occurs across the areas listed in Table 1.4 and does not include caesarean sections and prescriptions of medicines for all patients (with the exception of acute stroke

and use of prophylactic antibiotics for surgery where data are drawn from sampling only). Survey data are used to replace missing information and verify data. Thus the completeness of reported data can be assured and validated by comparing findings from different data sources.

Table 1.4. Data sources by assessment item, and target data collection by HIRA, 2010

Assessment items		Data sources		Target period	Target data gathering
		Administrative data	Survey sheet		
Acute myocardial infarction		•	•	Yearly	Complete
Acute stroke		•	•	3 months	Sample
Use of prophylactic antibiotics for surgery		•	•	3 months	Sample
Caesarian section		•		Yearly	Complete
Surgical volume	Surgeries for stomach & colon cancers, hip replacement, percutaneous coronary intervention	•		One year of diagnosis performance	Complete
	Liver cancer surgery Esophagus & pancreas cancer surgery, stem cell transplantation	•		Two years of diagnosis performance	Complete
CABG		•	•	2 years	Complete
Prescription		•		Yearly	Complete
Hypertension		•		6 months	Complete
Long-term care hospital		•	•(Institutional)	3 months	Complete
Mental hospital within medical aid		•	•(Institutional)	3 months	Complete
Hemodialysis		•	•	3 months	Sample

Source: HIRA (2012), *Comprehensive Quality Report for National Health Insurance 2010*, Health Insurance Review and Assessment Service, Seoul.

Table 1.5 illustrates the broad suit of indicators on acute care, long-term care and prescription of medication that are presently collected by HIRA.

These indicators compose a nice mix of data on structure, process and outcome. The process data on AMI and stroke are impressive, though the outcome data (30-day case fatality rates) are rather high compared with other OECD countries. Understanding the extent to which there are local and regional differences in this performance could be a useful exercise to help inform policies to improve quality of care. The data on prophylactic antibiotics, caesarean sections and volume of surgery could help inform

further in depth analyses in variations and trends over time. HIRA also has the potential to link data on volumes of services delivered to data on outcomes for various hospitals over time. The long-term care indicators are mainly based on structure and process. It would be interesting to complement these with outcome indicators, either based on disability measures or self-reported experiences by long-term care residents.

While HIRA has impressive data collection capabilities, the extent of information collected is often underutilised in informing improvements in the quality of care. A large majority of the data collected is focused on the hospitals sector or prescribing of medicines in outpatient settings. This may reflect challenges in collecting data from smaller clinics faced by HIRA. Since 2011, an amendment of the National Health Insurance Law is under discussion in the Korean National Assembly that would strengthen HIRA's possibilities for quality assessment and seek to make it mandatory for health care service providers to make necessary data available to HIRA.

While extensive information is made available to the public and to hospitals, there is little evidence to suggest that it has been driving major improvements in medical practice. This is partly because specific research focusing on the impact of information is scarce and trends in performance are difficult to attribute to the availability of data. Recent efforts to build on data collection and use it to drive performance through the Value Incentive Programme suggests some encouraging results, but this is limited to a handful of tertiary large hospitals.

Table 1.5. Summary table of results across quality indicators collected by HIRA

Assessment items	Indicators	2010 results (%)	
Acute myocardial infarction	Thrombolytics administration rate within 60 minutes of hospital arrival	81.9%	
	Primary PCI rate within 120 minutes of hospital arrival	91.7%	
	Aspirin administration rate of hospital arrival	98.6%	
	Aspirin prescription rate at discharge	99.3%	
	Beta-blocker prescription rate at discharge	95.7%	
	In-hospital case fatality rate	7.0%	
	30-day case fatality rate after admission	7.7%	
Acute stroke	Ischemic stroke and hemorrhagic stroke	Documentation rate of smoking history	94.0%
		Neurological examination rate	93.7%
		Dysphagia examination rate within two days	87.2%
		Brain imaging rate within 24 hours	98.7%
		Brain imaging rate within 1 hour	92.5%
		Consideration rate of early rehabilitation (within 3 days)	89.4%
	Ischemic stroke	Lipid profile test rate	96.0%
		Consolidation rate of IV t-PA initiation	93.5%
		IV t-PA administration rate	74.0%
		Administration of rate of antithrombotics within 48 hours	95.9%
		Anticoagulants prescription rate for patients with arterial fibrillation at discharge	99.1%
		Antithrombotics prescription rate at discharge	98.5%

Use of prophylactic antibiotics for surgery	Initial prophylactic antibiotic prescription rate within one hour before skin incision		75.6%	
	Administration rate of aminoglycosides		26.5%	
	Administration rate of third or later generation cephalosporin antibiotics		7.0%	
	Prophylactic antibiotics combination rate		37.3%	
	Antibiotics prescription rate at discharge		35.9%	
	Total mean days of prophylactic antibiotics administration		5.7 days	
Caesarean section	Caesarean section rate		36.0%	
Surgical volume indicators	Institutions that exceeded the standard volume of stomach cancer surgery		28.5%	
	Institutions that exceeded the standard volume colon cancer surgery		27.60%	
	Institutions that exceeded the standard volume of liver cancer surgery		43.5%*	
	Institutions that exceeded the standard volume of hip replacements		21.60%	
	Institutions that exceeded the standard volume of percutaneous coronary intervention		60.60%	
Long-term care hospital	Structure	Basic facilities	Average space per ward bed	6.5 (m ²)
			Percentage of multi-patient wards (over seven people)	48.7%
			Wards with toilets	48.4%
			Availability of adequate bathroom facilities	76.5%
			Availability of furnished amenities (lounge, cafeterias)	19.8%
		Safety facilities	Rate of thresholds or bumps removed (wards, bathrooms, and toilets)	50.1%
			Rate of non-slip floors installed (bathrooms, toilets, stairs)	50.7%
			Rate of emergency call system installed (wards, bathrooms, toilets)	13.1%
			Rate of safety grips installed (bathrooms, toilets, hallways)	35.1%
		Doctors	No. of beds per doctors	35.7
	On-call doctor availability in nights/holidays		30.2%	
	Nurses	No. of beds per nurse	13.2	
		No. of beds per nursing personnel	6.0	
		Turnover rates of nursing personnel	35.7%	
	Other human resources	No. of beds per physical therapist	68.1	
		Availability of pharmacy (including pharmacists)	32.3%	
		Availability of radiation cabins (including radiologists)	61.0%	
		Availability of clinical laboratories (including medical lab technologists)	39.8%	
		Availability of social workers	47.5%	
	Medical equipment	No. of EKG monitors per 100 beds	2.7	
		No. of pulse oximeters per 100 beds	3.7	
		No. of oxygen supply equipment per 100 beds	22.2	
		No. of aspirator per 100 beds	21.2	
Treatment	Process	Percentage of patients with an indwelling urinary catheter (high-low risk patient group)	24.1% / 3.6%	
		MMSE test rate for patients aged 65 years or older when hospitalised	58.6%	
		HbA1c test rate for diabetic patients	45.6%	

* Results of analysis for two years treatment, 2008-09.

Source: HIRA (2011), "Response to the OECD Questionnaire on Quality of Care in Korea, Health Insurance Review and Assessment Service", Seoul (unpublished).

HIRA should seek to extract more value from the data already available to it. By linking claims information, quality indicators for clinical care and information available in registries, Korea could better analyse the performance of the health care system and tailor care to specific needs. For example, Korea currently has the capability to “follow” patients with multi-morbidities or those with suffering from chronic health conditions to better understand which health care services they are using and how often they are used, as well as how this affects the continuity of care and their readmission and mortality prospects. Diabetes and COPD might be good examples to take given the performance of Korea on indicators related to potential avoidable admissions on these diseases.

The knowledge garnered from such monitoring could inform what services are delivered to patients as a follow up to one of Korea’s health care screening programmes and thus provide a longitudinal oversight of needed health care services and services actually provided. Similarly, better information would be indispensable for improving the quality of cancer care, where registries could follow various cohorts of patients, their treatment outcomes and their mortality. Recent OECD work analysing the differences in cancer outcomes and the relation with cancer governance emphasise the importance of such an approach (OECD, 2012). System wide information on quality of care can potentially be used for whole system monitoring and provide important data input for setting short term priorities and formulating policy in the long term.

In the longer term, Korea should seek to build a simple electronic patient history that is compatible across health care settings. Korea already has the technological capabilities for this innovation. Individual patient identifiers form the basis of the Drug Utilisation Review and are reported to HIRA when claims are made for services delivered under health insurance. When combined, these two sets of information alone would provide a simple electronic patient history for medical professionals to understand what medications a person is currently prescribed to and their use of health services in the recent past. In time, such a system could be extended to include the electronic store of diagnostic and other test results, potentially helping reduce cost of duplicate services in the system today. Delivering such a system will require Korea to have a national debate and accommodate concerns over privacy relating to an electronic patient record. Other OECD countries that are pursuing electronic patient records, such as Canada and Australia are working with consumer and privacy organisations to build safeguards and embed patient control into the disclosure of their health information. Such an approach should be considered in Korea. The potential efficiency gains and the ability for patient records to provide better information to clinicians and

help them deliver tailored care for patients ought to justify a reconsideration of current roadblocks to electronic patient records.

Policies on measuring patient safety and patient experiences

Patient safety and patient experience do not seem to be as much of a focus for the health system and health policy in Korea as it is in other OECD countries. Despite its impressive information infrastructure, Korea does not currently report patient safety indicator data to the OECD. This information should be able to be derived from administrative databases and illustrate shortfalls in quality of care such as “foreign bodies left during surgery” and “post-operative sepsis” (OECD, 2011). Other countries such as the United States, Canada, Denmark, Australia and France have undertaken national studies of patient safety with a view to establishing a baseline situation for the occurrence of adverse events in hospitals from which ongoing performance can be monitored. Such a national study has not been undertaken in Korea. This could reflect a disconnect between individual providers and national policies. Many tertiary hospitals in Korea appeared to have internal systems for monitoring patient safety and critical errors, however these were likely to have been the initiative of the hospital and used for internal quality control and improvement. There does not, however, appear to be a national system obliging those providers that may not do so from monitoring and reporting on adverse events in hospitals and in smaller clinics.

Patient experiences are likely to be measured in many health care facilities across Korea but are not comparable across the country. Having a form of patient experience measurement is one of the legally required standards in the accreditation process for hospitals, though the methods through which these measurements are executed have not been (nationally) standardised. While this likely produces worthwhile information for particular hospitals, it cannot be used for comparisons between health care services, or by consumers to inform their choices between institutions. In addition to accreditation, the Performance Evaluation Act for Public Organisation (2004) specifies that all public organisations (including public hospitals and clinics) need to report on the performance of the management and of personnel, and also includes an assessment of patient satisfaction. The lack of systematic measurement of patient experiences reflects that the prime focus of regulatory oversight is often on measuring medical effectiveness. Korea should seek to harness the experience of patients as an important information source for quality improvement. This could be undertaken by encouraging the systematic measurement of patient experiences according to agreed standards, which HIRA would be ideally placed to conduct.

Policies related to public reporting on performance

Korea has undertaken a number of initiatives to improve public reporting on quality of care. Both HIRA and KOIHA undertake public reporting on health care providers. Initially, HIRA only disclosed summary data on performance, by publishing a list of high performing providers in 2005 and then publishing a broader list of service providers with both positive and negative results on a website (see www.hira.or.kr) since 2006. Since these initial efforts, the number of assessment items has been expanded and a rating system for hospitals has been in place since 2009. This rating system assigns each hospital between one and five stars. Although a star-reporting-system has public appeal, it can also be misleading if the underlying information is not properly provided and weighted.

HIRA currently publishes the average cost and duration of hospitalisation for 38 types of surgical procedures. In addition, HIRA also publishes the location, human resources, equipments, and the specific important procedures provided, such as organ transplantation. Appropriate distinctions are made between the types of hospitals and those hospitals that are regional. Critically, this public reporting almost only applies to the hospital sector. It is also worth noting that HIRA measures the volume of antibiotics prescription for the acute respiratory infection, injection rate, hypertension care, and diabetes care in primary care. However, measures of quality of care provided by smaller clinics and individual clinicians remain underdeveloped in Korea.

Reporting through accreditation is undertaken through KOIHA, which discloses the names of accredited medical care institutions (so far mainly hospitals). In addition, the Emergency Medical Service Act obliges the Ministry of Health and Welfare to publicly disclose the results of a quality assessment of the Korean Emergency Services (450 emergency medical institutions) every year (see www.mw.go.kr).

Public disclosure of quality performance ought to be more extensively used to influence medical practice in Korea. Particularly in a health care service delivery market as competitive as Korea, public reporting on performance can be an influential way of encouraging health care providers to improve quality. HIRA and KOIHA should expand on current efforts by extending reporting on performance to include small clinics and monitor the performance of individual clinicians. Such activities would help the insurer and health care service provider better assess performance in delivering quality of care. In addition, on a national level, Korea should consider producing a national report on the performance of the health care system. These national performance reports, when executed on a regular basis such

as in the United States, the Netherlands and Sweden can often develop a high profile and inform decision making within government. The report released by HIRA that comes closest to such a publication is the Comprehensive Quality Report of National health Insurance 2010 (HIRA, 2012) although this has less of a whole health system perspective. Releasing a National Health System Performance report on a regular basis in Korea could encourage a stronger focus on which parts of the Korean health care system are – and are not – delivering high quality care. Such a report could also be used to outline performance on a regional or local community-based level, giving providers with feedback on their relative performance across specific areas.

1.5. Policies to drive improvements in the quality of care

National patient safety programmes

After the release of the US Institute of Medicine study *To Err is Human: Building a Safer Health System* (Kohn *et al.*, 2000), many OECD countries have implemented initiatives to improve patient safety. In addition to reporting systems for adverse events in the hospital sector and beyond, various countries have set up national patient safety institutes and initiated patient safety programmes to create more awareness on safety issues, nurture a patient safety culture and initiate interventions that enhance the safety of care, such as checklists for surgery (World Health Organization, 2009). National efforts have been supplemented by the World Health Organization's launch of a large international patient safety programme. As highlighted earlier, patient safety seems to receive less attention from public health authorities in Korea.

Most notably, there is no specific monitoring system or legislation to monitor and address medical malpractice in Korea. This situation occurs despite repeated attempts by various stakeholders to legislate on medical disputes since the 1990s. As a result, medical providers are not required to have liability insurance and the primary recourse for patients is to pursue legal proceedings for damages in instances of malpractice. Patients can file a claim with the assistance of the Medical Scheme Mediation Committee (created under the Medical Services Law), but this Committee does not have the resources to get involved in dispute resolution. In general, patients have to face the expense associated with legal action and the cost of demonstrating that damage has been caused by medical providers, which may be a significant financial hurdle to further patient disclosure of malpractice. Countries such as the United Kingdom have developed facilities for public reporting on medical malpractice. This usually occurs through institutions that are accessible to patients and which have the

capacity to review situations without significant costs to patients (or unfair publicity for providers). The Korean Consumer Agency publicly reports on medical errors, but in an irregular and un-standardised way.

Korea should seek to create an adverse events reporting system, which could be an important tool to improve quality of care and patient safety. The prospect of building such a system is well recognised within government in Korea, and specific legislation on liability insurance for medical providers has also been recommended by national experts (Lee and Yun, 2009). Such a policy could provide a more efficient and effective way of investigating reported situations of medical malpractice, and help stop the considerable growth in spending for medical malpractice in Korea. At a broader level, government should provide more attention to patient safety in Korea – across legislation for malpractice, measurement for adverse events and dedicated policies to improve performance. A worthwhile starting point to establish the magnitude of this problem in Korea would be a baseline study, as has been conducted in many other OECD countries such as the United States, Denmark, the Netherlands and Australia in recent years.

Policies related to clinical pathways within and between health care services

Ensuring that patients receive co-ordinated care across multiple health services is an important component of quality of care. All OECD countries are currently grappling with restructuring health care to better serve the increasing numbers of patients living with chronic diseases. Many of the solutions for improving quality in this domain include improving logistics between health care services, formalising mutual roles and responsibilities of health care providers, establishing information systems that are able to monitor the quality of patient centred care on continuous basis and providing quality assurance of interventions when they are appropriate. Organisational responses have also included strengthening the formal co-operation between different health care services, either through voluntary efforts by providers, obligations or financing and purchasing arrangements such as bundled payment and financing of accountable health care organisations. These policies are discussed in other sections of this chapter (and this report in general) but a specific strategy that can be deployed to improve the patient experience of care is to pursue clinical pathways.

Korea currently does not have a nationally standardised approach towards clinical pathways. However, there are several research institutes and hospitals that are undertaking work in this area. Box 1.3 below describes the clinical pathway activities in the Seoul National University Bundang Hospital where quality is assessed through a series of clinical indicators.

Box 1.3. Quality Improvement Programmes at the Seoul National University Bundang Hospital (SNUBH)

The SNUBH is a large university hospital which employs 554 doctors and 939 nurses. It is one of the leading Korean hospitals in quality programmes and uses the most up-to-date technological devices (has unique patient identifiers, uses radio frequency identification and barcode). Quality of care is controlled through the on-going assessment of the service provision using 255 clinical indicators, linked to a total of 98 critical pathways.

The SNUBH has developed comprehensive critical pathways and Quality Improvement programmes for both acute myocardial infarction (AMI) and stroke. The critical pathway organises care around the patient, reducing to 90 minutes the time between the emergency room visit due to chest pain and the coronary care unit admission. It also puts in place an emergency call system.

In addition to similar critical pathways for AMI, the SNUBH also set up an electronic medical record-based Quality Measurement of Stroke of Care System (EQMASS) to co-ordinate doctors and team members (using SMS) for stroke unit admission within three hours after the initial arrival to Emergency Room with symptoms and signs of stroke. A weekly report and feedback is also prepared and presented to the teams.

Finally, the SNUBH developed a pre-hospital evaluation and management for acute chest pain. The purpose of the system is to shorten the EMS call-to-balloon time, minimise transfer rate, develop an effective tool of medical direction and integrate the information obtained before and during hospital admission. The system is being implemented in Seong-nam City only. The programme put in place 12 ambulances equipped to send information about the state of the patient directly to three general hospitals in Seong-Nam city via a 3G wireless network (which can then, in turn, activate the PCI team member organisation). This improved communication is set to reduce the call-to-balloon time by 40 minutes.

Source: Presentation prepared for OECD, SNUBH Quality Improvement Programmes, 5 Nov. 2011.

On a national level, there is a national management programme for CVD that is implementing a clinical pathway. This programme is initiated by the Korean Ministry of Health and Welfare Affairs and being undertaken by the Korea Centres for Disease Control and Prevention in close collaboration with nine regional university hospitals that serve as a hub for prevention, treatment and rehabilitation of CVD. Aside from this programme for CVD, several other initiatives related to clinical pathways seem to exist in Korea, but the extent to which they are embedded and have become part of the quality improvement activities into the system is unclear. Where there is oversight of the pathways between primary care facilities and hospitals is more of an exception than a rule in Korea. This only underscores the need to work on more integration in the Korean health care service delivery system. Korea should seek to learn from national programmes such as in the United States, the United Kingdom, Denmark and France that try to implement

quality improvement efforts on specific themes in a large number of institutes at the same time.

National quality improvement programmes

Several OECD member states have initiated national quality improvement programmes often modelled after the programmes run by the Institute for Healthcare Improvement (IHI) in the United States. These programmes aim to improve quality of care by working with a group of institutes over a fixed period of time on a specific quality improvement topic. Although the literature on the effectiveness of these programmes is still indecisive (Ovretveit and Klazinga, 2010), these efforts usually illustrate a worthwhile co-operation amongst health care providers, patients, financiers and government to actively work on quality improvement.

Korea does not have such a government initiated programme to date and activities undertaken by HIRA to date include issuing of newsletters on quality of care, quality improvement community actions, running a quality improvement contest, quality improvement training activities and hosting conferences on quality of care. HIRA's policy documents suggests an ambition to broaden its scope from simply assessing the appropriateness of the provision and payment of medical services towards supporting health care providers in improving quality of care in Korea. Achieving this shift in focus should be undertaken in conjunction with other organisations responsible for quality improvement activities, such as KOIHA (for hospital accreditation) and NECA (for health technology assessment). HIRA should seek to establish itself as the institutional champion for quality in the Korean health care system, not just for larger hospitals but for all clinics, primary care facilities, long-term care and mental health care facilities and other health care professionals providing health care.

1.6. Government priorities related to quality of care

Quality of care has increasingly become a focus of health policies in OECD countries, in many of which it has been established as a central aim in improving health system performance. This interest has brought attention to the assessment of quality through robust information infrastructures, valid and reliable indicators, and programmes that assure quality and programmes to improve quality. In Korea, the strategic focus of regulatory and governmental oversight of the system is largely linked to assessing the appropriateness of benefits provided under insurance. The focus – particularly that of HIRA – has largely been on assessment and not improvement.

Nonetheless, Korea has strong foundations for improving quality of care. Korea's advanced information technology infrastructure that facilitates the calculation of an impressive range of quality indicators. At the same time, professional training and continuous education form the bedrock of assuring the quality of human resources, and are organised through professional organisations and the hospital association. These activities are comparable with what other OECD countries are undertaking. However, Korea falls short of best practices amongst OECD countries in re-certifying its medical professionals, assessing professional performance and improving patient safety and patient experience. Indeed, in seeking to influence and drive best practice for individual clinician performance, Korea's professional bodies often do not play the same professional leadership role that comparable organisations in other OECD countries currently do. This is supplemented with weak organisation of patient and consumer groups compared to other OECD countries. While accreditation is expanding professionally, it still has a limited reach. The same can be said for the development of clinical guidelines.

Underlying these specific strategies is the legislative and institutional framework for assuring quality of care in the Korean health system. Korean policy makers should consider codifying quality of care in legislation by broadening the focus of the Framework Act on Medical Services to improving the health of Koreans and not merely assuring the delivery of insured services. A broader approach would allow room for a greater focus on patient safety and patient experiences. Changes to legislation should be supplemented by changes to the design of the institutional landscape to make HIRA the national leader for quality improvement.

Whereas this chapter has provided an overview of key aspects of quality of care in the Korean health system, the following chapters will focus on specific areas for improvement. Beyond building an improved regulatory architecture and putting in place sensible policies that assure quality of care in specific ways, there is a need to develop more efficient financing and actively use financing to drive improvements in quality of care, this is the focus of Chapter 2. A major objective of both financing and policy making is the need to deliver better primary health care in Korea, which will be the focus of Chapter 3. Finally, this report will provide an overview of quality of care in relation to the prevention, diagnoses and treatment of one of Korea's largest health problems, cardio and cerebrovascular diseases (Chapter 4).

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Chapter 2

Using financing to drive improvements in health care quality

This chapter examines the financing and organisation of the Korean health care system and whether it is driving improvements in the quality of care. Korea's national health insurance faces a difficult budgetary environment as it grapples with rapidly rising health care costs, in large part driven by a very competitive hospital sector that is underpinned by fee-for-service financing rewarding the over-supply of medical services. It is argued that Korea ought to use its single insurer to more explicitly drive quality across the health care system. This should begin by shifting to financing hospitals through diagnostic-related groups (DRGs) to reduce the over-provision of services per patient. More broadly, stronger budgetary controls on hospital expenditure should be used to shift the balance of funding towards primary care over time. In this context, Korea's unique pay for performance programme has demonstrated the capacity to extract valuable information to assess the quality of care. Future reform should seek to build on this by incorporating assessments of quality of care into financing.

This chapter examines whether the organisation of health care services and payments in Korea is supporting quality of care. It begins by providing an overview of health spending in Korea that illustrates that the delivery of acute care services has become the major focus of the Korean health care system. This is underpinned by the organisation of health service providers and resources and reinforced by a payment system that rewards the delivery of more, and more complex, services.

Improving the quality of care in this system requires a focus on constraining expenditure for unnecessary services (more often delivered in hospitals), and in the long term, shifting the balance of care towards primary care services that will help Koreans manage their chronic conditions. Together, these changes can also help drive further efficiency in the Korean health system. In the context of these broad reforms, Korea's innovative pay for performance scheme has demonstrated the capacity to extract valuable information to assess the quality of care. Future reform should seek to build on this corporate knowledge, and seek to incorporate assessments on performance in delivering quality of care into financing health care.

2.1. The economic imperative for health reform in Korea

The Korean health care system has been through a period of major reforms in recent years

The Korean health care system has been through a major period of development and reform over the last half century, and most significantly so in recent years. When health insurance was first introduced in 1977 for workplaces of 500 employees or more, only 3.2 million people were covered. By 1990, health insurance covered Korea's population of 44.1 million people (Lee and Yun, 2009). This rapid expansion of coverage over the past two decades serves as a model for countries seeking to deliver universal health coverage for health care through social insurance.

After two decades of expanding coverage, two major reforms were undertaken in the Korean health care system at the beginning of this decade. First, health insurance was consolidated from multiple payers to a single insurer under the National Health Insurance Corporation (NHIC). Second, the functions of prescribing and dispensing of drugs were separated between doctors and pharmacists (the Separation Reform). The Korean health care system has undergone a complex period of change as a result of these reforms, with the Separation Reform in particular resulting in contested negotiations and significant financial difficulties in National Health Insurance (OECD, 2003). The size and scale of these reforms, along with the speed with which they were undertaken, is remarkable. There is already an extensive literature

examining the formulation and evolution of these reforms in Korea – see “Making Reform Happen” (Jeong and Hurst, 2010). This chapter will focus on how the health system established by these reforms can be adapted to better improve quality of care in the Korea into the future.

Korea’s national health insurance faces a difficult budgetary environment as it grapples with rapidly rising health care costs. This should not deter it from focusing on quality

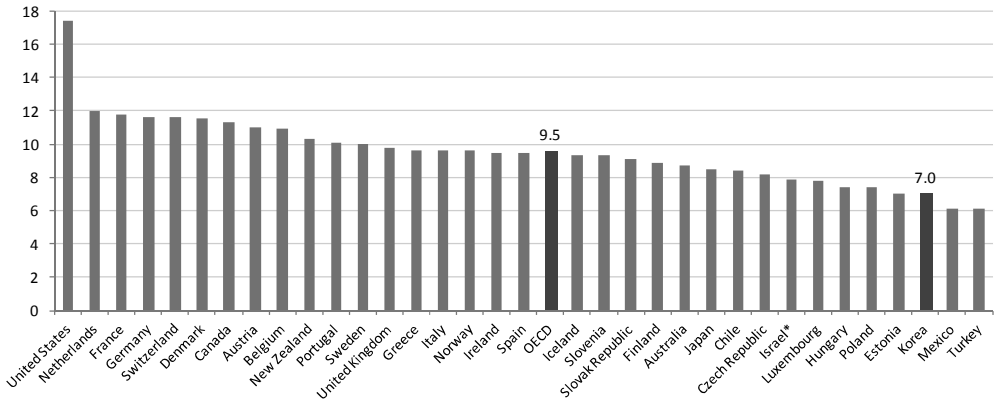
As with many OECD countries, Korea faces the difficult challenge of seeking to improve quality of care in a financially constrained environment. Korea’s national health insurance experienced successive deficits until 2002 (Lee *et al.*, 2009). This has heightened the focus of policy makers on the need for ongoing health reform to improve efficiency and better contain costs. Though finances have been restored somewhat in recent years, the National Health Insurance will experience a short term deficit of KWR 1 300 billion at the end of 2010 (HIRA, 2011).

Operating in a constrained budgetary environment, it is clear that a policy objective for the Korean Government is to seek further efficiencies (and potentially seek further ways of raising revenue). The current structure of the Korean health system is not likely to make this an easy task. However, the need for action to address this financial situation provides a unique window of opportunity for reform. A key challenge will be to ensure that reforms undertaken over the next few years – though they may be driven by financial concerns – are consistent with leveraging longer term improvements in the quality of care.

Korea spends less on health care compared to other OECD countries, but is experiencing faster rates of growth in health care costs

Korea’s financing challenge begins from a position of already spending less on health than most OECD countries. In 2010, Korea spent 7.0% of its GDP on health, placing it alongside Estonia and in equal third lowest among OECD countries. While this level of spending was ahead of Mexico and Turkey, who both spent 6.1% of GDP, these countries do not (yet) have a universal health care system. Average spending on health across all OECD countries in the same year was 9.5% of GDP (Figure 2.1). This comparatively low level of health spending is also reflected when measured on a per person basis, with Korea spending USD 1 980 per person (USD PPP) on health in 2010, compared with an average of USD 3 246 per person (USD PPP) across all OECD countries (OECD, 2011). This was amongst the lowest spending on health per person in OECD countries, alongside only Hungary, Poland, Chile, Mexico and Turkey (Figure 2.2).

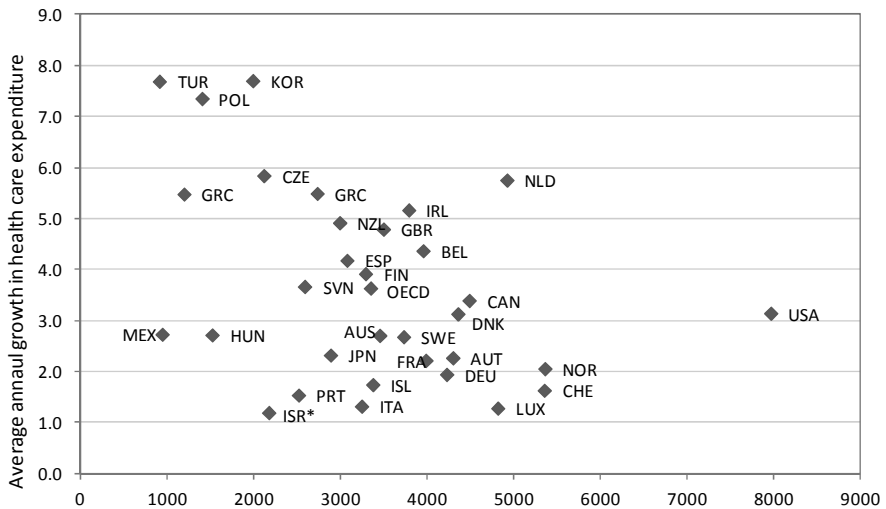
Figure 2.1. Health spending as a share of GDP across OECD countries, 2010 (or earliest year available)



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

Figure 2.2. Health expenditure per capita across OECD countries and growth in per capita health expenditure, 2002-09

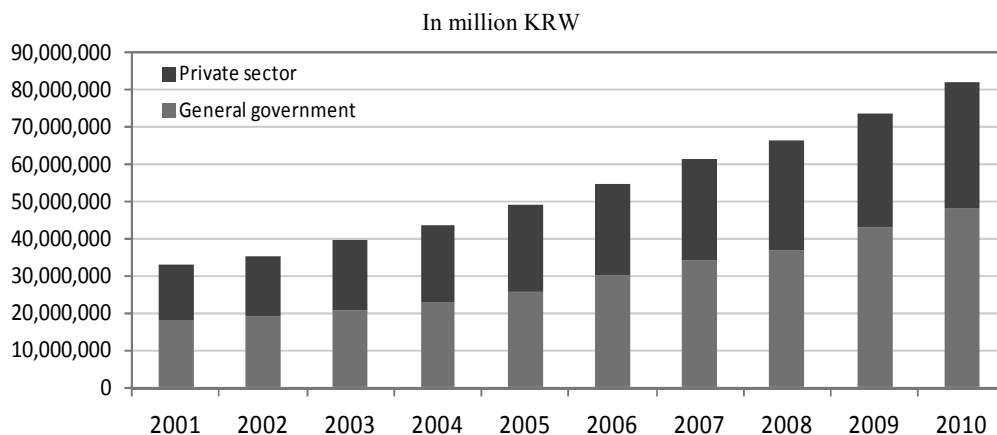


* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

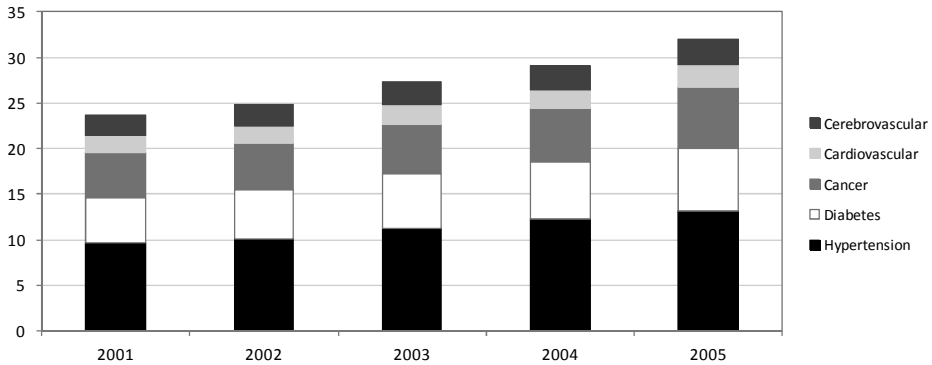
Though it has a comparatively low level of overall health expenditure, Korea is currently experiencing the fastest growth in per capita health spending across all OECD countries. Korea's average growth in health spending per capita of 7.7% a year between 2002 and 2009 is more than double the OECD average of 3.6% a year over the same period of time. When observed on nominal terms, this growth in the amount of health spending has been experienced in both the public and private sectors, which have been growing by 11% and 10% respectively over the same period of time (as illustrated in Figure 2.3 below). It is estimated that medical expenses for chronically ill patients accounted for 32% of total medical expenses in 2005 (see Figure 2.4), and currently are estimated to be growing as much as 17% a year (Lee and Yun, 2009). These significant levels of growth imply a need for Korea to focus on appropriate and cost effective ways of tackling chronic diseases.

Figure 2.3. Public and private sector health expenditure in Korea, 2001-10



Source: OECD Health Data 2011.

Given the comparatively lower overall levels of health spending in Korea relative to other OECD countries, strong growth in spending may not necessarily be a bad thing. Providing that this growth in health care spending reflects the value that Korean society is willing to place on services that improve their health, additional spending could reflect Korea's significant gains in economic development over the past two decades. However, this does not mean that additional health spending in recent years is delivering value for money. Indeed, the rapid growth in health spending is likely to reflect – and indeed, reinforce – imbalances in the Korean health system that are skewing where money is being spent.

Figure 2.4. Proportion of overall NHI medical expenses by chronic disease by category

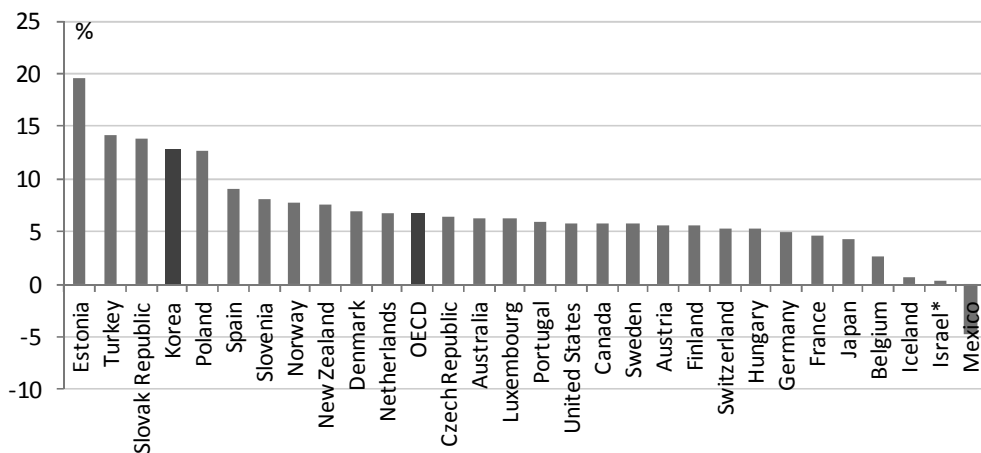
Source: Lee, S. and K. Yun (2009), “Policy Recommendations for the Advancement of Health Care”, Working Paper No. 2009-03, Korea Institute for Health and Social Affairs.

Even more than in other OECD countries, hospitals are driving increases in health costs

Spending on hospitals has been the major driver of growth in health expenditure in Korea over recent years. Spending on hospitals in Korea increased by 13% a year between 2003 and 2009, compared to 6% a year for spending on ambulatory care services (principally physician offices and dentists’ offices) and 9% a year for retail sales of health and medical goods (principally pharmaceuticals sold from chemists) over the same period. While it is not unusual for hospitals to be the fastest growing area of spending across OECD health systems, hospital spending in Korea appears to be outpacing most OECD countries. Korea’s growth rate in hospitals spending averaged 12.8% a year between 2002 and 2009, close to double the OECD average (excluding Chile, Greece, the United Kingdom, Italy and Ireland where data was not available) of 6.7% a year over the same period (see Figure 2.5).

As the single largest component of health spending in OECD countries, hospitals often account for a significant share of growth. Over the past five years, hospital spending accounted for half of the growth in overall health spending in the Korean health system (see Figure 2.6). In comparison, across the group of 17 OECD countries for which data was available, hospitals accounted for 35% of the growth in health spending over the same period. This strong growth in hospitals spending reflects the structure of health services and operation of payments in Korea.

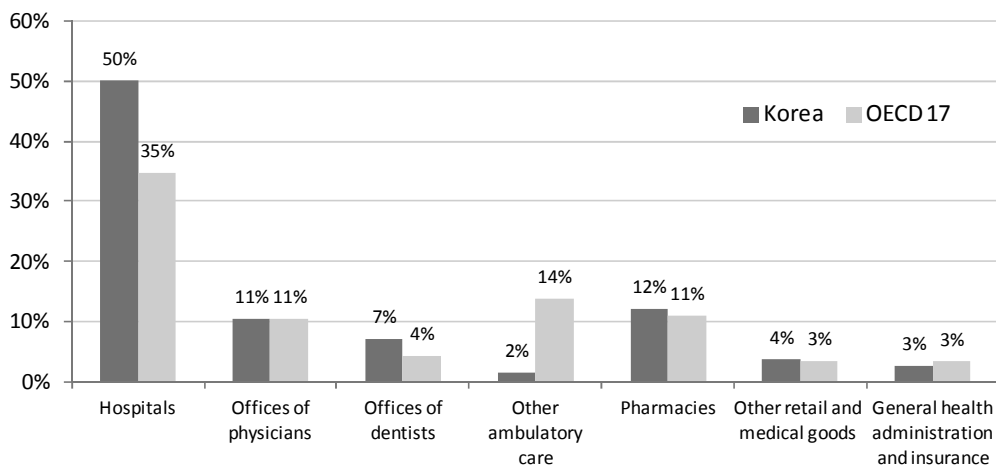
Figure 2.5. Average annual growth in hospital spending per capita across OECD countries between 2002 and 2009



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

Figure 2.6. Major contributors to growth in health spending per capita between 2004 and 2009, Korea compared to an average of 17 OECD countries



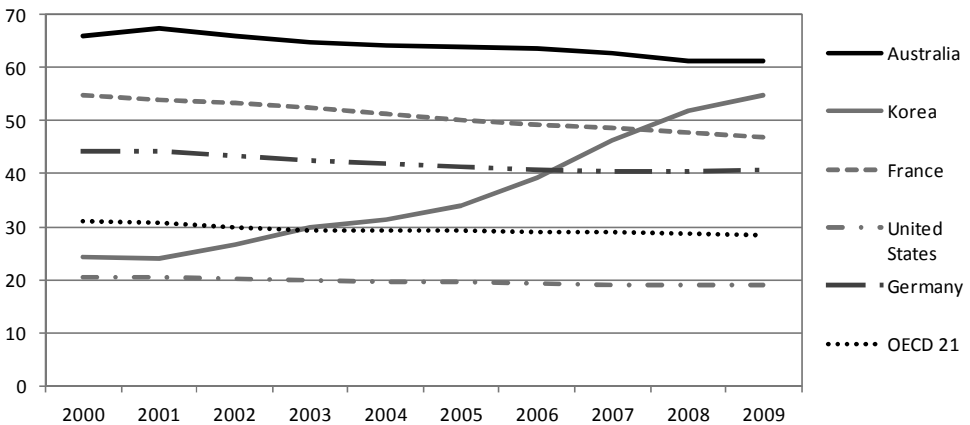
Source: OECD Health Data 2011.

2.2. Korea has a large supply of health and hospital services at low prices

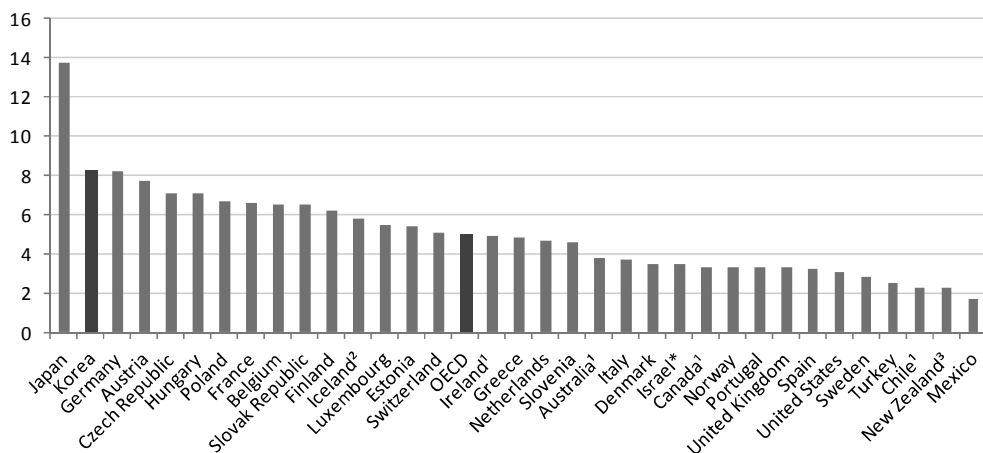
Korea has some of the highest levels of supply of hospitals and high technology medical equipment amongst OECD countries

For its population, Korea has one of the most substantial hospital sectors amongst OECD countries today. At a time when most OECD countries have been bolstering community-based services and gradually reducing the number of hospital beds, Korea has seen a major expansion in the supply and availability of resources in the hospitals sector. This has seen Korea “overtake” almost all OECD countries over the past 20 years to have one of the highest number of hospitals and hospital beds relative to its population (Figure 2.7). With 55 hospitals per million persons, Korea is behind only Japan (69 hospitals per million persons) and Australia (61 hospitals per million persons). This is well above an OECD average of 31 hospitals per million population. Similarly, Korea’s 8.3 hospital beds per 1 000 people places it behind only Japan with 13.7 hospital beds per 1 000 people, and well above the OECD average of 5.0 hospital beds per 1 000 people (Figure 2.8). A study published by the Korean Institute for Health and Social Affairs estimated there was an oversupply of 30 000 acute care beds while there was a shortage of around 70 000 long-term care beds in 2004 (Lee and Yun, 2009).

Figure 2.7. Hospitals per million persons across OECD countries, 2000 to 2009



Source: OECD Health Data 2011.

Figure 2.8. Hospital beds per 1 000 people across OECD countries, 2009

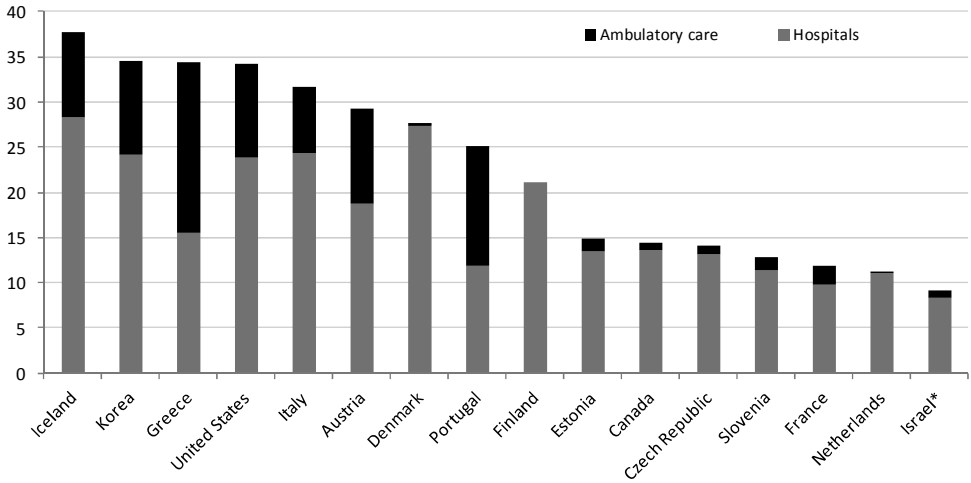
1. 2008 data; 2. 2007 data; 3. 2010 data.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

The Korean health system also has some of the highest levels of high technology medical equipment amongst OECD countries. As demonstrated in Figure 2.9, with 34.5 computed tomography (CT) scanners per million persons, Korea is the fourth highest after Japan (97.3 per million persons), Australia (42.5 per million persons) and Iceland (37.7 per million persons). Similarly, Korea has the sixth highest number of magnetic resonance imaging (MRI) units, with 19.5 per million persons, compared to an average amongst OECD countries of 12 per million persons (see Figure 2.10). While the significant availability of technology in the Korean health care system is likely to reflect the large number of hospitals, Korea has also traditionally been an early adopter of medical technologies. Together, the internationally high levels of supply of hospitals and high technology medical devices reflect a health system with very significant acute care capabilities.

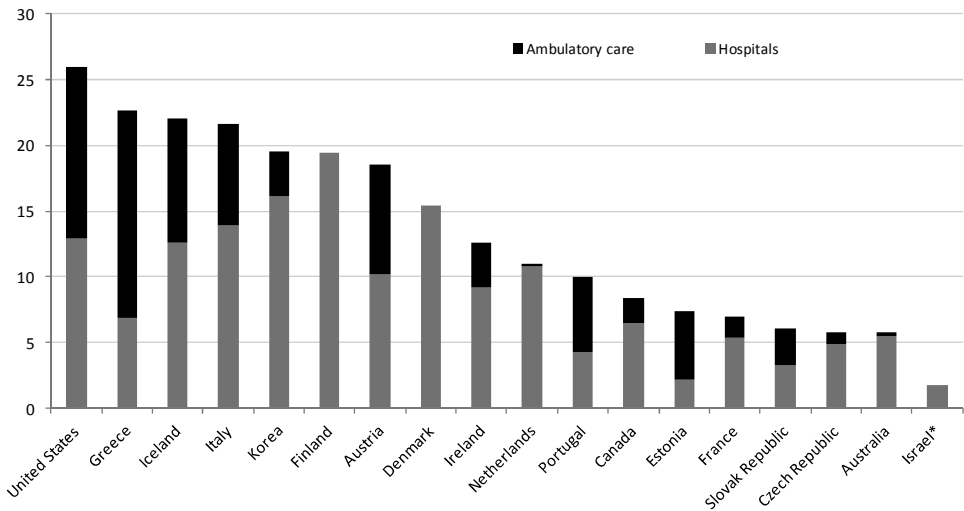
Figure 2.9. Number of CT scanners per million persons across OECD countries, 2009



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

Figure 2.10. Number of MRI units per million persons across OECD countries, 2009



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

The number of medical personnel in Korea is significantly lower than most OECD countries

Despite the substantial supply of hospitals and technology, Korea has a significantly lower number of health care personnel than most OECD countries. Korea's 1.9 practising physicians for every 1000 persons was the lowest out of the 26 OECD countries which report this data. Similarly, Korea's 4.5 nurses for every 1 000 person was the third lowest amongst 26 OECD countries which reported data (OECD, 2011). In broad terms, these indicators suggest that the delivery of health care services is characterised by significant infrastructure and technology with relatively lower labour intensity. With labour costs often the most significant component of health spending, this could help explain why Korea has maintained substantially lower levels of health care spending compared to many OECD countries.

Korea also has comparatively low price levels

The high levels of health care supply in Korea exist at the same time as comparatively lower prices than in many OECD countries. Until the turn of the decade, the Korean Government successfully pursued a policy of containing growth in fees for medical services, even below inflation levels being experienced in the economy at large. More recently, there have been large fee increases, particularly in response to the physicians strike against the separation reform. The government raised fees by around 43% over the three years to 2001 (Mathauer *et al.*, 2009). However, the unit cost of fees alone is not a sufficient basis for making a judgement on whether Korean medical professionals are adequately compensated for their work. Lower doctors' fees may reflect that Korea has managed to entrench a lower cost structure than most other OECD countries. If the care provided for the public's investment is appropriate and high quality, lower costs may be a strength of Korea's health system. However, it is also important to locate Korea's comparatively lower costs in context with other key characteristics of the health system. The combination of low medical fees, a lower physician intensity and a significant supply of hospital resources suggests that volume plays an important role in the overall remuneration of the medical profession in Korea. With incomes for medical providers and doctors depending on the volume of services delivered in a fee-for-service payment system, there is a risk that low fees lead to excess provision of services – a serious quality issue for Korea.

2.3. Key challenges in using financing to improve quality today

In addition to the physical resources and investment in health care, how services are organised, operate and are paid for are a critical factor in determining whether they support the delivery of high quality care. There are four key challenges in using financing to drive improvements in the quality of care in Korea today:

- Weak gatekeeping which often leads to people seeking care from specialists and in hospitals.
- A highly competitive market structure dominated by private providers.
- Fee-for-service financing which encourages the oversupply of services.
- The key institutions supporting National Health Insurance have limited levers to drive system reform.

This section profiles each of these challenges in setting the context for how policy ought to be adapted and deployed to better drive improvements in the quality of care.

Gatekeeping in the Korean health care system is weak

A major challenge for ensuring that patients receive an appropriate amount of care is weak gatekeeping in the Korean health system. Patients have an almost unconstrained choice of provider and can choose between western and oriental medicine (OECD, 2003). While there is notionally a requirement to have a referral from a family medicine specialist or a general medical practitioner prior to visiting a tertiary hospital, gatekeeping in Korea is not strictly enforced and patients can relatively easily access tertiary hospitals and their specialists (Chun *et al.*, 2009). Indeed, with significant competition between hospital outpatient departments and small clinics with minor surgical facilities many health care providers are likely to see family medicine as an “entry point” for more (or more complex) services such diagnostic testing, screening and minor surgical procedures.

Many hospitals in Korea have adopted practices that have weakened the effectiveness of the requirement to seek a referral before accessing specialist care. Examples include establishing family medicine centres (or departments) on hospitals premises that could sometimes also serve as a “gateway” for patients into the hospital at large. Absent the availability of longitudinal information on health outcomes experienced by patients, it is difficult to grasp the extent to which weak gatekeeping practices facilitate

the provision of unnecessary care. However, poor gatekeeping may help account for the significantly high number of doctor consultations per person in Korea.

A very competitive market for delivering health care services is likely to be fuelling a tendency for private providers to deliver acute care services

Health care services in Korea are largely delivered by private providers who operate in a highly competitive market characterised by low fees. Compared to several other OECD countries with significant publicly owned (or run) health service delivery organisations, most health care services in Korea are delivered in privately run clinics and private not-for-profit hospitals. Hospitals are generally classified into major “tertiary hospitals”, larger “general hospitals” and comparatively smaller “hospitals” (Table 2.1). General hospitals need to have a minimum of 100 inpatient beds and a minimum number of speciality departments. The 27 469 small clinics with few inpatient beds (an average of 3.6 beds) is a distinctive feature of the Korean health system (HIRA/NHIC, 2011).

Table 2.1. Distribution of hospitals by size in Korea

	Tertiary hospitals	General hospitals	Hospitals	Clinics
2006	43	253	1 322	25 789
2007	43	261	1 639	26 141
2008	43	269	1 883	26 528
2009	44	269	2 039	27 027
2010	44	274	2 182	27 469

Source: HIRA/NHIC (2010), National Health Insurance Statistical Yearbook.

Competition between facilities is significant as many institutions have the capability to deliver similar services. A substantial number of small clinics and general hospitals provide basic surgery and limited inpatient services, and most major hospitals have large outpatient departments. This competition is further promoted by relatively low barriers to entry into the health care service delivery market, with the establishment of hospitals and clinics left to private initiative. In this market, larger hospitals often distinguish themselves by virtue of their ability to deliver a greater range of more complex services and utilise the latest technology – effectively, as a “single” destination for all medical needs, staffed by the most prominent medical specialists. Historically, many of Korea’s hospitals have grown out of the offices of entrepreneurial doctors who sought to expand over time by

providing a greater range (and sophistication) of inpatient services. Pursuing growth in this manner not only allows facilities to increase revenues through the increased volumes and higher payments associated with more complex services, but also to access higher level of fees altogether. The current payment system increases the fee-for-service payment by 20% for small hospitals, and by 25% and 30% respectively for general hospitals and tertiary hospitals.

Small clinics tend to be run by general and specialist doctors in independent practice, who get paid on a fee-for-service basis. In practical terms, these small clinics are for-profit facilities, where individual doctors retain the difference between insurance (and relevant co-payment revenues) and the cost of delivering medical services. By legislation, hospitals are not-for-profit private organisations and tend to operate as corporatised entities which are usually run by doctors who reinvest earnings into further expansion of facilities and new technologies. While hospitals (as the financial entity) receive revenues from insurance (and co-payments), most staff tend to be paid a salary. It is likely that the significant number and availability of smaller for profit clinics creates market pressures for hospitals to compete on wages for staff in order to remain competitive. It has been noted that while the mean income of doctors in hospitals is above the national average for all employees, it is still likely to be lower than the average income of clinic doctors in independent practices (Chun *et al.*, 2009). Maintaining the competitiveness of salaries for doctors (who always have the ability to establish independent practice) is likely to be an operational factor driving hospitals to continue increasing revenues, with the attendant consequence of encouraging hospitals to increase volumes, particularly for complex procedures that smaller clinics are not capable of delivering. Indeed, the Korean Hospitals Association noted that while many hospitals are facing funding issues, the “big five” tertiary hospitals in Seoul are driving much of the capacity expansion in the Korean hospitals sector today.

It is often commented that all health care facilities in Korea – whether big or small – are also likely to rely on revenues from services delivered outside the insurance benefit basket (Mathauer *et al.*, 2009; and OECD, 2003). The prices of these services are determined by demand and supply free of regulation, and are financed through out of pocket payments (or private insurance). Fees earned from these uninsured services can vary dramatically by facility. However, a lack of financial information makes it very difficult to determine the extent of these practices and how significant they are to different service providers as a source of revenue. Larger hospitals are more likely to be benefitting from delivering such services as they have the financial capacity to invest in new technologies that are likely

to be outside the benefit basket. In comparison, smaller facilities, because of their size and narrowness of specialisation are more likely to deliver services that are covered by the benefit basket. This is likely to affect access to health care services. Poorer Medical Aid patients, who have the capacity to choose which hospital they visit, are more likely to be served in one of the few public hospitals in Korea, which could reflect that these public hospitals provide uninsured services at lower prices (OECD, 2003).

This highly competitive market structure of the Korean health care system makes increasing volumes and complexity of services good ways for providers to maximise profits. Korea's health care service delivery market structure is unique amongst OECD health systems. Several OECD country health systems have significant public providers of health care services that can often dampen pressure on costs from the supply side or dominate the delivery of complex procedures altogether. Korea's almost entirely private service providers do not face this kind of competition. In this regard, the Korean market for health care service delivery somewhat resembles arrangements in Germany and the Netherlands, where not-for-profit private providers dominate the bulk of service delivery. However, in these countries, care is financed through a system of multiple insurers (rather than Korea's single insurer). Unlike Germany and the Netherlands, Korea maintains a fee-for-service payment system that rewards private providers for increasing services delivered per case, without volume limits. While this has the benefit of underwriting a highly available hospitals sector in Korea, it entrenches institutional incentives for all providers – who each face their own economic pressures in a highly competitive market – to deliver as many and as complex services as possible. Within this market structure, doctors in Korea have the difficult task of both self regulating the care they provide while balancing entrenched institutional (or personal) imperatives to earn a profit. In this context, the major challenge for using financing to improve the quality of care should be to build better incentives for *appropriate* care.

Fee for service financing in the Korean health system is likely to be encouraging the oversupply of medical services

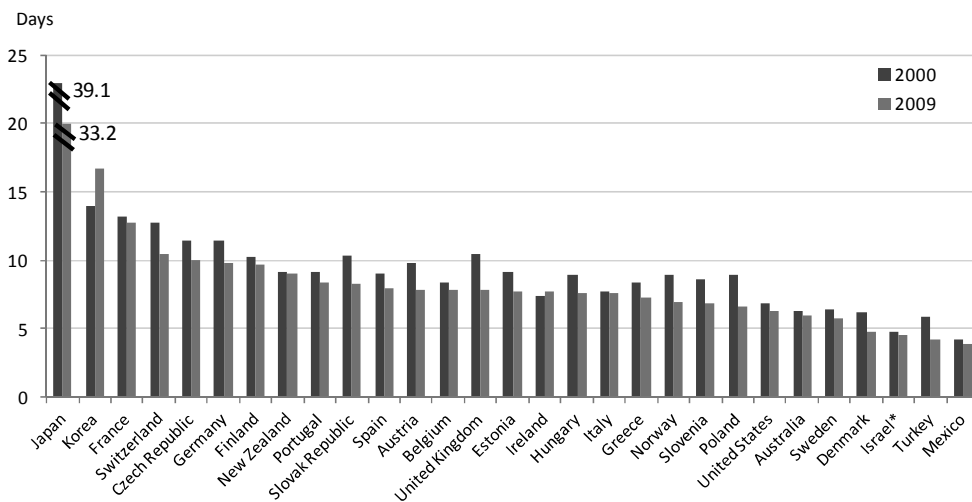
In addition to a highly competitive market for delivering health care services, Korea maintains a fee-for-service payment system that encourages the oversupply of health care services (Mathauer *et al.*, 2009; and OECD, 2003). Fee-for-service payments are process-based and reward professionals for the number and type of activities they perform. At a system-wide level, this form of payment can create incentives for overprovision as providers seek to maximise revenues which depend on the volume and intensity of services delivered. For patients, this can often mean that they receive a greater number of services per episode of care. Furthermore, fee for service systems often do

not pay (or pay comparatively less) for services such as counselling, education and guidance (Fujisawa and Lafortune, 2008). At a time when the burden of disease in Korea is shifting towards chronic diseases, which requires ongoing medical care of lower acuity and doctors' support in encouraging patient self management, a fee-for-service reimbursement structure may not be suited to fostering high quality chronic care.

Korea's exceptionally high average lengths of stay are likely to reflect the impact of fee-for-service financing in driving the overprovision of hospital care. Average length of stay is an approximate indicator of efficiency, with shorter stays often reducing the cost per discharge and occasionally reflecting efficiency improvements as care is shifted from inpatients to less expensive post-acute settings. After Japan, Korea has the longest average length of stay for inpatient care amongst all OECD countries. Korea's average length of stay of 16.7 days per inpatient admission in 2008 was almost double the OECD average of nine days per inpatient admission in the same year. As demonstrated in Figure 2.11 below, Korea is also the only OECD country in which the average length of stay for inpatients increased between 2000 and 2009 – from 14 days in 2000 to 16.7 days in 2009. In contrast, the average length of stay for inpatient care across OECD countries decreased from 10 days to 8.8 days over the same period (OECD, 2011). While variations in average length of stay can often reflect a number of operational and country specific factors, such as differences in case mix and the use of certain surgical procedures, Korea's position relative to other OECD countries marks it as an outlier. That Korea is joined by Japan – which also has a fee-for-service payment system and an abundant supply of hospital beds – is likely to suggest that payments based on the number of activities being undertaken could be playing a role in incentivising health care providers to keep people in hospital.

Fee-for-service financing may also contribute to the high number of doctors consultations in Korea. Korea has a higher number of doctor's consultations per person than every OECD country but Japan. Korea's 13 doctor's consultations per person in 2010 (Figure 2.12) was more than double the OECD average of 6.5 per person in the same year. Preliminary research suggests that OECD countries with fee-for-service-based systems tend to have higher consultation rates (Fujisawa and Lafortune, 2008). As with average lengths of stay, this is particularly noticeable in that Japan also sits alongside Korea in having significantly higher levels of doctor's consultations per person than most other OECD countries.

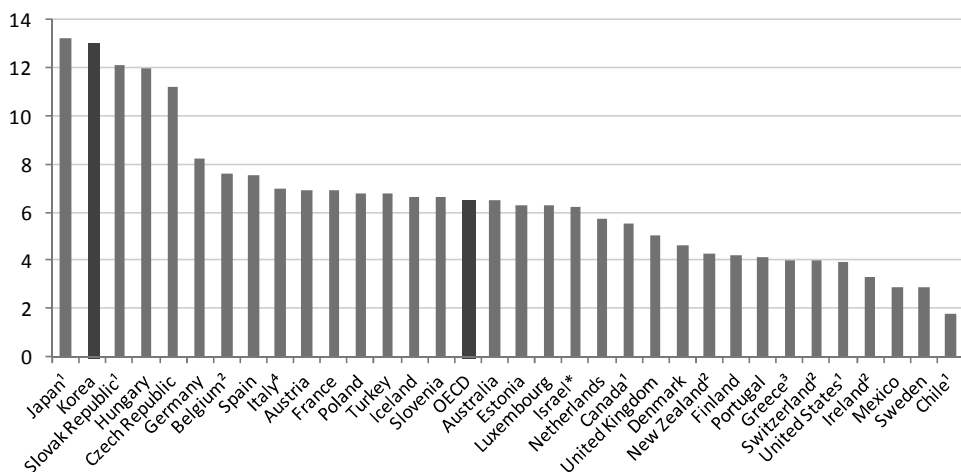
Figure 2.11. Average length of stay for inpatient care across OECD countries, 2000 and 2009



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

Figure 2.12. Doctors consultations per person across OECD countries, 2009



1. 2008 data; 2. 2007 data; 3. 2006 data; 4. 2005 data.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

It is also likely that Korea's fee-for-service payment system is influencing the kinds of medical services being delivered. Doctors, particularly those operating independently, have a greater incentive to deliver the services on which they can earn higher profits. It has been suggested that these variations in the profitability of certain services has influenced the pattern of services provided in Korea (Mathauer *et al.*, 2009). Notionally, fees are based on a relative-based value scale, which ranks all services according to their complexity to facilitate higher payments to more intensive services. However, when this relative-based value scale was introduced in 2001, fees were raised for complex services raised but fees for less complex services were not commensurately lowered. Recent efforts by HIRA have sought to revise these fee structures, by adjusting for fees within a particular speciality to reflect their resource intensity, however it is likely that distortions between different specialities will remain, with specialities enjoying higher fees from the start maintaining this position (Mathauer *et al.*, 2009). As a result, the fee-for-service payment system pays certain specialities quite generously, such as psychiatry, ophthalmology and dermatology, while others such as radiology, thoracic surgery and anaesthesiology are less popular (Kwon, 2003).

Korea's institutional architecture ought to be a strength but national insurance has few tools to drive system reform in practice

Having achieved consolidation under a single insurer, National Health Insurance in Korea is well positioned to use its purchasing power to drive improvements in the quality of care. A single insurer should have a strong bargaining position in negotiations with provider groups and deliver administrative savings from the consolidation of purchasing. With no risk that patients can move to another fund, a single insurer has an economic incentive to focus on prevention and early intervention – investing in a person's good health today could reduce fewer claims (and payouts) in the future. The architecture of Korea's National Health Insurance should provide a strong institutional framework from which to focus on financing high quality services.

To date, this has not happened. The single insurer in Korea has not turned itself into a proactive purchaser that uses its monopoly to improve quality and reduce costs. Instead, financing of national health insurance in Korea remains characterised by:

- The continuation of a fee-for-service payment system, where providers are assured that the services they choose to deliver will be reimbursed by the National Health Insurance Corporation (providing they are covered under health insurance).
- A retrospective and uncapped nature payment system that provides little scope for negotiating with providers on matters other than the level of fees, which are set annually.

- Fee setting largely occurring through a centralised National Health Insurance Policy Deliberation Committee that carries system-wide implications. As a result of this centralised (and annual) process, it is likely that discussions over quality improvements are often “crowded out” at precisely the time they ought to occur.
- Annual negotiations conducted with peak bodies negotiating on behalf of all providers, which leave little scope to foster competition amongst providers in driving improvements in quality or lowering costs. With little capacity for the purchaser (the NHIC) to vary compulsory contracts from one hospital to another (for example, by altering prices or quality obligations), health insurance in Korea has weak budgetary controls.

In effect, the Ministry of Health and Welfare currently determines the overall budget for health insurance when it negotiates fees. A more proactive contracting relationship with hospitals is needed to ensure that the system delivers quality improvements.

Compounding this situation is that the mandate for assuring quality and paying providers is split between two organisations. Under current arrangements, the NHIC is obliged to provide a payment for treatments provided to an insured person. Another agency, the Health Insurance Review and Assessment Service (HIRA), is responsible for evaluating the reasonableness of insurance claims and can raise objections if required. HIRA’s role in the Korean health system positions it as the institutional leader for driving quality, but leaves it with few functional levers other than a retrospective assessment of claims and collecting and reporting performance data. Through the design and administration of pay for performance schemes, HIRA has increasingly made efforts to link payments to quality through its pay for performance programme, however, this has been in addition to the overwhelming majority of financing for services under national health insurance and relatively modest in size. At the same time, the NHIC’s mandate does not allow it to proactively take quality of care into account when making reimbursements for the substantial payments it dispenses. The consequence of this functional separation between HIRA and the NHIC is that no one organisation has the in-house capacity (or incentive) to proactively design and implement a payment arrangement that embeds quality into purchasing.

Other than institutional arrangements at the centre, health insurance in Korea also currently lacks the tools needed to help direct funding to patients or areas of need. This is most evident in the lack of instruments available to direct funding towards the development of community-based primary care services. There are limits in the extent to which changes in relative fees can increase the financial attractiveness of primary care without compromising necessary

differentiation to reward services of higher clinical intensity. Furthermore, dedicated funding for public community health infrastructure is often hampered by a limited catchment population of medical aid patients, limited funding for certain prescribed activities (such as screening programmes) and the small budgets of councils supporting public health facilities. This leaves National Health Insurance with the difficult task of needing to develop a primary care industry without having a strong base of practitioners to financially support or regional purchasing agents that can help marshal resources on the ground towards delivering primary and secondary prevention services.

2.4. Driving further efficiencies in hospitals while focusing on quality

The Korean health system finds itself in a situation where budgetary and financial constraints will necessitate payment reforms in forthcoming years. This is likely to necessitate reforms to contain rapidly rising expenditure in the Korean health system. It also demands that current health outlays should be directed towards cost effective ways of improving quality of care. This section details some directions for payment and delivery reform that could help Korea better harness its strong institutional architecture to drive improvements in quality as well as containing cost.

The starting point should be to tackle the incentives for over-provision and over-supply of hospital services. Targeting efficiency in the burgeoning acute care sector could be consistent with improving the quality of care in Korea. As argued above, countries with health care service delivery dominated by private providers have often been early movers in adopting payment systems that seek to counter a tendency for over-provision. However, with the Korean government focusing on the delivery of separation and integration reforms in the recent past, hospital financing reforms have proved difficult to introduce. Two key proposals are often discussed to drive further efficiency from hospital financing in Korea: payment based on diagnosis-related groups (DRGs) and the use of global budgets for financing hospitals. As these proposals are well known, this report will not focus on description, but seek to provide an assessment for the best path forward.

Financing on the basis of diagnosis-related groups has been difficult in recent years

Efforts for hospital financing reforms have had a difficult history in Korea in recent years. The government has previously tried to shift to paying for services on the basis of diagnosis-related groups (DRGs). This was initially pursued on a mandatory basis, but then adopted as a pilot programme in light of provider resistance. This pilot programme demonstrated positive effects – with reductions observed in medical expenses, lengths of stay, the use of antibiotics and the number of tests in inpatient care. Its effect on quality of care is more difficult to determine, due

to the relative lack of quality data surrounding this pilot and because the surgical procedures included in the pilot were chosen for being less complex (see Box 2.1 for further details).

Box 2.1. Results from a pilot implementation of DRGs in Korea

The Korean Government's DRG pilot programme first commenced in 1997 for 54 health care institutions, which was progressively expanded to include 798 health care institutions by 2000. At this time, it covered nine disease categories – lens procedure, tonsillectomy/adenoidectomy, appendectomy, caesarean section, vaginal delivery, anal/stomal procedure, inguinal/femoral hernia procedure, uterine/adenexa procedure and normal pneumonia/pleuritis).

DRG payments under this voluntary scheme sought to cover all medical expenses other than meals, MRI, sonogram and extra charges for qualified specialists physicians or rooms shared by less than six people – in effect, broadening the scope of services covered under fee-for-service at the time. The majority of payments to providers were made prospectively, with outlier payments and patient co-payments helping account for treatment costs.

An evaluation of the scheme suggested that providers responded to incentives:

- Medical care costs declined by an average of 8.3%, with lens procedures and simple appendectomy showing the largest drop in expenses.
- Length of stay dropped by 3% on average with inguinal/femoral hernia operation and simple appendectomy demonstrating the largest falls.
- After controlling for the types of health care institutions, it was estimated that the pure effect of DRG-based payment was to reduce medical expenses by 14% and length of stay by 5.7%.
- While the use of antibiotics in inpatient care and on discharge decreased significantly (by more than 25%), the use of antibiotics after discharge increased (by around 27%).
- While the average number of tests in inpatient care reduced from 5.06 to 3.85, the average number of tests before hospitalisation increased from 3.51 to 4.46.
- The number of outpatient visits increased before hospitalisation (from 1.22 to 1.30) and after hospitalisation (from 1.16 to 1.39). An increase in outpatient services is often observed alongside the introduction of DRG-based systems – to the extent that this reflects a substitution from inpatient services, this may be an indicator of improved efficiency.

While the application of DRGs in the Korean pilot programme was to a narrow scope of items, these results are in line with demonstrated improvements in efficiency and quality indicators that have been observed across OECD countries. Indeed, the positive results from this pilot combined with the increasingly widespread use of DRGs in a number of OECD countries (across a significantly broader range of services) suggests that there exists considerable scope for improvements in the quality and efficiency of services across the Korean hospitals sector.

Source: Kwon, S. (2003), "Payment System Reform for Health Care Providers in Korea", *Health Policy and Planning*, Vol. 18, No. 1, pp. 84-92.

After three revisions to the pilot programme, DRG-based payments were introduced on a voluntary basis across seven key disease categories in 2002. The seven disease groups are: caesarean sections, appendectomy, lens procedure, tonsillectomy and adenoidectomy procedures, inguinal and femoral hernias, uterine and adenexa procedures for non-malignancy and anal procedures. The adoption of these DRG-based payments has largely been undertaken by clinics and smaller hospitals. As outlined in Table 2.2 below, some 81% of clinics, 39% of hospitals and 27% of general hospitals have adopted this form of financing. However, there has been poor takeup amongst the major tertiary hospitals, where only the government-owned Ilsan hospital has adopted such a payment scheme.

Table 2.2. Participation under the DRG scheme, by type of hospital in Korea

	2002 (participating rate)	2003 (participating rate)	2004 (participating rate)	2005 (participating rate)	2006 (participating rate)	2007 (participating rate)	2008 (participating rate)	2009 (participating rate)	2010 (participating rate)
Total	1 839 [57.5%]	1 965 [59%]	2 066 [60.6%]	2 213 [62.8%]	2 277 66.4%	2 350 69.0%	2 365 69.6%	2 283 68.0%	2 325 69.9%
Tertiary care hospital	4 [9.5%]	2 [4.8%]	2 [4.8%]	1 [2.4%]	1 2.30%	1 2.30%	1 2.30%	0 0.00%	0 0.00%
General hospital	109 [45.2%]	112 [46.5%]	102 [42.2%]	101 [40.6%]	96 37.90%	101 38.70%	93 34.60%	77 28.60%	75 27.40%
Hospital	153 [49%]	174 [47.9%]	184 [42.9%]	188 [40.5%]	201 44.00%	198 41.70%	189 40.80%	175 38.80%	174 39.20%
Clinic	1 573 [60.5%]	1 677 [62.5%]	1 778 [66%]	1 923 [69.5%]	1 979 74.00%	2 050 78.00%	2 082 79.30%	2 031 78.30%	2 076 80.90%

Source: Kang, G. (2011), “Experience & Prospect of DRG-based Payment in Korea”, International Symposium for DRG-based Payment, 16 December.

The narrow application of the Korean DRG scheme to a handful of clinical categories and the non-participation of tertiary hospitals has weakened its potential to drive efficiency and quality. It was estimated that the DRG scheme is likely to account for only a quarter of inpatient cases in Korea (Kwon, 2003). The lack of take up of this scheme has occurred despite significant premiums being offered on DRG payments relative to fee for service. On average, the DRG payment in the pilot programme was 23.8% greater than the comparable fee for service level (Kwon, 2003). Indeed, low cost providers (*e.g.* clinics) have switched to the DRG scheme in greater numbers as they find the more generous remuneration on offer to be more profitable. However, the larger tertiary hospitals have continued to hold out from opting into DRG payments. This could reflect that with a higher cost structure and more complicated case-mix, tertiary hospitals do not consider the higher DRG rates to provide a sufficient premium on comparable fee-for-service rates (Mathauer *et al.*, 2009). Similarly, reasons for non-participation cited by the hospitals association include fears that the DRG scheme would constrain clinical autonomy by proscribing the use of

certain technologies and practices. More forthrightly, there is also belief amongst sections of the clinical and provider community that once introduced, DRGs will be used to drive cost control from the centre, and that this would lead to deterioration in quality.

Financing based on DRGs should be pursued as a major reform to target over-provision

The experience of several OECD countries in shifting to and operating DRG-based payment schemes has demonstrated that there is scope for DRGs to help drive improvements in the quality of care. In a fee-for-service-based payment system, the physician has every incentive to do as much as possible and fewer incentives (other than self-regulation) against limiting the number of interventions to those that are cost effective (Fuchs, 2011). In contrast, the virtue of a DRG-based payment system is that it introduces price signals that can be calibrated to drive *appropriate* service delivery – a focus that Korea’s system lacks today. DRG payments seek to pay a benchmark “price” for diagnostically similar services. Implicit in setting such a price is a judgement on what is an “appropriate” treatment for a particular mix of conditions.

DRG-based payments ought to be more extensively deployed in Korea to provide financial signals about the appropriate intensity of care for a particular procedure, under normal circumstances. For example, Korea (as illustrated earlier) has a high supply of technology and diagnostic testing when compared to other OECD countries. Under a DRG-based system with a specific case price, the cost of unwarranted extra diagnostics or unnecessary technologies would reduce profits. In this way, DRGs provide a worthwhile economic incentive for providers to moderate the over-provision of services. Indeed, DRG payment systems could potentially change the “rules of the game” from the current system in Korea where hospitals maximise profit from delivering more services and increasing lengths of stay within an episode of care, to placing a focus on maximising profit through the efficient delivery of a clinically appropriate number of services per episode of care. As a result, more efficient hospitals will stand to financially benefit, while less efficient hospitals will face economic pressures to improve efficiency. To tackle the high (and likely over) provision of acute hospital services, Korea should seek to move to expand DRG-based financing across the entire Korean hospital sector and across as many service categories as clinically appropriate.

Safeguards and financial incentives should complement the introduction of DRGs to help monitor and assure quality of care under the system

Better safety and quality monitoring is an essential complement to a broad scale introduction of a DRG-based payment system. By setting a price on the cost of delivering a case, DRGs can also introduce perverse incentives for hospitals to maximise profit by under-providing services or increasing the number of services they deliver. The implementation of a DRG system therefore needs to be paralleled by an information system for disease classification and health care resource utilisation and expenditure (Kwon, 2003). Using the platform provided by such information systems, OECD country health systems with DRGs have often adopted strategies such as specifying admissions and discharge criteria and surveillance of the intensity and volume of services being delivered as strategies to assure quality of care. Many countries have used information infrastructure for financing to improve data collection on the quality of care, through secondary diagnostic coding and present-on-admission flags. Such measures would be worthwhile to collect even before a shift to DRG-based payment can be feasibly implemented in Korea. To get the most out of reform, a shift to DRGs should also be accompanied by increased efforts to inform clinicians of best practice approaches.

While they have cited a fear of a deterioration in quality as a concern in resisting the further introduction of DRGs, major hospitals in Korea are more likely than their smaller counterparts (that are already receiving DRG payments) to have instituted the kind of quality management programmes needed to monitor and correct perverse outcomes. Korea's major tertiary hospitals have developed a series of clinical pathways and essential checklists for different health care professionals in the diagnosis and treatment of the most common conditions. Such quality monitoring systems can help reduce the scope for human error and provide a safety net mechanism that helps identify shortfalls in the quality of care and prevent problems from escalating. These systems are often in place for the most complex procedures, such as cardiovascular care and cancer treatment. Indeed, in introducing DRGs more extensively across the Korean health system, policy makers should look to the systems in place in Korean tertiary hospitals to inform their policies on what quality standards (such as admissions and discharge criteria) should be sought in exchange for hospital payments on a DRG basis. As with other OECD countries, there will remain certain services for which DRG payments are not often not appropriate, such as mental health services, emergency department services and certain highly complex services. These services ought to be accommodated for through direct payments to hospitals and be defined as narrowly as possible.

A considerable quality of care concern today is that the current DRG programme in Korea has predominately been taken up amongst the small and medium-sized hospitals where quality monitoring and assurance systems are least developed. Efforts should be undertaken by government to ensure that hospitals of an appropriate scale to have quality monitoring systems should do so when they receive DRG payments. The broader introduction of DRG-based payments could provide an opportunity to use financing to drive the further collection of information on quality and safety, with a view to producing comparable reports across the Korean hospitals sector.

While a shift to DRG-based payments would be a major policy change, Korea ought to consider ongoing financing reforms to drive quality in the more immediate term. As detailed earlier, Korea currently provides higher fee-for-service payments according to hospital size. This is a substantial expenditure that rewards providers to pursue expansion in volumes and complexity. Redirecting some of this investment towards rewarding hospitals (irrespective of their size) that deliver high quality and appropriate services would deliver better value for money. Such a reform could also provide a financial incentive to encourage smaller and general hospitals to improve quality monitoring.

DRG-based payments can also be used to develop stronger budgetary controls and influence the balance of funding between acute and primary care

The implementation of DRGs can also be undertaken to manage the risk of providers responding by increasing volumes to the detriment of quality. Providers often respond to the introduction of DRGs by seeking to protect (or grow) the overall size of their revenues – *i.e.* even if they moderate the costs of each service delivered, providers seek to increase the volume of treatments they deliver. For this reason, best practice models of introducing DRGs across OECD countries have incorporated explicit strategies for dealing with the potential for an increase in volumes and admissions. For example, when first implementing DRGs for Medicare, the United States initially introduced surveillance and warnings to impose sanctions if the number of admissions was to increase dramatically (Böcking *et al.*, 2005). Improving the strength of financial controls on the health care expenditure are likely to be a necessary pre-requisite to countering volume-based responses to the implementation of DRGs in Korea.

Implicit in the operation of a DRG-based payment system is an ability to better contain the overall acute health care budget than Korea's current system of retrospective fee-for-service payments allows. As well as detailing

a schedule of relative prices, DRGs provide the ability to adjust the overall level of prices. This allows government to impose (or target) an overall budget constraint on spending for hospital services. Some governments seek to do this by specifying a global budget in advance and then making relative adjustments to the overall level of prices. This is undertaken in France, where DRG tariffs are adjusted downwards if the health insurance spending target for hospital care is exceeded (Ministère de la Santé et des Sports, 2010). Another approach is to specify a budget in advance with a regionally defined group of hospitals who then face penalties or discounted payments if budgets overrun, as is undertaken in the Australian state of Victoria. For a country such as Korea, with extensive information technology architecture, a history of service data provision, and a single payor, it is conceivable that National Health Insurance should be able to use DRGs to forecast the mix and volume of services within a given year in order to specify an overall budget for the hospitals sector at large. If budget overruns incur credible penalties – such as discounted payments or reductions in the overall level of prices – such an approach could provide a system wide impetus for additional efficiency. Over time, the ability to vary the overall level of prices implicit in a DRG-based system provides Korea with the ability constrain growth in overall price levels for acute services, and could help create fiscal space to further allocate funds to primary care.

2.5. Financing primary care

Improving the quality of care in Korea will require establishing a stronger primary care system. As detailed in Chapter 3, community-based family physician services are relatively underdeveloped in the Korean health care system. At the same time, the major health challenges faced by Koreans are likely to be chronic diseases requiring health care services of lesser acuity and higher frequency than hospitals are geared to deliver. The need to rebalance the health system to focus on prevention, health promotion, disease control and rehabilitation has been a key focus of recent policy studies in the Korean context (Lee and Yun, 2009) and internationally (OECD, 2003; and Mathauer *et al.*, 2009). There exists widespread recognition amongst policy makers that primary care ought to be a priority area of investment for the Korean health system. Effective primary care holds the potential to provide services that are better suited to the rising population health challenge of chronic disease. To the extent that effective primary care can help avoid unnecessary hospital admissions, it can potentially lower costs as well. The following section seeks to provide suggestions on how financing of primary care could be built into Korea's health care financing.

Developing strong primary care services in Korea will require efforts from government to shift the financial centre of gravity from hospitals to primary care. This will demand additional and long-term funding for primary care in Korea. As detailed earlier, the current growth trajectory of health spending is strongly driven by the continued expansion of the hospital sector – whether measured by the share of new spending or the ongoing expansion of hospitals and hospital beds. At the same time, the commonplace delivery of minor surgical and other acute care services within doctors’ clinics in Korea is likely to mean only a fraction of spending on primary care is actually spent on services such as patient counselling, primary and secondary prevention. There is also likely to be significant path dependency in the combination of current payment systems and the structure of medical services in Korea which encourages the utilisation of additional and more complex services, even in community-based medical clinics. This leaves policy makers with the challenge of using financing to develop essential primary care infrastructure as well as encouraging the reallocation of human and financial resources towards primary care over time.

Developing primary care will require National Health Insurance to develop the tools needed to directly fund services to patients or areas most at need. To establish primary care as an institutional priority within health insurance, one option may be to make investments to scale up primary care a distinct component of National Health Insurance expenditure. Policy makers ought to have the financial freedom to assess and invest in proposals that develop best value for money in delivering high quality primary care. Locating funding within the National Health Insurance Corporation rather than as a discretionary budget item would help ensure that primary care is entrenched as an institutional priority in financing the overall health system. Locating funding within the National Health Insurance Corporation would also align new investments with the institutional imperative of reducing longer term payouts by the single insurer. Over time, this will reinforce the ability for National Health Insurance to develop a better capacity to control the overall distribution of funding across primary and hospital sectors. It would also help foster an operating culture where the insurer is seen as a financial agent capable of driving system change to improve quality of care and not just a payments clearinghouse.

In the same manner in which the gradual expansion of insurance helped underwrite the development of Korea’s hospitals sector, an ongoing financial commitment from National Health Insurance ought to become a major source of financing for the development of a stronger primary care sector in Korea. This funding could be modest initially, but over time should be scaled up such that it accounts for a noticeable share of overall NHI spending. Domestic policy makers may wish to consider hypothecating a

gradually increasing proportion of NHI revenues towards this purpose. This would serve as a discipline that locks in a sustained increase in investment in primary care, and as an incentive to drive ongoing policy efforts to contain spending on acute care services.

Recognising that institutional reform of this nature is a long-term objective, Korean policy makers should increase remuneration for primary care professionals. Such a move will help raise the profile and profitability of primary care services in the near term. With the type of services often delivered in primary care settings (such as physician advice and the treatment of common conditions) attracting lower relative fees than specialist services, the structure of the current payment system can push primary care practices in Korea towards delivering additional services that provide higher fees. One way of addressing this situation in an environment of budget constraints would be to consider increasing the relative price of general practitioner services (particularly for a doctor's time spent in counselling and guidance) while decreasing relative prices for specialities that are over-supplied, as has also been suggested by the WHO (Mathauer *et al.*, 2009). Alternatively, additional measures to increase the remuneration of primary care professionals through other forms of payments could be a worthwhile way of encouraging professionals to deliver cost effective lifestyle modification and prevention advice, and to take more time in supporting patients in making choices about their health and the health services they use.

At the same time, Korea should seek to pilot payment approaches that encourage hospitals to invest downstream in primary care and rehabilitation services. An emerging policy approach that is being adopted by some OECD countries to improve the focus on continuity of care and reduce the intensity of hospital care is “bundling payments”. This form of financing seeks to prospectively combine payment for a hospital admission with a reasonable number of pre- and post admission services and pay this entire payment to a single entity. For example, a knee replacement episode could begin three days before hospital admission and end 30 days after discharge, and provide a single payment to cover the hospital service, family physician support following the operation and some home care (Mechanic, 2011). These approaches, deployed in the United States and in the Netherlands, can often be difficult to administer and design to take coexisting conditions into account (Mechanic, 2011). Nonetheless, they have also demonstrated a potential to improve care co-ordination, adhere to protocols and the use of multidisciplinary teams.

Bundled payments should be piloted in Korea to encourage hospitals to contract with primary care providers who are likely to be able to deliver follow up care more cheaply than in a hospital setting. Providing hospitals

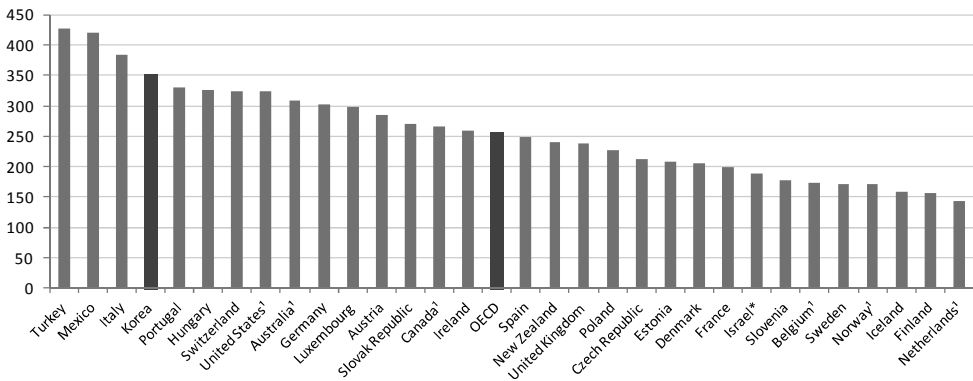
with the opportunity to realise a share of the financial benefits, bundled payments could be used in Korea to incentivise hospitals to invest in establishing the infrastructure needed to deliver services such as primary care, rehabilitation in less clinically intensive settings, and home care – and provide an additional source of investment in developing primary care facilities other than simply government investment through the National Health Insurance. With significant experience in pay for performance, Korea could link bundled payments to quality indicators, such as avoidable readmissions. In the long term, as primary care capacity develops, consideration ought to be given to pursuing models similar to those in the Netherlands and in Germany – which make primary care services the financial entity responsible for receiving payments for bundled services, and enhance their care co-ordination and gatekeeping roles in the process.

2.6. Pay for performance in the Korean health system

Korea's hospital pay for performance programme is unique and designed to reward improvements in clinical care and patient outcomes

The introduction of a pay for performance scheme in Korea's hospitals is one of the more innovative policies to use financing to drive improvements in quality of care across OECD countries. Launched in 2007, the Value Incentive Programme (VIP) initially sought to cover Korea's tertiary hospitals in seeking to lift Korea's performance in two areas of comparatively poorer performance amongst OECD countries: acute myocardial infarction (AMI) and the proportion of caesarean deliveries. Amongst the 19 OECD countries for which data was available, Korea had the highest in hospital case fatality rates within 30 days after admission for AMI (OECD, 2011). Similarly, Korea has the fourth highest rates of caesarean deliveries amongst OECD countries, with more than a third of live births delivered using this clinical procedure (Figure 2.13) which results in increased maternal mortality, maternal and infant morbidity and increased complications for subsequent deliveries. Caesarean sections also come at a greater financial cost to the health system.

Figure 2.13. Caesarean sections per 1 000 live births across OECD countries, 2009 (or latest year available)



1. 2008 data; 2. 2007 data.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

Pay for performance schemes are a relatively new development amongst OECD countries and reflect a growing attempt to more explicitly use financing to improve the quality of care. While the majority of pay for performance schemes in OECD countries today are targeted at primary care, Korea's Value Incentive Programme focuses on acute care. While pay for performance in health care is a relatively new concept for the Korean health sector, there has been a long tradition of performance-related pay in several sectors of the Korean economy, with a survey reporting that 45% of Korean firms with more than 100 employees have implemented compensation methods based on individual performance (Park and Yu, 2002).

The Value Incentive Programme (VIP) seeks to rank hospitals according to their performance in delivering good quality clinical care and patient outcomes. Participation in the VIP is mandatory amongst Korea's 44 tertiary hospitals. The VIP works by computing "quality scores" for each hospital on their performance in addressing acute myocardial infarction and delivering an appropriate amount of caesarean deliveries. For acute myocardial infarction, the VIP seeks to compute a composite score based on five measures of whether good clinical processes are being undertaken (*i.e.* therapies and drugs are being delivered in a timely way) and what patient outcomes are (the mortality rate for patients). These indicators are listed in Table 2.3 below. For caesarean deliveries, the VIP computes a score based on the difference between the actual rate of caesarean deliveries

and the expected rate of caesarean deliveries (this is calculated on the basis of 16 clinical risk factors concerning the baby and/or the mother, such as baby weight, twin delivery, etc). These composite scores are measured on a yearly basis and compared against a hospital's previous performance, with 2007 as the baseline year.

Table 2.3. Indicators and changes in performance for acute myocardial infarction under the Value Incentive Programme (VIP) in Korea

		Baseline (late 2007)	2008	2009
		Percentage		
AMI	Thrombolytic drug administration rate within 60 minutes of hospital arrival	70%	86%	91%
	Primary PCI performance rate within 120 minutes of hospital arrival	85%	89%	96%
	Aspirin administration rate at hospital arrival	98%	99%	100%
	Aspirin prescription rate at discharge	100%	100%	100%
	Beta-blocker prescription rate at discharge	96%	98%	99%
	30-day case fatality	8%	8%	6%
Cesarean section	Risk adjusted C-section delivery rate	35%	34%	33%

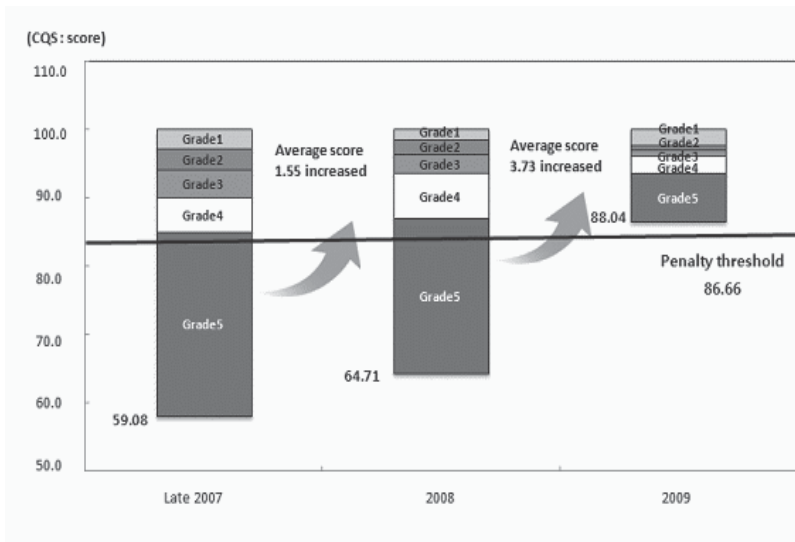
Source: HIRA (2011), “Response to the OECD Questionnaire on Quality of Care in Korea, Health Insurance Review and Assessment Service”, Seoul (unpublished).

The key levers for driving performance under the VIP are publishing a hospital's score and financial rewards for high performing hospitals. The results of each of the measures for AMI and caesarean deliveries are published on the HIRA website and hospitals are provided with result reports. Each year, hospitals are distributed into one of five grades according to their score. These grades are critical to determining whether a hospital receives a financial bonus as a reward for good performance. The maximum score for grade five (the lowest 20% of hospitals) was set as a “performance floor” in late 2007. In 2008, hospitals were informed that their score must be above the “performance floor” or they would face financial penalties from 2010. At the same time, hospitals that ranked amongst the highest grade commenced receiving financial bonuses from 2009. These bonuses amounted to KRW 453 million (USD 400 000) distributed amongst 21 hospitals in 2009 and KRW 404 million amongst 26 hospitals in 2010. Performance improvements have meant that no hospitals have been charged a penalty of 1% of payments for a quality score under the performance floor.

Results from the Value Incentive Programme are encouraging, but it is difficult to judge the extent to which it has improved performance at this early stage

Results from the VIP suggest performance is improving in hospitals. The large tertiary hospitals participating in the Value Incentive Programme have improved AMI treatment performance and outcomes over the three years since the programme was established. There was a 1.55 point increase in the quality score for acute myocardial infarction between 2007 and 2008, and a cumulative improvement of 5.28 points from 2007 to the end of year three in 2009 (see Figure 2.14). Similarly, data indicates an observable reduction in caesarean sections, with the rate dropping by 0.56 points between 2007 and 2008 (HIRA, 2011).

Figure 2.14. Results improvement for acute myocardial infarction under the Value Incentive Programme



CQS: Composite Quality Score.

Source: HIRA (2010), *Report on Value Incentive Program 2010*, Health Insurance Review and Assessment Service, 30 November, Seoul.

However, in the absence of a formal evaluation, it is difficult to judge the extent to which pay for performance has driven improved performance. It is currently difficult to distinguish whether the VIP has encouraged hospitals to improve their performance or simply captured a trajectory of gradually improving performance that may have occurred irrespective of the

scheme. Results from the pay for performance programme on which the Korean VIP was originally modelled – run by the Centres for Medicare and Medicaid in the United States – has indicated mixed results in its formal evaluation. Unlike Korea’s relatively new VIP, the programme operated by the Centres for Medicare and Medicaid in the United States has been running for several years now. A US study compared 260 hospitals in the pay for performance project against a control group of 780 hospitals not in the project. It found a majority of hospitals in the pay for performance project initially achieved high performance scores compared to fewer than a third of control hospitals, but that differences dissipated after five years (Werner *et al.*, 2011). With scores from the end of 2007 forming the base year, and financial bonuses and penalties having only commenced in the last two years, it is still relatively early to judge the effect of the Value Incentive Programme in Korea.

Despite being a relatively new programme, the Korean Government has expanded the VIP beyond the largest tertiary hospitals to include some general hospitals. This should make it a useful means by which to compare performance across the hospital sector. In 2011, the VIP will be significantly expanded to cover general hospitals. The focus will also be extended to include acute stroke care and the prophylactic use of antibiotics for surgical care. The programme will also be modified to categorise hospitals into nine grades, with incentives to be raised from 1% to 2% of total payments made by National Health Insurance. As the government seeks to further expand the Value Incentive Programme, it would be prudent to undertake a formal evaluation, using an experimental design, to shed light on the cost effectiveness of the programme.

Collecting data on processes that constitute good quality clinical care is a virtue of this programme

The VIP appears to be a useful way of collecting data on good clinical processes and patient outcomes, which is likely to be more influential than the financial bonuses on offer. It is unlikely that the relatively modest financial rewards provided under the VIP are a major driver of performance. While the size of bonuses vary from hospital to hospital, an implied average payment per hospital of KRW 21 580 000 (USD 18 500) in 2009 and KRW 15 540 000 (USD 13 320) in 2010 suggests that bonuses are likely to be a very small fraction of revenues for a major tertiary hospital. No official survey has been carried out in order to determine how bonus payments were used in tertiary hospitals, and discussions between HIRA and hospitals suggest they have been distributed to resident doctors. The relatively small size of these bonuses is likely to help mitigate against the risk of providers

diverting resources to focus on certain things in order to maximise incentive payments.

The reputational effect of collecting and publishing data on the quality of care as part of this programme may be a driver of improved performance in its own right. Data collected as part of the programme indicates that there has been a decrease in the *variance* of quality scores amongst providers. This is most notable for the lowest performance grade (grade five), where the improvements amongst bottom performers is most significant. By collecting and publishing data that provides feedback to hospital managers on where they rank relative to their peers, the programme is likely to provide an impetus for the worst performers to improve. Indeed, the collection and public release of such data is an innovative example of the kind of information on adherence to good clinical process (and their outcomes) that policy makers and consumers ought to have available to assess the quality of care. Even though surveys suggest that consumers are unlikely to be (currently) using this data to make decisions on where they receive care, the reputational effects of this data alone may be a strong impetus to improve performance, particularly in Korea's highly competitive hospital market. For this reason, the Korean balance of modest financial incentives and a focus on data collection may be the virtue of the VIP.

2.7. Conclusion

With the delivery of acute care services having entrenched itself as a major focus of the Korean health system, policy makers now face the difficult challenge of re-orienting the Korean health system. Doing so will require a focus on constraining expenditure for unnecessary services, particularly in the acute care sector. It will also require a proactive effort to channel growth in expenditure towards primary care services that will help Koreans better manage their chronic conditions in the future. Korea's single insurer provides an ideal institutional architecture which to achieve these reforms. When supplemented by efforts to incorporate assessments of quality into financing health care, this ought to provide a strong base for Government to help better equip the Korean health system to deal with looming challenges.

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Chapter 3

Strengthening primary care

This chapter highlights why bolstering primary care ought to be a major priority for Korea in the years ahead. Korea has one of the world's most rapidly ageing populations and rising chronic diseases. This is already a major challenge to the health system, as illustrated by high levels of potentially avoidable hospital admissions for key chronic diseases and increasing expenditure on chronic disease-related care. At the same time, the absence of functional gate-keeping and the large number of clinics seeking to provide more "acute" services often leads to patients missing out on less technology intensive but highly cost effective patient counselling to prevent and manage their health condition. To improve the quality of care in the Korean health system, policy makers should support the growth of effective primary care services in communities. Not only will this require more primary care practices and better remuneration for family medicine, but it will also require the development of a regional architecture so that insurance can target funding to areas of need. Collecting better information and bolstering the workforce of primary care professionals are two fundamental reforms that will be needed to help develop better primary health care in Korea.

Korea today has one of the world's most rapidly ageing populations. As a result of birth control policies established in the early 1960s, Korea also has one of the lowest birth rates in the world. These demographic extremes set the stage for significant health care challenges in the foreseeable future. It is already evident that chronic disease is a major challenge to the health care system, the expected rise in the prevalence of multi-morbidities that accompanies this will present a further challenge. While Korea has achieved major strides in economic development over past years, there has also been an increase in a number of risky lifestyle factors. The tendency, especially among younger Korean people to adopt more Westernised diets, has already resulted in increasing levels of overweight and obesity. In addition, smoking rates are still very high, especially among Korean men (OECD, 2011). If unchecked, these risky behaviours today are likely to presage further increases in chronic diseases in the future.

The challenges of an ageing population, the rise in prevalence of chronic diseases and lifestyle changes will increase the demand for health care services, and will require a focus on orienting the health system to promote good health, prevent the onset of chronic disease and reduce the risk of chronic disease deterioration. The health care system will also need to be responsive to the imperative of good care co-ordination and care continuity. Given these challenges, it is a cause for concern that community-based primary care is currently an area of weakness in the Korean health care system. This chapter will provide an overview of the key health challenges facing Korea in order to highlight why bolstering primary health care ought to be a major priority for Korean policy makers in the years ahead.

3.1. Why is primary care important?

Health care systems are increasingly challenged by the rise in chronic diseases and multi-morbidity. Chronic diseases such as diabetes and Chronic Obstructive Pulmonary Disease (COPD) now represent a major component of health care expenditure and their prevalence due to population ageing and lifestyle changes is increasing. Tackling chronic disease requires skilful health care co-ordination and delivery and ensuring that there is a balance in the health system between effective community-oriented primary health care and acute hospital and rehabilitative care.

Health states for people living with chronic diseases across OECD countries are increasingly likely to be characterised as “multi-morbid”, which is having two or more chronic conditions at the same time. Because of the ageing population and changes in people's lifestyle, there are now more patients who fall into this category than ever before. For example, a study in the Netherlands (Fortin, 2010) showed that the prevalence of multi-

morbidity (patients with two or more co-existing conditions), ranged from around 17% in patients aged 20-39 to 77% patients aged 80 and over. The health impacts of multi-morbidity are significant with patients often experiencing worse quality of life, compromised clinical outcomes and complex health care needs. And, because patients with multi-morbidity tend to be repeatedly admitted to hospital and, once admitted, stay for longer in requiring more intensive treatment and management, the associated costs are often significantly greater than for other less complex patients.

Community-oriented primary care is broadly recognised as essential to the maintenance of good population health and to the reduction of health inequities. Furthermore, research has shown that community orientated primary care mediates its benefits through good care co-ordination and continuity, care that is accessible and locally delivered, care that is provided over time and that is person not disease focussed (Starfield, 2005; Kringos, 2010). These characteristics are important because people with chronic or multiple conditions are typically seen across numerous care settings and specialties, often over their entire lifetime. The rise of multi morbidity also means that it is increasingly important to consider the totality of a person's health care needs and not simply the needs of the condition they happen to be presenting with at a particular time (Guthrie, 2011). Effective primary care services are also critical in avoiding acute exacerbation of chronic conditions which can result in expensive and unnecessary hospitalisation. In countries with well established primary care systems – such as the United Kingdom, Denmark and New Zealand – the general practitioner or family physician often serves as the co-ordinating hub for routine and specialised care. As primary care settings are typically the first point of contact for people seeking health care, they are also ideally situated to assess and prevent health risks through health promotion, health education and preventive action.

Community-oriented primary care systems have a major role to play in improving health and health care quality by ensuring good health promotion and preventing illness, by minimising the deterioration of chronic disease and multi-morbidity through good care co-ordination and continuity and by ensuring that people's health care needs are assessed holistically. In turn, this has the potential to reduce the need for costly and unnecessary hospital care. Effective primary care can improve the quality of life for people living with a chronic condition by stabilising disease progression through regular and co-ordinated health checks and ultimately can reduce the number of years of life lost by preventing premature death.

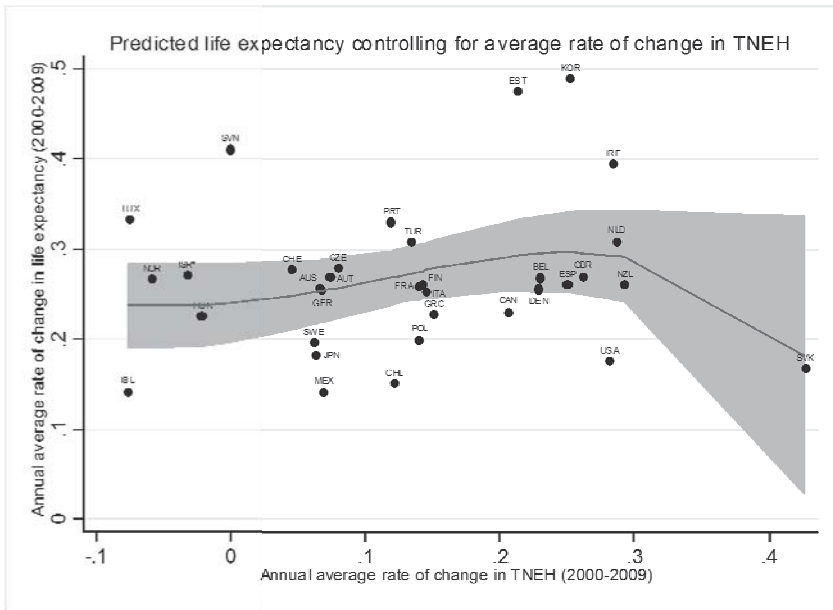
3.2. The overall health of Koreans: changes and future challenges

Korea has made major strides in overall population health but it is unclear whether this is a result of the development of the health system

Korea has seen major strides in improving the overall health of their population in recent years. In 1960, the average Korean could look forward to around 51 years of life. By 2009, life expectancy for the average Korean had risen to 80.3 years – a 57% increase to a level that is today above the OECD average of 79.3. As with many OECD countries, life expectancy gains for people aged 65 in Korea have been similarly substantial, with Korea outpacing every OECD country (for which data are available) in gains that have been achieved for this age group since 2000. In 2009, the average male and female Korean aged 65 could expect to live for another 17.1 years and 21.5 years respectively. This compares to an OECD average of 17.1 years and 20.4 years. Over the same period, there have also been impressive gains in the infant mortality rate, another key indicator of population health. In 1970 the Korean infant mortality stood at 45 per 1 000 live births. By 2009 the rate had dropped to 3.5 deaths per 1 000 live births, which is above the OECD average and on par with Germany, Belgium and Italy (OECD, 2011).

When considered together, gains in life expectancy in Korea have significantly outpaced gains in health care expenditure. The graph in Figure 3.1 seeks to draw an association between annual average changes in life expectancy with annual average changes in national expenditure on health. The annual average change in life expectancy has been adjusted by the annual average rate of change in national expenditure on health. The expected rate of change in life expectancy – that is, the extent to which changes in life expectancy could be explained by greater spending leading to the increased availability of health services – is shown as the continuous line and the shaded area indicates the 95% confidence interval about which this estimate lies. The plot shows that Korea, along with several other countries, lies significantly above its expected life expectancy given its rate of change in health care expenditure. At the same time, a number of OECD countries demonstrate changes in life expectancy within thresholds that are consistent with increases in health spending. This suggests that Korea's recent and unprecedented life expectancy gains are higher than what the rapid development of a health care system might have driven. These substantial gains could reflect the impact of public health measures that resulted in dramatic and recent reductions in infant, infectious and parasitic disease death rates. Without a doubt, Korea's post-war leaps in economic development and the consequent changes in the social and economic status of individual Koreans has also greatly contributed to these gains (Lee, 2010).

Figure 3.1. The potential association between annual average changes in life expectancy and average annual changes in expenditure on health



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD analysis based on *OECD Health Data 2011*.

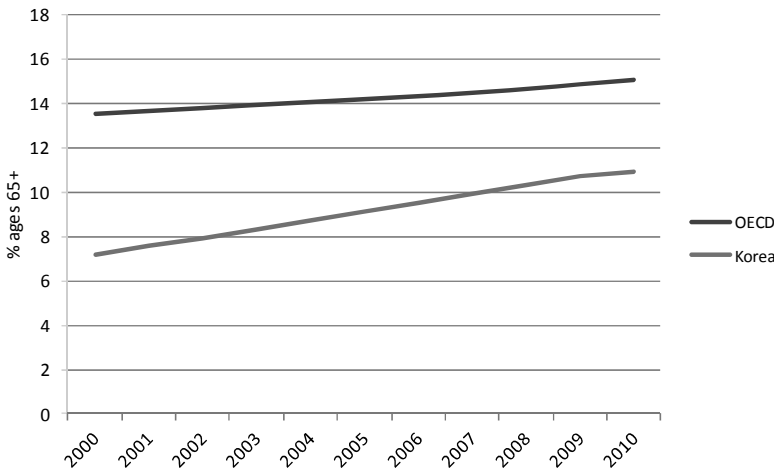
While it may have not been the major factor, the expansion of health care coverage to all Koreans is also likely to have made an impact in helping avert pre-mature deaths and improve life expectancy. In a study looking at changes in the pattern of causes of death among Korean's between 1984 and 2004, researchers found that avoidable death rates had dramatically decreased over the 20-year study period (Song, 2008). Interestingly, this study concluded that “the rate of reduction was slower for mortality avoidable by primary or secondary prevention methods than for that preventable by direct medical care, and mortality from some diseases in those categories even increased, indicating that there is a need to put more effort toward primary and secondary prevention”.

Korea's substantial elderly population is likely to live longer and suffer from multiple chronic diseases

The life expectancy gains over past decades are reflected in the fact that Korea has, along with other OECD countries, a rapidly developing older population (see Figure 3.2). In 2010 people aged 65 and over represented

around 11% of the total Korean population, this equates to a population dependency ratio (*i.e.* the percentage of the population aged 65 years and older relative to those aged between 15 and 64 years of age) of 15%. Korea's national estimates suggest that by the year 2030, the population dependency ratio will have increased to around 38% (Statistics Korea, 2011). This situation is likely to be compounded with Korea having one of the lowest birth rates in the world – Korea's total period fertility rate in 2010 was 1.2¹ (Statistics Korea, 2010). These demographic shifts will apply significant pressures on an already stretched health system. These pressures will be felt as patients with diverse health care needs will require care to be provided in multiple care settings and across different clinical and non clinical specialisations, and with their care plans and drug regimens to be reviewed with increasing frequency in order to avoid deterioration in their symptoms.

Figure 3.2. Share of the dependent (65 years and older) population as a percentage of the total population, Korea and the OECD between 2000 and 2010



Source: OECD Health Data 2011.

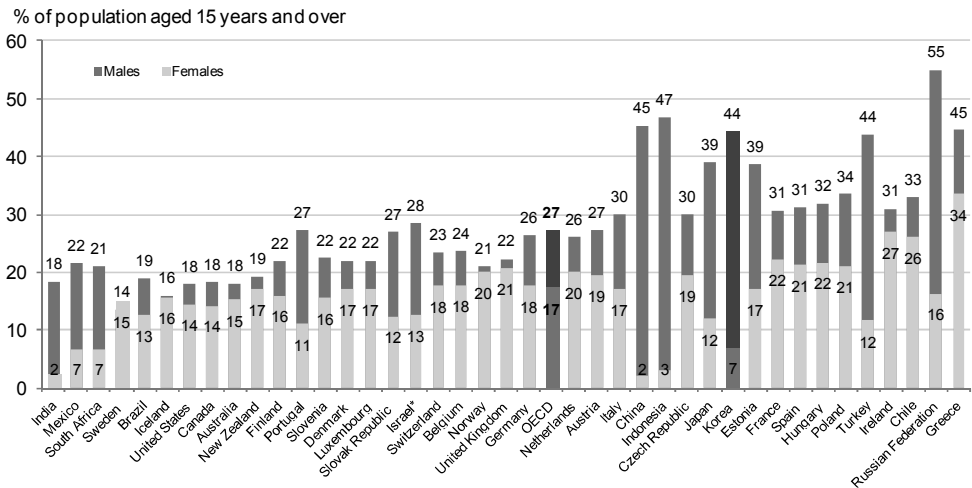
Risky health behaviours amongst the population today may mean that more Koreans come to live with chronic diseases

There are some worrying trends in the increase of risky lifestyle behaviours amongst Korea's population. As is the case across the OECD, Korea's economic development has been accompanied by changes in dietary habits that result in a steady increase in the total level of fat intake. Data from the Korean National Health and Nutritional Examination Survey

showed that the prevalence of abdominal obesity, which is associated with various forms of chronic disease including diabetes, increased among adults aged 20 and over by almost 9% over the period 1998 to 2007 (Lim, 2011). OECD projections indicate that Korea's current obesity rates will increase by a further 5% within ten years (Sassi, 2010). Inevitably, this increase in obesity and overweight levels will result in more Koreans suffering from chronic diseases such as diabetes, cancer, cardiovascular and respiratory conditions (Berry *et al.*, 2011).

Smoking rates are also a public health concern in Korea. Korean males having smoking rates that are among the highest across OECD countries, as illustrated in Figure 3.3 below. While a smaller proportion of women smoke in Korea, those that do are likely to start at a younger age and are therefore exposed to the harmful effects of smoking earlier in life. This underlines the importance of comprehensive health promotion and preventive action for both males and for females. Smoking is a risk factor for cardiovascular disease, cancer, COPD and asthma.

Figure 3.3. Females and males smoking daily across OECD countries, 2009 (or nearest year)



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

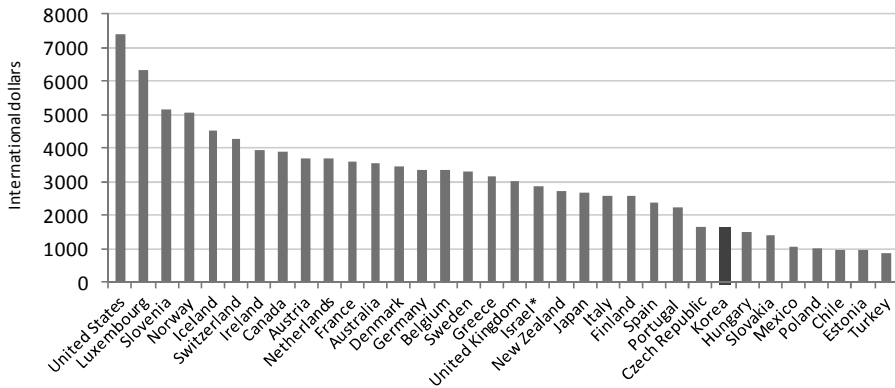
3.3. The challenge of chronic diseases in Korea

Korea's mounting chronic disease profile is now recognised as a major challenge for health and fiscal resources. Korean health care expenditure for the elderly, much of it for chronic conditions, increased from

KRW 5 109 billion to KRW 10 490 billion in just four years (2004 to 2008). While the elderly population currently represents around 10% of the total number of National Health Insurance beneficiaries, they are responsible for around 32% of the total health insurance expenditure (HIRA, 2010a).

Taking diabetes as an example, recent estimates compiled by the International Diabetes Federation (IDF) indicate that in 2010, Korea's total health expenditure on diabetes alone was between 5.4 and 9.5 billion international dollars. In 2010 these expenditures represented between 11% and 14% of the entire Korean health budget. The IDF also estimates that expenditure on diabetes will increase from between 7.3 billion in 2010 to 10.3 billion dollars by the year 2030 (Zhang, 2010). Furthermore, while Korea spends a large slice of its health budget looking after people with diabetes, Korean mean expenditure per person with diabetes is relatively low (Figure 3.4). This fact, coupled with Korea's underdeveloped primary care infrastructure perhaps goes some way toward explaining Korea's high volumes of potentially avoidable admissions for certain chronic conditions.

Figure 3.4. Mean health expenditure per person with diabetes in 2010

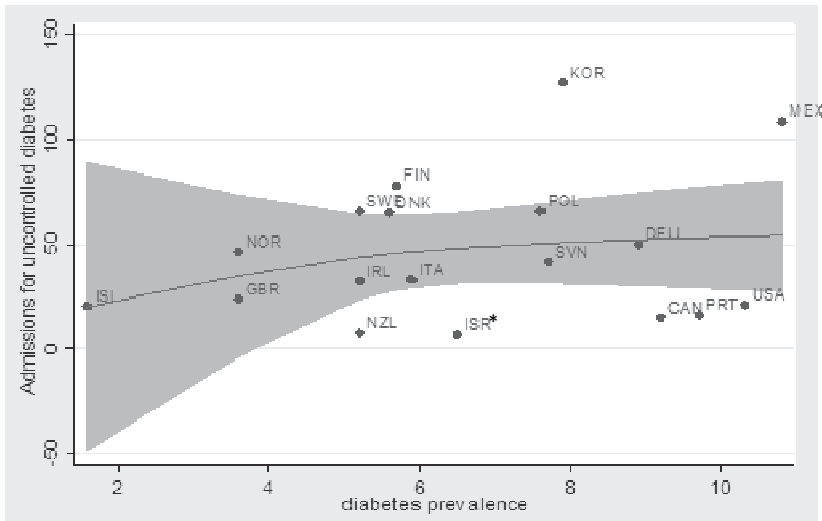


* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: International Diabetes Federation, Diabetes Atlas, fourth edition.

For example, Figure 3.5 below shows the association between diabetes prevalence and admissions for uncontrolled diabetes – a marker for poor disease management. Korea has a moderately high prevalence rate for diabetes and it also has a high admission rate for uncontrolled diabetes. In this regard Figure 3.5 suggests that Korea's admission volumes for uncontrolled diabetes are considerably higher than expected, even after adjusting for diabetes prevalence.

Figure 3.5. The association between diabetes prevalence and admissions for uncontrolled diabetes across OECD countries



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD analysis based on *OECD Health Data 2011* and International Diabetes Federation (2009), *Diabetes Atlas*, 4th edition, IDF, Brussels for prevalence estimates (Statlink <http://dx.doi.org/10.1787/888932525096>).

This indicates that more could be done to offset the deterioration of a clinically well understood chronic condition – in this case, diabetes. Diabetes outcomes provide a rudimentary but useful lens by which to analyse the performance of a primary care system. Care co-ordination, continuity of care and well informed patients – the key functions of a primary care system – can make a substantial difference to the potential for hospital admissions related to diabetes. Korea's poor outcomes in hospitalisations relative to its population prevalence for diabetes suggests shortfalls in the quality of care delivered for diabetes in Korea, and in particular, the quality of primary care.

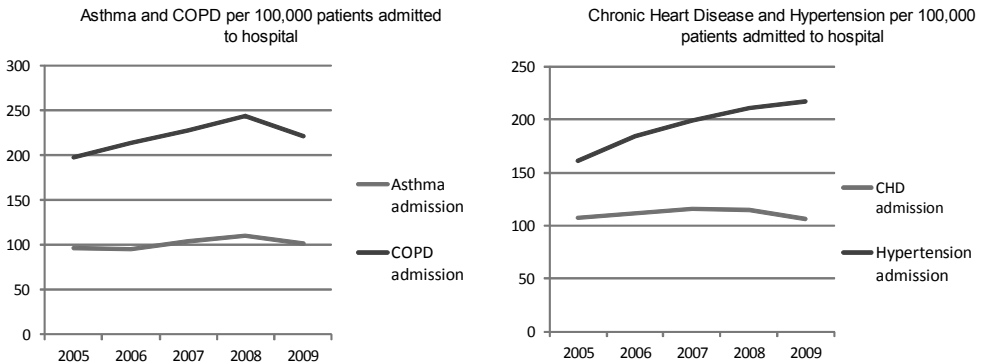
Potentially preventable admissions for chronic conditions

Reinforcing these observations in the quality of diabetes care and primary care are indicators of potentially avoidable hospital admissions across a range of other chronic diseases. Potentially preventable admissions serve as an indirect measure of primary care quality because for the most part chronic conditions can be treated and stabilised without the need for

expensive and unnecessary hospital care. If a chronic condition has deteriorated to the point of requiring urgent hospital care, then we may reasonably assume (at least for a proportion of the admissions) that there has been a break down in the care process in the community. This may encompass a failure or disruption in the continuity of patient care or care co-ordination over a period of time.

Rates of potentially avoidable hospital admissions for asthma, COPD, chronic heart disease and hypertension reinforce shortfalls in the quality of care delivered outside of hospitals. As indicated in Figure 3.6, Korea has persistently high admission rates for COPD and asthma, while asthma has remained constant, COPD admissions appear to be rising. Admission rates for both conditions are significantly above the OECD average and probably reflect the higher than average smoking rates within the country (especially among men). Hypertension admission rates are also high and have increased steadily over the past few years.

Figure 3.6. Potentially avoidable hospital admissions in Korea



Source: OECD Health Data 2011.

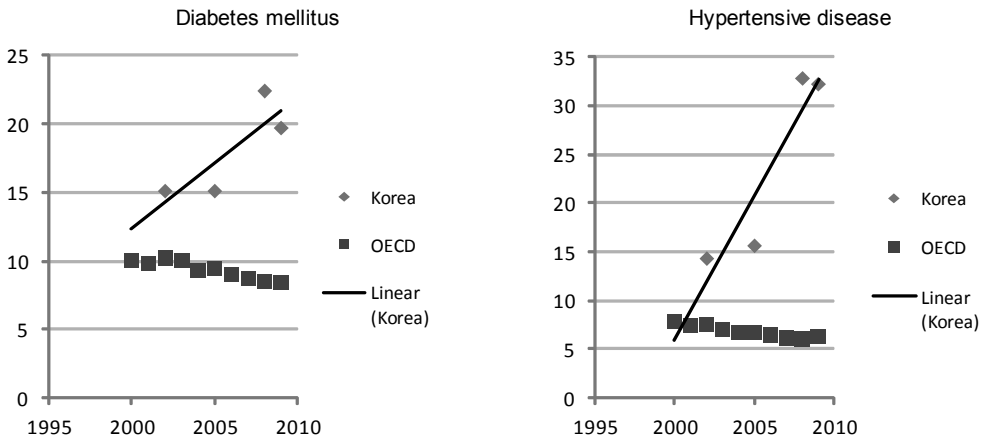
All of the conditions considered in this section have clear and evidence-based guidelines for their management and treatment. The trends presented in these data particularly for COPD and hypertension indicate that Korea's mounting chronic disease profile is not being managed effectively. Supporting the observation of potentially avoidable hospital admissions, researchers in Korea examining the impact of continuity of care in four chronic disease areas among elderly patients (diabetes, hypertension, asthma and COPD) found that as care continuity increased, the risk of hospitalisation and emergency department visits decreased for all four conditions. The researchers also point out that a physician who has a

continuing relationship with a patient is likely to reduce disease progression through ongoing disease management. The same study also noted that Medical Aid Programme (MAP) recipients (the health care scheme for the poorest 2% of the population) consistently had lower continuity of care score when compared with NHI beneficiaries. This was observed even despite the fact that MAP recipients have low or no out of pocket payments means that they can visit multiple health care institutions without financial loss (Hong *et al.*, 2010).

Average length of stay for chronic conditions

While the absolute number of unnecessary admissions is small by comparison to the total number of admissions, the long lengths of stay associated with these care episodes underline the need for targeted action to ensure that chronic disease is properly managed within the community setting. Korea has significantly higher lengths of stay than most OECD countries, as demonstrated in Figure 3.7, which illustrate average length of stay trends for diabetes, hypertension, heart failure, COPD and asthma. Not only does Korea have higher average lengths of stay, but these have been increasing significantly at a time when most OECD countries have made gradual progress in reducing lengths of stay.

Figure 3.7. Average lengths of stay for key chronic conditions, Korea compared to the OECD average, 1998-2010



Source: OECD Health Data 2011.

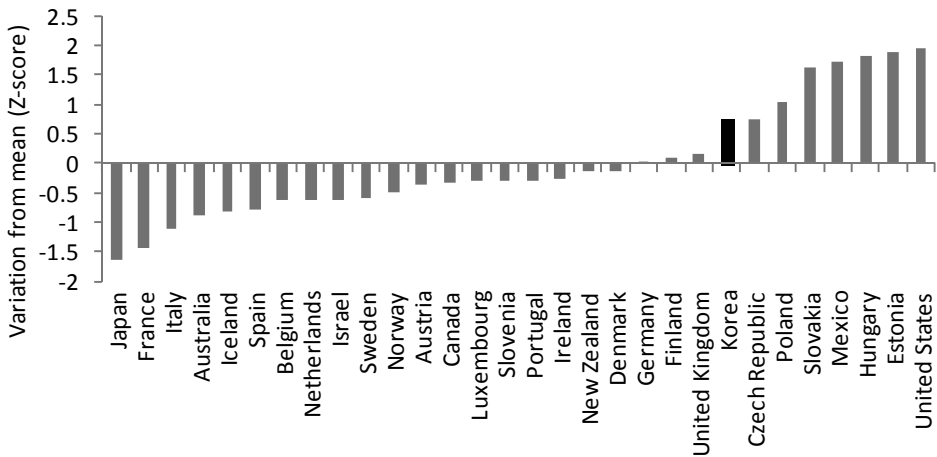
There are several plausible reasons for Korea's unusually long length stay. Korea has a high number of hospital beds and is second only to Japan in the ratio of total beds per 1 000 population. Furthermore, beds for long-term care, that is beds for patients with chronic impairments and reduced independence, top the OECD table at 17.24 per 1 000 population aged 65 and over (OECD, 2011). The high supply of beds probably means that bed occupancy pressures are not as acute as they are in other OECD countries, but are also likely to reflect that the health care system is geared towards delivering acute care services.

Coupled with a fee-for-service payment system which provides remuneration based on procedures, drugs, examinations or days of hospitalisation, there are strong incentives to maximise resource use at the acute end of the health care spectrum. To some extent, high average lengths of stay could also reflect that hospitals are occupied by long-term care patients in Korea. However, at large, the combination of high levels of potentially providable admissions and then long lengths of stay once in hospital suggests that patients are either presenting at hospitals with more advanced chronic conditions or receiving a greater bulk of their care from hospitals.

Chronic disease mortality

Recent data produced by Statistics Korea show that deaths from diabetes and respiratory diseases rank as fifth and seventh leading causes of death respectively. Figure 3.8 below shows the normalised scores for potential years of life lost associated with a basket of causes of death considered to be amenable to medical intervention. The potential years of life lost indicator provides an estimate of the average years a person would have lived if they had not died before a notional reference age limit. For the purpose of this analysis, we assumed that deaths under the age of 75 years were premature. Korea's position in Figure 3.8 indicates that it is at the high end of the distribution of potential years of life lost though not significantly above the average overall.

Figure 3.8. Potential years of life lost for deaths from chronic conditions that are amenable to preventive action



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD analysis based on WHO mortality data, World Health Organization mortality database, Table 9 (International Classification of Diseases version 10).

Compared to the OECD average, Korea has high admission rates for asthma, COPD, hypertension and for uncontrolled diabetes. The trend data for admissions for COPD, hypertension, uncontrolled diabetes and long-term diabetic complications indicate an increase in the volume of admissions over the past five years. Among OECD countries, Korea has almost the longest average length of stay for all the chronic conditions mentioned in this report and worryingly the trend in length of stay has risen sharply in recent years. In terms of potential years of life lost for chronic conditions amenable to preventive action, Korea is not significantly above the average for OECD countries. However it is at the high end of the distribution and given that the full effects of epidemiological transition from ageing and rising chronic diseases are yet to be felt, and will be compounded by an under developed primary care system, it is most likely a matter of time before the number of premature years of life lost for chronic conditions reach the outlier level.

3.4. The primary care system in Korea

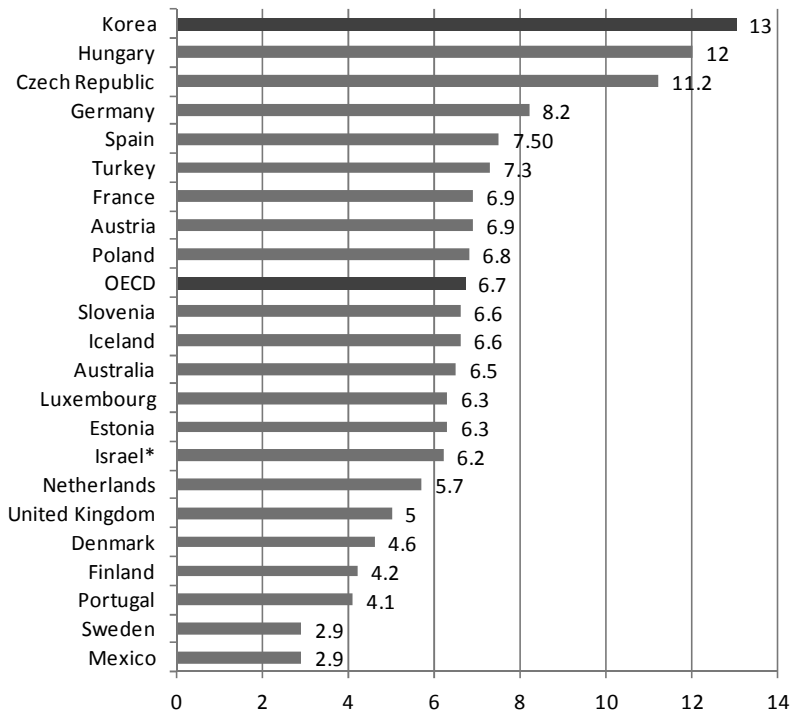
The conventional model of primary care, where a community-based team usually with a family physician or general practitioner leading the team, does not apply in Korea. Most of the 30 000 or so clinical practitioners

are specialists and often do not perform the functions of what might conventionally be viewed as primary care practice. Community health care infrastructure is skewed towards institutions that are defined by – and often seeking to add – beds, and provide outpatient primary care services. Furthermore, low or non-existent gate keeping means that there are poor controls on where Koreans go for their health care, with patients often seeking and receiving treatment in a variety of settings ranging from community based clinics to specialist centres. This can mean that patients with conditions that might more appropriately be seen in a community-oriented primary care setting are seen in a hospital.

The absence of functional gate keeping combined with a fee-for-service reimbursement system work together to reinforce a system of supplier-induced demand, with clinics and hospital services “touting” for business, and patients shopping around for the best deals. There is nothing inherently wrong with a competitive health care market, especially where competition is based on the pursuit of quality. However, in Korea, competition has incentivised an ever increasing tendency to provide services to bolster revenue and where “low-tech” but highly effective community-based health care gets squeezed out. This results in poor care continuity and coordination, and compromises health outcomes. The effects of Korea’s unfettered health care market can be seen in part in Figure 3.9, which illustrates that Korean doctors have the third highest rate of consultations per capita among OECD countries.

There is no clear demarcation between primary and secondary care in Korea. Clinicians working in community-based clinics are free to specialise and to provide any volume of specialist services within these settings. Typically, clinics are operated by general practitioners, internists, family physicians and paediatricians (HIRA, 2011). Table 3.1 below demonstrates the key areas of specialisation amongst physicians working in clinics. General Medicine – which dominates, represents physicians with a medical degree but without a specific specialisation in “family medicine” (broadly equivalent to a specialisation in “general practice” in many other OECD countries).

Figure 3.9. Consultations with doctors per capita among OECD countries, 2009 or earliest available year



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

Table 3.1. Key specialties of physicians working in clinics in Korea, 2005-09

Specialty	2005		2006		2007		2008		2009	
	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)
General medicine	7 851	26.25	8 165	26.43	8 466	26.81	8 803	27.32	9 179	27.81
Internal medicine	4 041	13.51	4 220	13.66	4 317	13.67	4 384	13.61	4 505	13.65
Orthopedics	2 008	6.72	2 060	6.67	2 067	6.55	2 051	6.37	2 057	6.23
Obstetrics & gynecology	2 674	8.94	2 591	8.39	2 539	8.04	2 499	7.76	2 484	7.52
Pediatrics	2 536	8.48	2 570	8.32	2 541	8.05	2 558	7.94	2 601	7.88
ENT	1 992	6.66	2 088	6.76	2 146	6.8	2 194	6.81	2 284	6.92
Family medicine	774	2.59	789	2.55	773	2.45	751	2.33	777	2.35

ENT: ear, nose and throat.

Source: HIRA (2010b), “HIRA Report on Medical Care Institutions” (in Korean), Seoul, Korea.

The clinics described above tend to operate independently of one another and might be viewed as competing enterprises. Another distinct feature of the primary care system is that the majority (around 94%) of clinics are solo practices (Table 3.2). From a quality of care perspective and in the absence of a patient registration system embedded within primary care, this raises obvious questions about care continuity and co-ordination and about the functionality of the primary care system outside of normal working hours. Solo privately owned clinics are also less able to weather difficult economic circumstances, which is a compounding viability issue in a market where patients tend to prefer to be seen in a hospital setting. This and other pressures on the clinics in the Korean health care system have resulted in an increase in the closure rate, up from around 7% in 2006 to 8% in 2008, this is compared to a 1% closure rate among hospitals and underscores the additional level of financial difficulty faced by clinics (Cho, 2009).

Table 3.2. Solo and group practice amongst clinics in Korea, 2010

	Solo practice		Group practice	Total
	Private	Incorporated		
Number	24 792	629	1 606	27 027
(%)	91.70%	2.30%	5.90%	100.00%

Source: HIRA report on medical care institutions. These statistics exclude dentistry and oriental medicine clinics.

There are also major disparities in the per capita ratio of physicians, nurses and (crucially) key speciality physicians (general and internal medicine, family medicine and paediatrics) between cities and provinces. While it is unclear from the available literature what the effects of these disparities are in terms of health care needs, it is clear that Korea's rural demographic is distinctly older and may therefore have increased primary care demand especially for chronic conditions (Lee *et al.*, 2009).

3.5. Strengthening primary health care in Korea

It is evident that primary care as it currently exists in Korea is not serving the country well. These challenges are only likely to be compounded as demographics drive older and poorer patients to present at Korea's health services with more than one health condition, and requiring care that straddles multiple health services and specialists. Dealing with such cases will require better co-ordination of care and support to help patients undertake actions to help moderate the risk of their condition.

At present the Korean primary care system does not operate in this manner and clinicians that have been trained in family medicine are just as likely to provide specialist care as they are generalist care. Furthermore, the predominance of acute hospital medicine and a reimbursement system that encourages technical and disease focused intervention work against efforts by motivated individuals to deliver high quality primary care. Indeed, after several decades, a cultural shift in the medical mindset will be required from a disease-based approach to health care towards person-based approach where all of the health care needs of an individual are properly assessed as opposed to a particular presenting condition.

Experience and research has shown that effective primary care is characterised by generalist care as the first point of call and with the ability to refer patients to specialist care when it is needed. It should also seek to provide care that is person –and not disease- focused, and be continuous in seeking to maintain a relationship with patients over a period of time and as their health needs vary. Establishing health services that capable of delivering this kind of care is a considerable task that will demand a long-term commitment from government and key organisations in the health sector working to a common vision.

This section focuses on system-wide efforts that ought to be undertaken to develop primary care services that are capable of better meeting the health care needs of Koreans into the future. In particular, it argues that policy efforts ought to be directed to:

- Establish primary care as an investment priority and directing investments towards supporting the growth of effective models of primary care.
- Develop a regional architecture that can help co-ordinate the efforts of providers to health priorities and areas of need.
- Collect better information on health challenges across Korea and the quality of care delivered outside of hospitals.
- Strengthen the workforce of primary care professionals.

Making primary care an investment priority and supporting effective models of care

Korea’s community-based family medicine sector is woefully underdeveloped today. There is a need to shift away from the current version of “primary care” as a gateway to more complex surgical or medical procedures and towards the provision of evidence-based health promotion and prevention along with partnering with patients to help them select the appropriate services for their needs. Current remuneration levels make it

hard to do this, making the practice of family medicine unattractive while supporting the oversupply of other services with greater complexity. As a result, primary care providers feel a financial pull towards becoming mini-hospitals that provide surgical procedures (even when not appropriate or safe). Correcting this situation will require ongoing investment specifically for primary care and preventative services.

Korea already has some of the essential building blocks needed to develop world class primary care. The country has a good supply of primary care physicians who work in local clinics and an outstanding record for technological innovation (which is much needed in the development of a modern computer-based primary care system). There are also good individual projects that can serve as examples of how the essential elements of effective primary care work in practice through promoting good health and raising health awareness and through preventing the deterioration of chronic disease. The challenge for Korea is to ensure that the building blocks that are already in place are financially supported to grow, and that institutional conditions are put in place that allow for these models to expand across the country at large. This will require dedicated investment that is not able to be easily diverted towards providing unnecessary acute care services, and that is prescribed tightly enough that it cannot be used to fund services that serve as a conduit to hospital admission.

To this end, it may be worthwhile for policy makers to specify “critical characteristics” of what good primary care ought to look like, such that new investment can be directed towards supporting the scaling up of effective models of primary care. Experience across OECD countries, combined with observations of successful projects in Korea suggests that more effective community-based primary care facilities often have these characteristics in common:

- *A community focus.* Health care that is locally accessible and responsive to patients needs will provide Koreans with an opportunity to have their primary health care needs assessed and met before they are drawn into the acute hospital environment. Often, this will be all the patient needs but in the case of a need for referral for acute care, this can be done in such a way that takes into account the totality of a patient health care needs.
- *Patient registration backed by financial support.* While this is a considerable undertaking, the potential benefits of a national primary care-based patient registration system are manifold and include the opportunity to develop a longitudinal health record for quality and outcome monitoring purposes, the transfer of information between the acute and primary sectors for care co-

ordination and care optimisation purposes. Ultimately, such a system could help in identifying resource needs and priority setting for successful outcomes.

- *Outreach preventive services.* A key facet of Korea's registration projects has demonstrated the benefits of proactive outreach both in raising awareness about risky health behaviours that might lead to the development of chronic disease and also in moderating lifestyle habits of those with established chronic disease. There may also be distinct benefits in terms of accessing hard to reach or disadvantaged communities where the burden of health risk might also be greater.
- *Continuity of care.* With the advent of complex health care interventions including complex drug regimens and a rise in the prevalence of multi-morbidity, patients are now more likely than before to receive multiple health care interventions across different providers at different times. To ensure patient safety and effectiveness, it is vital that care is properly co-ordinated over time. A functional primary care system where a family physician serves as the co-ordinating hub for complex patient care, ensuring that medicines and treatment regimens are properly reviewed over time will help ensure that complex care needs arising from chronic disease are catered for.

Many of these features figure prominently in OECD countries with strong primary care systems. A good example of a community programme in Korea today is the Gwang Myeong registration project which focuses on diabetes and hypertension management (see Box 3.1 below).

Box 3.1. Registration and management project for hypertension and diabetes mellitus in Gwang Myeong city

The two foci to this demonstration project are diabetes and hypertension management. This pilot project is run by the Gyeonggi Provincial Government and involves collaboration between the Ministry of Health and Welfare, the Korean Centre for Disease Control, Gyeonggi Provincial Government, Gwang Myeong metropolitan health centre, provincial medical care institutions and pharmacies, and the hypertension/diabetes mellitus control centre. The project is co-ordinated via Gwang Myeong metropolitan health centre.

As of August 2011, a total 17 679 hypertensive and diabetic patients were registered including 81% of the suspected patients over 65 years old and a total 84 hospitals and clinics as well as 115 pharmacies take part in the project. The registration and management centre is staffed by four people (a director, a team leader and two nurses).

The programme has three key elements:

1. Publicity – publishing, advertising and incentivising enrolment via clinic centres.
2. Private clinic involvement – where registration is recommended patients are then referred to the centre and are provided with ‘mass’ education concerning diet, exercise and general health awareness.
3. Academic input – for project evaluation.

Registered patients benefit from recall/reminder services, personalised training and counselling, highly focused care including health awareness training and connection to community health programs. Registration fees and part of treatment costs are refunded as well.

Potential enrollees are provided with financial incentives consisting of a one off payment of KRW 1 500 + KRW 3 000 per month for medical treatment and drugs. In addition, attending hospitals and clinics are provided with KRW 1 000 per registration for persons aged 65 and over and KRW 5 000 per registration for persons aged under 65. Funding for the scheme is split between National Government (50%), Provincial Government (15%), and the Gwang Myeong Municipality (35%). The programme has been running since 2009 and will be expanding to three other Korean cities. Total cost of the project is around KRW 1.2 billion in 2011.

The project is undergoing a formal evaluation which is being led by a local academic centre. The evaluation will focus on six areas:

1. Rate of sustained treatment of patients with hypertension and diabetes.
2. User and professional satisfaction (Doctors and pharmacists) + (patients).
3. Extent to which the programme has enhanced user participation in the Registry Programme.
4. Change in registered patients’ behaviour in the use of medical institutions.
5. Change in registered patients’ health related behaviour.
6. Provincial level surveys to assess hypertension and diabetes prevalence.

The specialist health care centre, named the Gwang Myeong city hypertension diabetes centre is managed by the AJOU University Department of Preventative Medicine and located in the Public Health Centre of Gwang Myeong city.

Locally-based primary care centres should serve as the co-ordinating hub for the provision of evidence-based health promotion and risk prevention programmes – these activities ought to work in parallel with the existing registration programmes. At the very least, it would be prudent to ensure that the development phase of primary care patient registration systems include appropriate functionality to record risk registers for the major chronic diseases. The experience and learning gained from the national registration projects should be used to identify “quick wins” in the

development of these services. The development of a distinct primary care service that is provided in local communities will provide Korea with its best chance to meet its medium and longer term chronic and multi-morbidity health care needs. For such a service to flourish and to provide effective care, it is likely to be characterised by a system of local clinics that are led by family physicians and supported by properly trained practice nurses that seek to maintain contact with patients in supporting them with their health needs.

Placing primary care within a regional system, that co-ordinates solo practitioners

In financially supporting the development of primary care practices, investment should be used to leverage a shift towards the development of group practice amongst Korea's 26 000 solo practitioners. In addition to best practice characteristics of the kind detailed above, financial support could be provided to practitioners that are willing to consolidate their services in a single location, making it easier for them to work in teams, undertake care co-ordination and peer review. Recent efforts in Australia that provide infrastructure grants to establish multi-disciplinary clinics could be a model for Korean policy makers to consider. Where useful and appropriate, these services should build on existing infrastructure supporting mandatory coverage of screening services in communities across Korea – in essence, becoming the hub of “follow up” services for patients with identified health needs. Over the long term, this approach will help establish a regional architecture for primary care in Korea that will help National Health Insurance identify and direct funding to areas most at need.

Korea's provincial and City governments have a long standing administrative responsibility with distinct responsibilities for welfare and for public health. Formalising their responsibility for primary care coupled with adequate information flows from both HIRA and the NHIC would sharpen the country's focus on primary care quality and its potential to meet and stem emerging health care needs including the development of locally tailored programmes to meet local health needs. Such a move might also redress the current imbalance in the locus of health financing. The development of more widespread registration, especially if synchronised with national screening programmes, might also support the development national disease registers.

Better information

The use of existing data to develop better measures of quality of care in primary care could be a useful tool to guide policy development and

funding. The development of primary care quality measures will facilitate analysis of quality trends and will provide the information base for remedial action. Within its expansive data infrastructure, HIRA currently has the ability to monitor the number and type of patients presenting at hospitals with potentially preventable admissions. Such information could be invaluable in identifying areas where primary care services are not encouraging controlled and appropriate referrals. Similarly, HIRA is able to monitor the utilisation of ambulatory care in emergency departments. In pharmaceuticals, HIRA is able to monitor the prescribing of antibiotics, drugs of limited clinical value and the ratio of generic to branded drugs – information that could help map where quality shortfalls are occurring (and where unnecessary costs to the system are being incurred).

Critically, HIRA has the ability to map the geographical differences in performance across Korea. Doing so along the lines of regional boundaries that align with the scaling up of primary care services (as recommended above) will provide National Health Insurance with the tools to make regional assessments of needs or identify where shortfalls may be occurring. Such information could bring into focus the often higher needs and fewer resources in rural communities. More broadly, these indicators can bring the benefits of primary care into sharper relief and foster a culture of delivering higher quality care.

With regard to better information exchange, a place to commence the development of regional and nationally benchmarked primary care quality indicators would be to cover the following key quality areas:

- Potentially preventable admissions for asthma, chronic obstructive pulmonary disease, congestive heart failure, diabetes (long and short term complications) and uncontrolled diabetes, hypertension.
- 30-day and 90-day readmission rates for the chronic conditions mentioned above.

A workforce for primary care

Efforts to develop a workforce of primary health care professionals will be essential to developing a stronger primary care system. The majority of new medical graduates in Korea currently prefer to gain a specialisation. At the same time, independent medical professionals working in primary care often feel the need to deliver basic surgical and inpatient services to maintain their viability. While investment and a more pronounced role in the health system would help enhance the professional status of family physicians, Korea also needs to engender an awareness of the importance of primary care amongst its medical profession. Providing more medical

students with the experience of working in primary care could help impart an understanding of the role and importance of primary care.

Policy makers should work with medical associations and universities to introduce a mandatory training rotation in a primary care facility. Such a programme (of limited duration) could build on existing training opportunities available in select schools. Critically, it would also help bolster the size of the primary care workforce, especially in rural areas where the number of community-based health professionals has been steadily reducing in comparison to Seoul. Providing a modest training subsidy would support the development of a training culture in primary care practices across the country.

At the same time, more immediate changes could be driven by further promoting advanced practice nurses, who could play a valuable role in supporting physicians' delivery of preventive health care, reviewing people at risk of developing chronic disease and planning co-ordinating care for patients with complex health care needs.

3.6. Conclusion

The challenges that Korea is grappling with – an ageing population and rising chronic diseases – are not unique. Indeed, they are shared by most OECD countries, many of whom are seeking to bolster primary care services to help people avoid getting sick in the first place and help those living with a chronic disease better manage their condition. However, which such an acute focused health care system, Korea's starting point today is behind that of many other OECD countries. Turning this situation around will demand a consistent policy commitment to developing effective primary care services over a long period of time. Better remuneration and more primary care practices will help set the foundations, but will need to be supported by a workforce dedicated to primary care and better information to help the single insurer direct funding to areas of need.

Note

1. The number of births that a woman would have if she experienced the current age specific birth rates throughout her childbearing years.

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Chapter 4

Quality of care for cardio and cerebrovascular diseases in Korea

This chapter reviews the quality of care for cardio and cerebrovascular diseases in Korea. Quality of care indicators suggest an interesting paradox in patient outcomes in Korea, where outcomes for two conditions where countries are generally either relatively good or relatively bad – AMI and stroke – tend to diverge in Korea. In seeking to unpack this paradox, and the extent to which it is influenced by the health care system and health policies, it is argued that acute care is usually delivering high quality cardiovascular care, though variations in quality exist across the country. Consistent with recommendations for improvement across the health system, the focus of efforts to improve quality of care should be prior to and after hospital admission. In particular, preventing cardiovascular disease, supporting patients in managing their health in primary care and improving ambulance services are worthwhile reforms. Similarly, establishing formal rehabilitation processes for AMI and stroke would also be a high value for money investment in Korea.

Cardiovascular diseases are the leading cause of death in almost all OECD countries, accounting for 35% of all deaths in OECD countries in 2009. While being one of the major killers, mortality rates associated with cardiovascular diseases have decreased dramatically in all OECD countries over the past three decades. This reflects advances in understanding and monitoring risk factors for cardiovascular disease and improved medical care in the acute phase of the disease. Improvements in survival rates have, however, led to an increase in the disability burden following stroke and heart attack.

Cardiovascular diseases have also become a considerable financial burden on health systems in general, with circulatory diseases accounting for between 12% to 28% of total hospital inpatient spending in selected OECD countries (OECD, 2009). Given their substantial burden on population health and health systems, national and international policy makers are increasingly focusing on reducing mortality rates caused by cardio and cerebrovascular diseases.

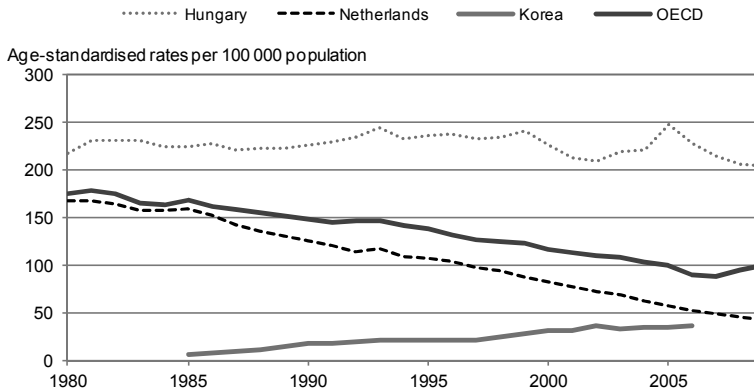
This chapter reviews the quality of care for cardio and cerebrovascular diseases (CVD) in Korea. For the purposes of this chapter, CVD will refer broadly to a wide range of diseases related to the circulatory system, mostly heart attack and stroke (OECD, 2009). It will consider the quality of care in CVD as measured by mortality rates, but also take into consideration other factors such as appropriateness of care, disability, quality of life and life expectancy.

4.1. CVD outcomes in Korea

Mortality and case-fatality for ischemic heart disease and stroke: the Korean paradox

Korea has not experienced the same trend decline of mortality rates for ischemic heart disease as has occurred in other OECD countries. While the mortality rate – the number of deaths in a population over a period of time – for ischemic heart disease in Korea is one of the lowest amongst OECD countries, they have been rising. In 2007, mortality from ischemic heart disease peaked at 29.5 per 100 000 persons in 2007 compared to only 16.2 per 100 000 persons in 1998 (Statistics Korea, 2007). At the same time as low but rising rates of mortality for ischemic heart disease, mortality rate for stroke in Korea (73 per 100 000 male) ranks amongst the highest among OECD countries (OECD, 2011).¹

Figure 4.1. Trends in ischemic heart disease mortality rates, selected OECD countries, 1980-2005



Source: OECD Health Data 2011.

In reflecting deaths across a population at large over a period of time, mortality rates can signal a range of factors such as lifestyles, social and economic conditions and levels of health education. Influencing mortality outcomes for CVD is likely to require a range of policies, many of which are likely to be outside the influence of health service providers. In this regard, in assessing the quality of care, a useful indicator is case fatality rates following hospital admission for advanced vascular conditions. While the impact and incidence of a disease across the population are likely to affect the number and intensity of patients that present at hospitals, governments and health service providers have more scope to influence case fatality rates through good quality of care in hospitals. Evidence from international literature suggests that the effective use of thrombolysis, aspirin and beta-blockers following stroke and AMI can help improve the chances of a patients' survival. When placed alongside each other, an interesting paradox emerges between population wide mortality outcomes and fatality from CVD in Korean hospitals.

While Koreans are less likely to die of ischemic heart disease compared to people in other OECD countries, they are more likely to die once admitted into hospital for acute myocardial infarction (AMI) than patients in other OECD countries. The mortality rate from ischemic heart disease in Korea is the lowest amongst all OECD countries for which data was available, with 37 deaths per 100 000 males in 2009. In the same year, the average across OECD countries was 117 deaths per 100 000 males (Figure 4.2).

Figure 4.2. Ischemic heart disease, mortality rates in selected OECD countries, 2009 (or nearest year)

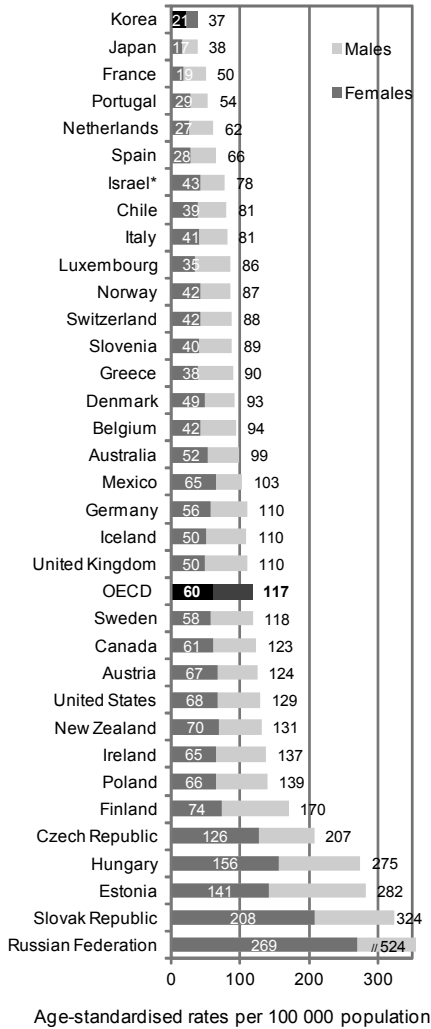
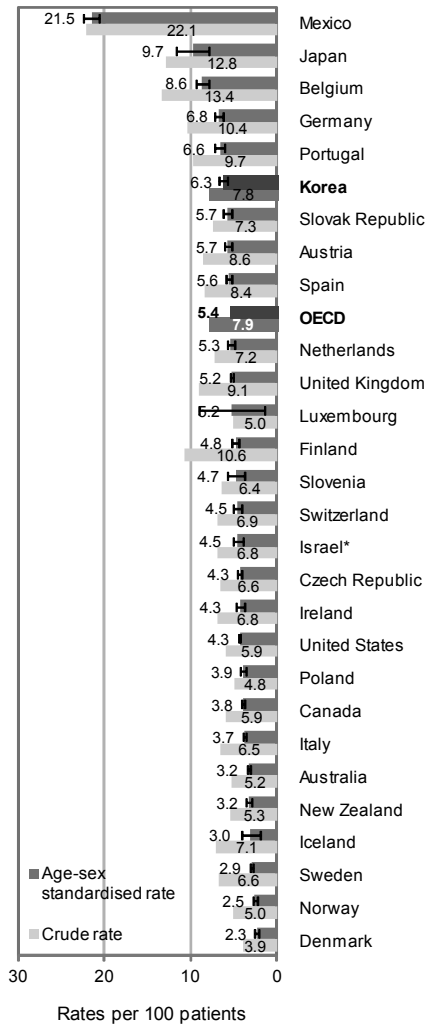


Figure 4.3. Admission-based in-hospital case-fatality rates (same hospital) within 30 days after admission for AMI in selected OECD countries, 2009 (or nearest year)



H represents the 95% confidence intervals, which show the range or boundary of precision for a particular figure.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011.

At the same time, Korea has high in-hospital case fatality rates when compared to other OECD countries. Korea's in-hospital case fatality from AMI is 6.3 per 100 admissions in 2009, compared to an OECD average of 5.4 per 100 admissions in the same year (Figure 4.3). The concurrence of the figures on overall mortality and in-hospital 30-day mortality could suggest that those persons presenting at hospital with AMI may represent advanced or particularly complex cases amongst a smaller group of people across the population that are dying from ischemic heart disease.

The situation for stroke is the opposite of that for ischemic heart disease and AMI. While in-hospital 30-day case mortality from stroke has decreased dramatically in recent years, Korea's overall mortality rates for stroke remain one of the highest in the OECD. In 2009, 73 per 100 000 males died from stroke compared to an average across OECD countries of 54 makes per 100 000 (Figure 4.4). Yet while population wide mortality from stroke is high, case fatality rates from stroke once in hospital are low in when compared to other OECD countries. Improvements in hospital infrastructure and organisation across OECD countries (in particular, the creation of separate stroke units in tertiary hospitals) are widely credited for having improved the treatment and recovery of stroke patients and driven considerable improvements in quality of care delivered in hospitals. Data collected as part of the Health Care Quality Indicators (HCQI) project at the OECD indicate that in 2009, 30-days case fatality rates for both ischemic and hemorrhagic stroke in Korea were respectively 1.8 and 9.8 per cent of admitted patients, which is now amongst the lowest in OECD countries (OECD, 2011). These figures suggest that quality of care delivered in hospitals in Korea following a stroke episode is amongst the best in the world.

Korea's seemingly inverse outcomes – both when comparing mortality and case fatality rates and when comparing stroke to ischemic heart disease and AMI – are unusual. In most OECD countries, levels of in-hospital fatality rates across the two acute manifestations of underlying vascular conditions – AMI and stroke – are similarly either relatively good, or relatively bad (for example, Denmark, Norway and the United States report amongst the lowest rates of OECD countries for both conditions). Population-based mortality *trends* for both conditions also tend to be similar. Indeed, countries with high population-based mortality rates will also often have high case-fatality rates.

Figure 4.4. Stroke, mortality rates in selected OECD countries, 2009 (or nearest year)

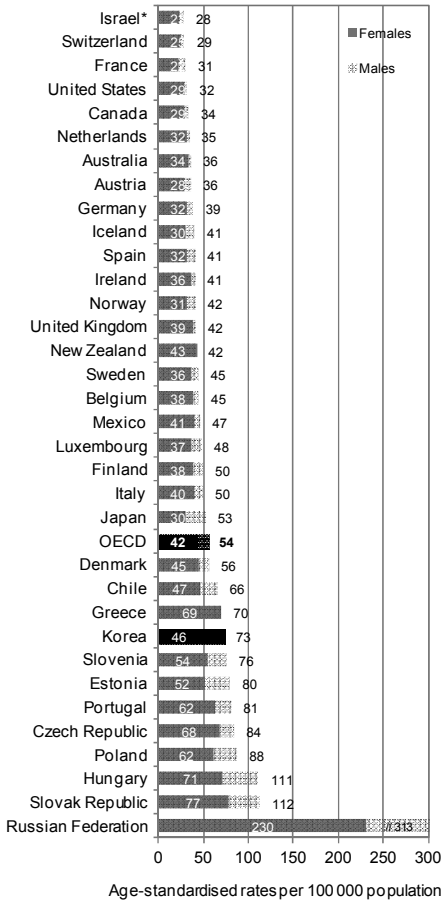
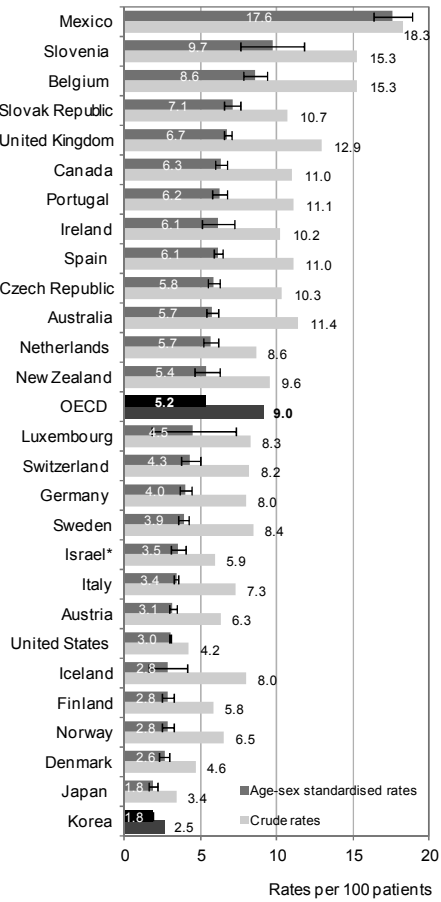


Figure 4.5. In-hospital rates within 30 days after admission for ischemic stroke in selected OECD countries, 2009 (or nearest year)



H represents the 95% confidence intervals, which show the range or boundary of precision for a particular figure.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: OECD Health Data 2011; IS-GBE (2011).

Considerable care is required when analysing this data, especially in inferring that high-case fatality rates are a principle *cause* of high population-based mortality rates. Population-based mortality is an indication of overall population health, dependent on social and economic health determinants, preventive care and access to secondary care. While case-fatality rates of patients admitted with an AMI or stroke are intended to indicate the quality of hospital care, hospitals admitting a higher proportion of complex and more advanced disease cases will – possibly – have worse outcomes. Furthermore, the preceding step of ambulance care will determine which patients will be admitted alive to receive the necessary services. In the absence of a proper international method for adjusting for differences in case mix, it is difficult to precisely unpack this paradox in Korea's indicators of quality of care for CVD.

Nonetheless, a reasonable inference for ischemic heart disease and AMI is that while hospital care for CVD has improved in recent years, policies to reduce the incidence of CVD outside the hospital sector are an area of weakness in Korea. A lack of supervision and monitoring in primary care settings of adults with high levels of risk factors might result in admission of patients with exacerbated underlying CVD conditions and in turn, high case fatality rates. Ineffective and insufficient primary and preventive care, especially for older adults, can result in deterioration of general health status and exacerbate the potential threats of CVD risk factors. This is particularly relevant in the case of disadvantaged populations, which might have limited access to health care. To further compound matters, it has been shown that these populations are more at risk of obesity, uncontrolled diabetes and high cholesterol (Sobar and Stunkard, 1989; Everson *et al.*, 2002; McLaren, 2007).

In the case of stroke, low in hospital case-fatality rates indicate that most deaths from stroke might occur outside of the hospital sector: *i.e.* at the place of onset of stroke, during the ambulance transportation, or at the emergency care units. The combination of high mortality and low case fatality could also suggest that while improvements of medical care in the acute phase has led to good quality of care in hospitals, timely transfer to hospitals might be inadequate and deficient, especially in the case of rural populations. The concurrence of high mortality and low case fatality should also suggest that policy makers should look beyond hospital settings to how hospitals work with other health facilities and levels of public awareness surrounding stroke in the community.

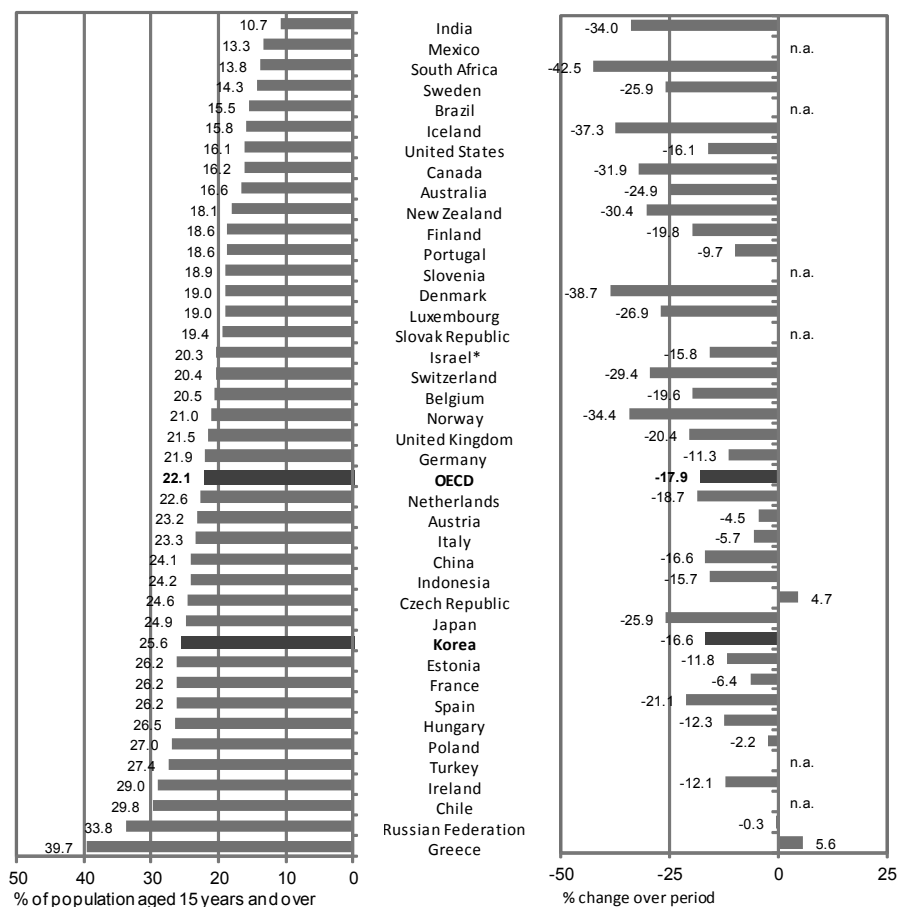
Health risk factors and the likely increase in the burden of cerebrovascular diseases (CVD)

Governments across OECD countries are increasingly recognising the impact of nutritional patterns, physical exercise and smoking patterns on the burden of CVD. As a consequence, prevention strategies across OECD countries have increasingly focused on lifestyle and behavioural changes to improve the monitoring and control of risk factors associated with CVD. The major risk factors for stroke are older age, hypertension and smoking tobacco. In addition, risk factors for heart attack also include high cholesterol levels and diabetes (which is usually associated with obesity). A previous episode of AMI is also one of the main risk factors for future heart attacks. As in many other OECD countries, Koreans have experienced dramatic changes in lifestyle habits with regard to physical exercise and dietary changes.

Smoking

Smoking rates in Korea are well above the OECD average, with 25.6% of the adult population smoking regularly (see Figure 4.6). Behind this sits a considerable disparity in smoking rates between Korean men and women, with 44% of Korean men smoking compared to 7% of Korean women. However, it is interesting to note that smoking rates have decreased by 16.6% from 1999 to 2009 (OECD, 2009), indicating that policies to prevent smoking instituted in recent decades could have a considerable impact in having reduced the risk of CVD in Korea.

Figure 4.6. Percentage of adult population smoking daily, 2009 and change in smoking rates across OECD countries, 1999-2009 (or nearest year)



* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

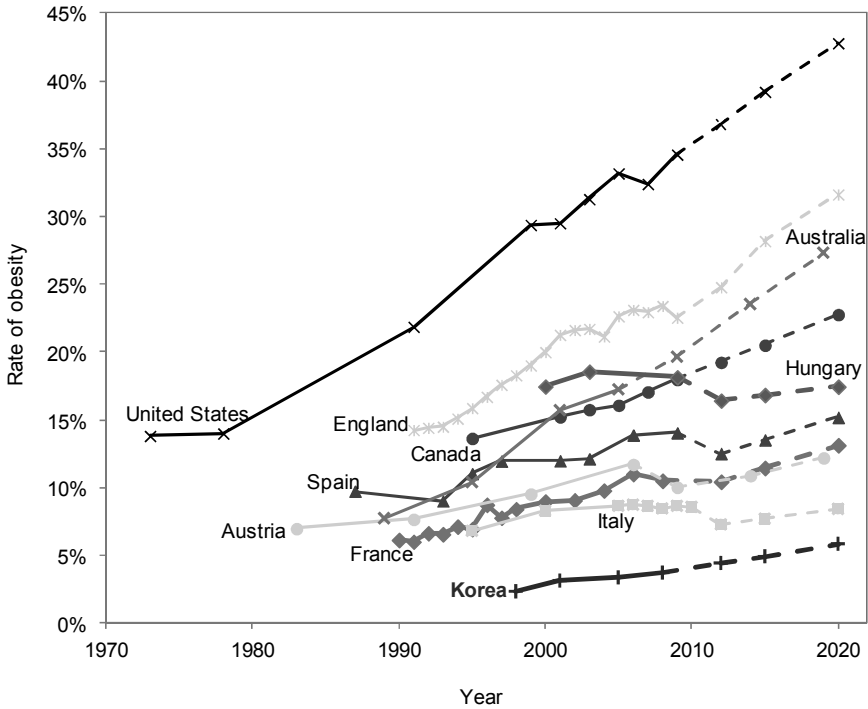
Source: OECD Health Data 2011; national sources for non-OECD countries.

Obesity

Although obesity has become a major public health concern in most OECD countries, it receives less attention in Korea. Overweight and obese adults are more likely to experience health conditions such as hypertension, high cholesterol and diabetes, which are risk factors for CVD. Korea has one of the lowest obesity rates amongst OECD countries,

with only 3.8% of the adult population considered to be overweight or obese, a fifth of the average across OECD countries. However, recent projections suggest that obesity is set to steadily increase in Korea, reaching an estimated 6.5% of the population in 2019 (OECD, 2009). Nonetheless, this rise in obesity is not nearly as alarming as in other OECD countries (for instance, in the United States, where the obesity rate among adults is expected to reach 45% by 2020). It is also worth noting that overweight rates have been rising more quickly amongst children. This is likely to reflect changes in both nutritional habits (more food containing trans-fats is being consumed) and more sedentary lifestyles. Being overweight² at a younger age could potentially increase the likelihood of a CVD in the future.

Figure 4.7. Rising obesity across OECD countries

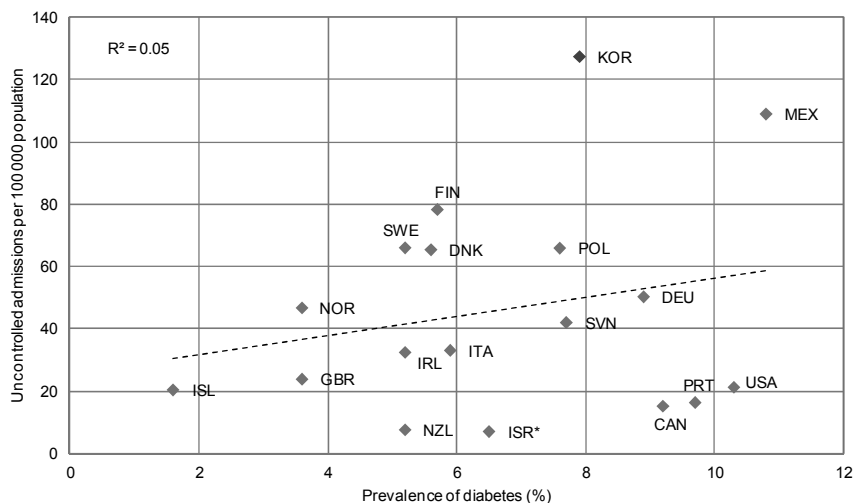


Source: OECD (2010), *Obesity and the Economics of Prevention: Fit not Fat*, OECD Publishing, Paris.

Diabetes

The increase in the prevalence of diabetes (which is a main risk factor for CVD) in Korea over the past few years is of considerable concern. Estimates on the prevalence of diabetes in Korea suggest some of the highest levels amongst OECD countries, with 7.9 cases per 100 000 people compared to an average amongst OECD countries of 6.5 per 100 000 people (Figure 4.8). Data on unplanned hospital admission rates for uncontrolled diabetes also suggest that detection, treatment and follow-up of patients with diabetes might be an area of weakness in Korea. In 2009, hospital admissions for uncontrolled diabetes in Korea were the third highest in OECD countries, behind Hungary and Austria (OECD, 2011).

Figure 4.8. Uncontrolled diabetes hospital admission rates and prevalence of diabetes across OECD countries, 2009



Note: Prevalence estimates of diabetes refer to adults aged 20-79 years and data are age-standardised to the World Standard Population. Hospital admission rates refer to the population aged 15 and over and are age-standardised to 2005 OECD population.

* Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.

Source: International Diabetes Foundation (2009) for prevalence estimates; *OECD Health Data 2011* for hospital admission rates.

Older age

Korea's ageing population is the most concerning risk factor for CVD. Ageing leads the heart to undergo physiological changes (even with the absence of illness) and can increase the risk of CVD. In the case of existing conditions (such as coronary heart disease), these changes can have important impacts on the well-functioning of the heart and increasingly lead to heart attacks. Today, 10.7% of the Korean population is aged over 65 years (compared to an OECD average of 15%) but this is set to increase to 37% of the population by 2050, due to longer life expectancies and dramatic falls in fertility rates in Korea (OECD, 2007).

4.2. Policies to improve the quality of care for CVD in Korea

The combination of rising risk factors for CVD in Korea suggests that good prevention and primary care will be important – both to improve outcomes today and to help the Korean health system address future challenges. This will require proactive policies that can identify patients at risk, monitor their conditions and provide the appropriate follow up services. The starting point for developing such systems is data on health outcomes and the quality of care. The data collected in Korea today is largely focused on the acute care sector, and suggests that the quality of care delivered in Korean hospitals is amongst the best in the OECD.

The following section examines the key policies underpinning CVD care in Korea today, and provides recommendations to improve the quality of care. At a broad level, improving CVD care outside of hospitals ought to be the policy priority to help improve cardiovascular care outcomes for Koreans. Current prevention policies in Korea mainly revolve around two screening programmes organised by the National Health Insurance Corporation and the Ministry of Health and Welfare. While this forms a solid basis for identifying patients, there is a need to build on these programmes by establishing formal mechanisms to help coordinate care and deliver case management to those patients at risk in the long run. Supplementing this, efforts ought to be made to minimise intervention time and the lag between the onset of stroke or AMI and the arrival of a patient to hospitals. Establishing formal rehabilitation processes for cardiovascular conditions would also be a high value for money investment in Korea.

Measuring quality of care for CVD

Measurement of the quality of care for CVD disease in Korea is on par with best practice amongst OECD countries for the acute care sector, but lacks capacity beyond hospitals. In large part, this situation reflects the importance given to monitoring health services funded under health insurance relative to monitoring health outcomes and performance across the system at large (as detailed in Chapter 1).

HIRA currently sits at the centre of measuring the quality of CVD care delivered in Korea as a result of its claims databases and recent efforts to develop measures on the performance of health services. HIRA undertakes yearly measurement across three main assessment areas: inpatient, outpatient and long term care. A broad suit of structure, process and outcome indicators are collected on AMI, stroke and coronary artery bypass graft (CABG) from all tertiary and general hospitals (see Table 1.5 in Chapter 1). The indicators measured include: appropriate and timely diagnostic testing, numbers of patients who received thrombolytic treatment within 60 minutes of arrival to the hospital, use of aspirin for patients with symptoms of AMI within 24 hours upon arrival to the hospital, and the number of patients who died within one year of discharge from hospitals.

In addition to HIRA's efforts, the Korean Centre for Disease Control (KCDC) is also involved in data collection and measurement of quality of care as part of the Comprehensive Plan for CVD launched by the government in 2006. Data collection (mainly outcome indicators) on care in the acute phase, disability and reduction in complications (and recurrence of episodes of AMI or stroke) is performed using population-level data. Data on the impact of primary and secondary prevention is also collected (treatment of patients with important risks factors and reduction in overall prevalence of hypertension, obesity, smoking, physical activity). However, these efforts at expanding data collection beyond acute care are currently in their infancy.

These two main data collection processes – through HIRA and the KCDC – only partially reflect the entire care process of patients with CVD, as they mainly focus on hospital care (leaving quality of primary care or care in smaller hospitals undocumented). This is likely to reflect a lack of governance in the primary care sector, which is dominated by the solo practitioners and small hospitals where co-ordinating the implementation of data collection is a more difficult task. As part of overall efforts to strengthen primary care, Korea would benefit from a greater focus on collecting systematic information on the quality of care and health outcomes across the country. Today, these efforts are limited to hypertension control, diabetes and quality measures of prescriptions. In particular, the ability to

distinguish differences in performance across regions in Korea could provide a valuable tool to help policy makers target their efforts.

At a macro-level, the data collected by HIRA and the KCDC reinforce a picture of high quality care for CVD in large hospitals and shortfalls in community and primary care services. High achievement rates for process indicators from HIRA are consistent with the data collection carried out by the KCDC. For instance, the number of deaths per year from stroke was reduced by 20% between 2001 and 2008 (HIRA, 2010a). A particular area of shortfall is the monitoring of patients at risk in the management of their condition. The few indicators available suggest poor processes indicators for diabetes: only 42.9% of patients with diabetes go through a renal exam and 35.9% receive an ocular fundus exam – an indication of poor management of a condition that is relevant to CVD.

Health promotion, prevention and primary care

Public awareness about the importance of a healthy lifestyle plays an important role in the prevention of CVD. Many countries have facilities and programmes in place for health promotion that seek to modify risk factors and help patients living with CVD. The institutional locus of efforts on health promotion and prevention in Korea is the Ministry of Health, which together with the KCDC undertakes public campaigns targeting obesity, smoking and physical exercise. At a community level, public awareness campaigns are supported by services delivered in a network of local public health centres across Korea. Around 16 037 private institutions (mainly clinics) and 145 public health centres offer screening services related to cancers and CVD. The work of public health centres is monitored through a joint assessment by central government and local government. Together, these national and local institutions seek to deliver health promotion and prevention programmes in Korea.

In analysing prevention programmes for CVD, a useful distinction to make is to assess their effectiveness across different types of interventions. Prevention programmes for CVD typically include the following interventions:

- Raising public awareness and detect risk factors for CVD (primary prevention).
- Monitoring and control of patients at high risk to CVD – for example with hypertension (secondary prevention).
- Treating and monitoring patients with previous episodes of AMI or stroke (tertiary prevention).

Primary and secondary prevention in Korea is largely performed through the routine adult health screening programme and the life-turning point health assessment programme, both of which are conducted by the NHIC and planned by the Ministry of Health and Welfare. The health adult screening programme is directed at the working population (and dependants) and includes preventive interventions such as tests for hypertension, diabetes, hyperlipidemia and abdominal obesity. The screening process takes place once every two years. Those identified at risk are offered a consultation on screening results and tailored health education to further raise awareness on risks factors in relation to CVD and ageing in general. A life-turning point health assessment is offered twice to all health subscribers at ages 44 and 66. It includes more in-depth mental and physical health examinations and tests on hypertension, diabetes, hyperlipidemia or depression and well-being. Again, adults identified at risk for chronic conditions can have a second screening and tailored consultation with a physician. In 2010, 35% of those screened received a second screening. The screening rates for the health adult screening programme and the life-turning point health assessment programme in 2010 were respectively 68.15% and 65.17% (HIRA, 2011). In their scope and design, these two programmes are comprehensive and form the critical foundations for diagnosing risk factors for CVD, especially amongst the working population.

Following the screening process, those identified as being at risk are offered follow-up care ranging from case management with home visits and telephone counselling to health promotion and books and brochures. In 2010, efforts were made to more broadly offer follow-up care, resulting in 22.6% of those screened who received at least some form of follow-up care (compared to only 8.2% in the previous year) (HIRA, 2011). The different types of follow up care available following screening is detailed in Table 4.1 below.

In addition to screening and follow-up care, an important recent development is the creation of *registers* in several cities by the KCDC (Daegu City, Gwang Myeong-si, Namyangju-si and Ansan-si) to facilitate management of adults identified with hypertension and diabetes. This project links the private hospital sector with clinics by setting up a patient-centered management system to share information about treatment dates, treatment compliance, individualised health care and reduced treatment costs for senior citizens. A survey shows that the register system as part of a broader “disease management process” (see Box 2.1 in Chapter 2), in Gwang Meong-si has been considered as a success by patients, doctors and also pharmacists: 98.2% of patients, 90.6% of participating doctors and 90.4% of participating pharmacies have expressed satisfaction with regards

to the registration and management programme. While currently a small project with limited impact across Korea at large, this is a desirable step towards increasing follow-up of patients identified at risk following the screening process.

Table 4.1. Post-screening activities offered in Korea’s public health centres

	Subject	Activities
Post-screening follow-up care (focused care group: case management)	Those who are diagnosed with hypertension or diabetes mellitus after second screening but left untreated or under-treated (less than 300 days of medication)	Home visit and telephone counselling, Personalised assessment and problem listing, Intervention plan based on the problem list, Intervention and assessment, Counselling on medical care
Post-screening follow-up care (risk group)	Those who are diagnosed with IFG (impaired fasting glucose) or pre-hypertension after second screening. Those who are suspected of hypertension or diabetes after first screening or those who are suspected of general disease but have hyperlipidemia	Telephone counselling (maximum four sessions), health literature/books (disease-specific information, health information, lifestyle guidelines)
Post-screening follow-up care (general group)	Those who are obese (with BMI higher than 27 after first and second screenings).	Books or brochures via mail
Health Promotion Center	Those who are diagnosed with IFG (impaired fasting glucose) or pre-hypertension after second screening. Those who are suspected of hypertension or diabetes after first screening or those who are suspected of general disease but have hyperlipidemia.	Consultation with doctors, Personalised preventive programmes including exercise and nutrition

Source: HIRA (2011), “Response to the OECD Questionnaire on Quality of Care in Korea”, Section 4: Health care quality and cardio/ cerebrovascular diseases, Health Insurance Review and Assessment Service, Seoul (unpublished).

While screening programmes are comprehensive in their service offering, and well dispersed throughout the country, it is unclear whether they are serving as a constructive gateway to follow up services for secondary prevention. Despite recent efforts to implement registers in some cities, there is little evidence on how follow-up care after screening is delivered in practice. For instance, individuals can decide to enrol in a complete stop-smoking programme or individualised targeted exercise programmes following the identification of their condition, but these highly cost effective services are not covered by National Health Insurance. Take-up of such activities is at the expense of patients, though some local governments are operating sporadic health promotion programmes.

Public health facilities where screening is undertaken often do not have the institutional capacity and the resources to deliver monitoring and patient

counselling for patients at risk in the long run, and there are few systematic methods by which these screening services act as a gateway that cultivates a relationship between a patient at risk and an identified primary care professional that can be responsible for their care. This is reflected in high unplanned admission rates for uncontrolled diabetes compared to other OECD countries (as detailed earlier). Korean policy makers should seek to embed basic primary preventative measures in its community health services. This could firstly be undertaken by the further inclusion of cost effective post-screening activities in the benefit basket of National Health Insurance. The considerable screening infrastructure already in place provides a useful mechanism by which to identify those patients most at risk, and maximise value for money for further government investments in this area. Particular attention ought to be given to services that are cognisant of emerging risks amongst young people in Korea.

In addition to screening programmes, a wide health promotion programme has been established under the Health Promotion Act. Financing of the programme comes directly from earmarked taxes imposed on tobacco, that are collected in the Health Promotion Fund (around KRW 1 976.2 billion). The programme mainly focuses on funding anti-smoking education, lifestyle modification programmes, diet management, oral health management, and disease prevention in public health centres.

In seeking to further improve health promotion and prevention for CVD, policy makers should focus on the developing a more supportive primary care system, in particular to bolster the capacity for secondary and tertiary prevention. Primary care is generally the cornerstone for monitoring risk factors for CVD in other OECD countries. Secondary preventive services are typically associated with risk factor modification in people with established diseases (hyperlipidemia, hypertension, angina etc). These people may not have had a catastrophic event (AMI, transient ischemic attack, stroke etc.) but they are at higher risk. Therefore for this group, risk modification and secondary preventive measures are almost always appropriate. For people in a third category – those that have had a catastrophic event such as AMI, stroke, CABG or even Percutaneous Coronary Intervention (PCI) – rehabilitation and delivering risk modification and ongoing medical care (beta blockers, ACE inhibitors, statins, calcium channel blockers etc) is desirable.

Given the considerable challenges involved in delivering such services with Korea's relatively under-developed primary care sector, policy makers should focus on high risk patients, where the greatest value for money is likely to lie. While registration projects like those that have already been undertaken at a small scale in selected Korean communities are likely to be advisable in the long term, a quick win could be delivered by using

information already available to offer proactive follow up services to those people that have already been admitted for a potentially preventable admissions, CABG, PCI, stroke, AMI and uncontrolled angina. This group of people could serve as an effective cohort for commencing broader registration of patients at risk. Over the longer term, this registration system could be expanded to include those who have an established disease but poor risk factor modification and those identified by community-based screening programmes for having a risk profile for CVD (fat, smoke, hyperlipid, hypertensive, etc.). Policy makers ought to be sensitive to ensuring that broader development of registries using hospital-based data does not come at the expense of primary care-based risk registers.

Ambulance services

With time to reaching appropriate medical support often making a critical difference in the outcomes of an acute CVD condition, ambulance services can play an important role in the quality of cardiovascular care. While Korea has effective technological and logistical systems in place, there are concerns over exceptionally long transfer times to hospitals.

As with most other countries, a patient's path through emergency services is in theory clearly defined from patient's call to the emergency call centre. In Korea, the emergency call centre works closely with a communication satellite centre to identify the location of the patient and of the nearest emergency vehicles, which are then sent to the patient. Emergency vehicles are all linked to a national information system to share the most-up-to-date information on the patient's health status, such as electrocardiogram readings or vital signs. They also receive information on the closest emergency hospital for rapid transfer of the patient. The Emergency Medical Information Centre also makes sure that hospitals receive full information before taking over. Korea's use of satellite technology to precisely locate patients and co-ordinate the different levels of services is a remarkable technological innovation in this patient pathway. Korean ambulance services operate in close relation with hospitals, in order to reduce transfer times and maximise survival chances. Several general pre-hospital practices (proper diagnosis, hospital pre-notification) have been shown to have a positive impact on the quality of acute stroke care upon arrival at the hospital (Mosley *et al.*, 2007).

There have been some concerns about the operation of ambulances in Korea in recent years. According to the Emergency Medical Service Act, Korean ambulance services are not subject to a separate accreditation system, and can be operated by either local government, hospitals, persons who have obtained a business license for transferring emergency patients, and other not-for-profit organisations (that have been agreed by the Minister

of Health and Welfare). An external review of the quality of ambulance services was commissioned by the Ministry of Health and Welfare in 2008. The first results of the external review showed that the interval times between the onset of AMI and stroke and the transport to the appropriate hospital were respectively 228 and 358 minutes (HIRA, 2011). These high average interval times are likely to reflect a number of factors specific to people and their circumstances when they seek medical support, but also the poor allocation of emergency vehicles and centres, especially in rural and remote areas.

These surprisingly long transfer times are especially concerning as in Korea, the ambulance services' function is almost exclusively to transport patients to the hospitals. This function is clearly stated under the Emergency Medical Services Act, which underlines that the purpose of ambulance use is to transport emergency patients, blood and objects for medical diagnosis and equipment and transfer of the dead to medical institutions. Aside from first-aid assistance, ambulances are not allowed to further provide medical care to patients. For instance, thrombolysis can only be performed in hospitals. This is despite international literature that demonstrates that the administration of thrombolysis by paramedics in ambulance care reduces delays of care at the hospital and in turn can reduce mortality rates for patients with symptoms of ST-elevation myocardial infarction (Bjorklund *et al.*, 2006; Van de Werf *et al.*, 2003). Long transfer times in Korea, compounded by the lack of medical care beyond first-aid assistance can lead to lower survival chances before reaching hospital doors.

The most critical time for survival chances of patients with AMI and stroke is the very early phase. In Korea, it has been shown that interval times between onset of stroke or AMI and transfer to hospitals can be particularly long. These long transfer times are likely to reflect two shortcomings. Firstly, patients might not be aware of the symptoms of stroke and AMI and only seek help in late and advanced stages of the acute episode; reflecting an overall problem of public awareness and poor follow-up and education of patients, especially those identified at risk. Secondly, these figures are also likely to reflect the fact that ambulance care is inefficient in providing timely transportation services, resulting in patients dying during transportation or upon their arrival at emergency care units prior to hospitals. These factors could provide part of the explanation for high in hospital case fatality rates in the case of AMI (with patients arriving at the hospital with exacerbated conditions) and also low in-hospital case fatality rates for stroke (patients dying prior to their arrival to the hospital).

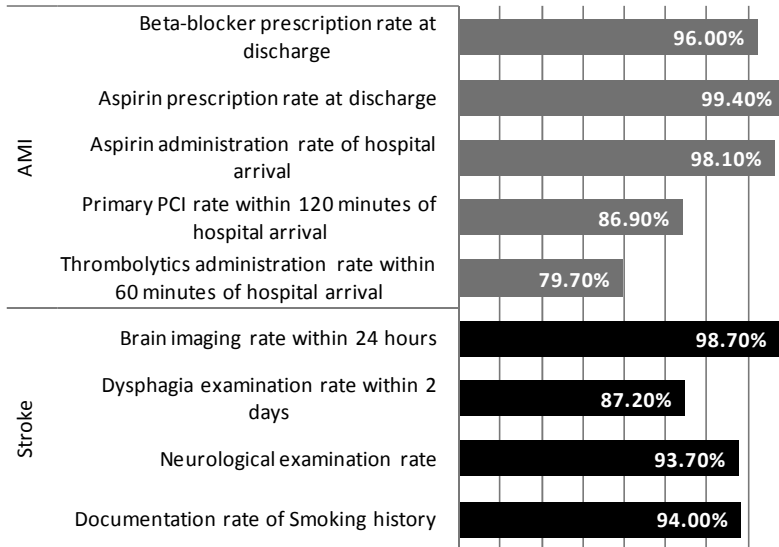
Based on these elements, additional efforts should aim to increase prevention and public awareness on the symptoms of stroke and AMI and enhance the quality and speed of ambulance services. Quality assurance

mechanisms for ambulance services should focus on more equitable allocation of ambulance and emergency centres (particularly to deliver better coverage for rural areas), bolstering training and medical awareness of ambulance workers, exploring possibilities for provision of more advanced medical care (*i.e.* thrombolytics) during ambulance transportation, potential accreditation of ambulance services and better supervision of ambulance services, especially during the transportation of a patient following an episode of AMI or stroke.

Hospital services

Korea's strategy for improving the quality of CVD care is currently strongly oriented around care delivered in hospitals. Data collected by HIRA (as shown in Figure 4.9) on process indicators suggest that patients do receive appropriate CVD care following their admission at the hospital (*e.g.*, aspirin administration upon arrival, neurological examination, brain imaging within 24 hours, etc). Surprisingly, the thrombolytics administration rate within 60 minutes of hospital arrival seems be lower than in other countries, with almost one in five patients not receiving thrombolytics drugs quickly upon arrival. Other quality indicators show that upon arrival and discharge from the hospital, appropriate drugs and interventions are performed. For instance, respectively 96% and 99.4% of patients suffering from AMI are also prescribed beta-blockers and aspirins at the time of discharge (HIRA, 2011).

In addition to process indicators of care, quality assurance mechanisms for the use of advanced surgical procedures are in place in Korea. Procedures such as CABG, heart transplantation or implementation of implantable cardioverter defibrillator (ICD) are subject to licensing of specialists and accreditation of facilities authorised to perform advanced surgical procedures. The safety of ICD device quality is also assessed by the Korean Drug and Food Administration quality assurance process. However, volumes of elective PCIs, CABGs and ICD implementation are increasing and less is known on the exact outcomes. With the increase in procedures it seems advisable to critically monitor the outcomes per hospital and discuss results with the professional associations to assure the appropriateness and quality of care.

Figure 4.9. Results of performance indicators in CVD collected by HIRA

AMI: Acute myocardial infarction; CVD: Cerebrovascular diseases.

Source: HIRA (2010), “Comprehensive Quality Report of National health Insurance: 2009”, Health Insurance Review and Assessment Service, Seoul.

The utilisation of stroke units is an area of concern in the quality of CVD care in Korea. Separate stroke units within hospitals are known to generate better survival chances and long-term quality of life compared to general wards (Indredavik *et al.*, 1998; Svendsen *et al.*, 2011). Patients in stroke units are usually administered early computed topographic scan or magnetic resonance imaging and early antiplatelet therapy; which could lead to higher quality of care and in turn, higher quality of life (Svendsen *et al.*, 2011). Similar evidence was found for the pooling of medical and nursing expertise in the case of AMI (coronary care units). Upon arrival to the hospital, a patient with AMI or stroke is transferred to emergency services or to a separate stroke or AMI unit. Many hospitals in OECD countries are equipped with coronary care units and/or stroke units although different arrangements exist on how the first steps of patient admission to the hospital are organised.

In Korea, only a handful of general hospitals are equipped with separate stroke units (Table 4.2). Around 54% of Korea’s tertiary hospitals are equipped with stroke units, but 9.6% of (smaller) general hospitals are

reported to have stroke units. Between 2005 and 2010, the number of stroke units increased from 2 to 39 across the country (HIRA, 2011). Stroke units are a major innovation in improving the quality of cardiovascular care over past decades and do not have high technological requirements that should unnecessarily burden hospitals. The relatively low level of take up of stroke units in Korea's hospitals – which often have relatively high levels of take up of sophisticated technologies used in CVD care – is a clear area for policy improvement in CVD care in Korea.

Table 4.2. Operation of stroke units within tertiary and general hospitals in Korea

	2005			2009			2010		
	Total	Tertiary hospitals	General hospital	Total	Tertiary hospitals	General hospital	Total	Tertiary hospitals	General hospital
Total	187	42	145	194	43	151	201	44	157

Source: HIRA (2010), "Reports on Quality Assessment for Acute Stroke", Health Insurance Review and Assessment Service, Seoul.

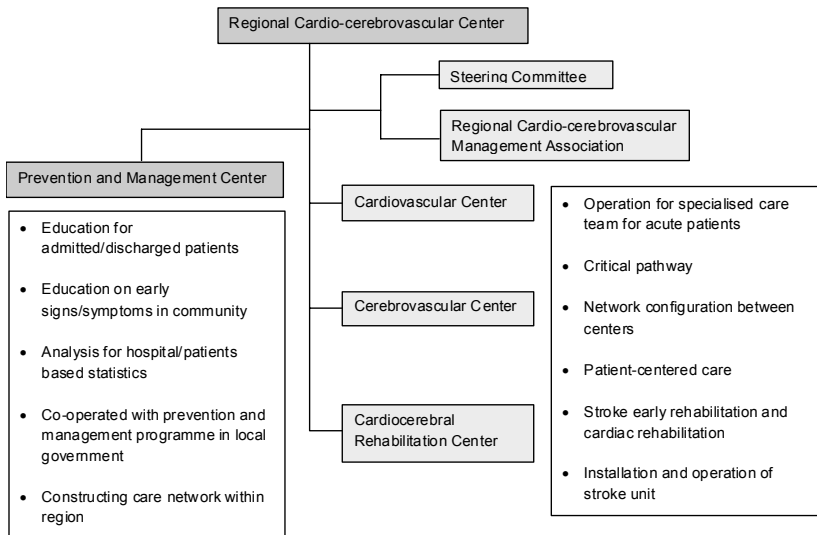
Efforts should also be undertaken to measure quality assurance surrounding the use of stroke units. Clinical guidelines for diagnosis and treatment of CVD have been developed by Clinical Research Centres since 2006. The indicators reported above on stroke care and AMI care show that key elements are already recorded. However, less is known about the actual level of expertise of the physicians and nurses involved and how exactly their co-operation is organised in stroke units and coronary care units. It would be advisable if external quality assurance mechanisms such as the accreditation programme for hospitals would encompass the functioning of acute AMI and stroke care.

Comprehensive Plan for CVD and vertical programmes

The Comprehensive Plan for CVD was developed by the MIHWA in 2006. It aims at addressing shortcomings in quality of care for CVD in Korea by strengthening prevention and management of risk profiles for CVD in primary care and also the quality of acute care. To this end, as part of the Comprehensive Plan, a key policy was the creation of regional cardio and cerebrovascular centres throughout the country (whose functions are summarised in Figure 4.10). To date, there are nine centres, including three in local university hospitals; all located outside of Seoul. Appointments are based on estimation of potential risks and needs of the population area (with regards to CVD), performance of hospital, and on defined plans to create new services developed by the competing hospitals (HIRA, 2011).

The Comprehensive Plan funds vertical programmes in general and tertiary hospitals on a five-year basis for “establishment” and “operation” projects. Institutions have to compete to become regional centres. Designated regional centres then receive funding every year to upgrade facilities with medical equipment for rapid diagnosis, higher quality medical care and intensive treatment. In addition, the plan also financially assists hospitals in the provision of medical care in the case of CVD. For instance, one specific focus of the plan was to assist facilities with the creation and operation of a 24-hour medical care system with specialist teams. For these two work streams (establishment and operation), facilities on average receive respectively KRW 5.8 and KRW 1.2 billion (but operation and establishment should be financed with at least 30% of hospitals’ own funds).

Figure 4.10. Summary of the main functions of regional CVD centres in Korea



Source: HIRA (2011), “Response to the OECD Questionnaire on Quality of Care in Korea”, Section 4: Health care quality and cardio/cerebrovascular diseases, Health Insurance Review and Assessment Service, Seoul (unpublished).

Although the Comprehensive Plan and the creation of regional centres include prevention and health promotion in principle, the actual interventions undertaken are very heavily hospital-focused. An interesting intervention was the definition and implementation of critical pathways for stroke and AMI and the creation of rehabilitation units specific to CVD.

While focusing on hospitals, the impact of the Comprehensive Plan for CVD is also limited to addressing shortcomings in quality of care in a limited number of hospitals rather than seeking improvements across all hospitals. Only a selected number of institutions have received financial and technical assistance to develop stroke units and enhanced facilities under the Comprehensive Plan for CVD. Efforts have been made to support hospitals located outside of Seoul that have seen nine institutions (including three university hospitals) designated as regional centres since 2008. With a significant dispersion between those living in rural areas across the country, the small number of centres that have benefited from the Comprehensive Plan for CVD is unlikely to have made major progress in helping reduce significant disparities that exist between rural and urban areas. Proximity to a regional centre is likely to be a major determinant of quality of health care in some remote rural areas. Beyond equipping hospitals with up-to-date infrastructure, the implementation of critical pathway in regional centres is a positive development to emerge the Comprehensive Plan for CVD, and such pathways should be encouraged across the system at large. This would help address inequalities between regions and between tertiary and general hospitals.

Rehabilitation

Rehabilitation care in Korea is funded through financial support for services delivered in long-term care hospitals under National Health Insurance and those qualifying for long-term care insurance. In general, rehabilitation care in Korea is at an early stage of development and there are few institutional facilities that provide rehabilitation services exclusively for patients who survived an AMI or stroke. Long-term care insurance also partly covers activities supporting physical activities and home care for patients with activities of daily living (ADL). The establishment of specialised rehabilitation hospitals in Korea from 2011 can be a welcome development in helping expand these critical services when embedded properly in the broader health care system. The Comprehensive Plan for CVD seeks to further set up rehabilitation structures within regional cardiovascular centres, but there is little information on the creation of such services through the plan.

Establishing formal rehabilitation processes for cardiovascular conditions would be a worthwhile investment in improving CVD care in Korea. Providing comprehensive rehabilitation care is fundamental to the recovery of patients who have suffered a heart attack, a CABG operation or a stroke. By assisting patients in exercise, education and psycho-social health, rehabilitation can help prevent secondary complications, reduce mortality and improve patients' health outcomes. The effectiveness and cost effectiveness of cardiac and stroke rehabilitation is undisputed. Results from published studies also consistently show that rehabilitation has a marked

impact not only on improving the patient's health and general well being but also in reducing expensive and unnecessary hospital readmissions (Briffa *et al.*, 2005; American Heart Association, 2005; Canyon and Neshgin, 2008). In one study which looked at home-based rehabilitation, the reduction in the readmission rate was 30% (Sinclair, 2005). The same study also noted that patients who had received home-based rehabilitation and who were subsequently hospitalised, spent less time as an inpatient when compared to patients who had not received rehabilitation.

These findings are highly relevant to the Korean context where rehabilitation services are in their infancy and where risk factors for CVD are poorly controlled. For example, data from the Korean National Health and Nutrition Examination Survey (KNHANES) shows that for people aged 30 and over, the prevalence of hypertension has only reduced from 29.1% in 1998 to 27.9% in 2005 (Korean Ministry of Health and Welfare Affairs, 2005). The reduction in elevated lipids for the same age group had a similarly low reduction, changing from 8.6% to 8.2%. At the same time stroke prevalence among people in their forties has nearly doubled over the same period and for people in their fifties or sixties, the rate has increased by over 50% (Kang, 2011). As well as highlighting the fact that cardiovascular risk factors are poorly controlled these statistics also indicate that high risks exist amongst Koreans from younger age groups, who potentially have the most to benefit from effective rehabilitation services.

Korea's rehabilitation services will need to strike a balance between those provided in the hospital setting and those provided within the community. Information relating to access for rehabilitation services varies across OECD countries. However, overall, take up rates suggest room for improvement, even among countries that have well developed services. In the United Kingdom for example, the percentage of patients receiving cardiac rehabilitation who had had either an AMI, PCI or CABG was 26%, 18% and 72% respectively (Bethell, HJN *et al.*, 2007). In the United States, the situation is not dissimilar. A range of factors contribute to low take up of rehabilitation including poor patient motivation, a lack of awareness about the need for and effectiveness of rehabilitation both on the part of the professional and the public. The development of a community focus to cardiac and stroke rehabilitation will provide Korea with an improved opportunity to overcome obstacles to access and may also serve to further reinforce the need for more community-oriented care programmes more generally. In countries that have successfully implemented community-based rehabilitation programmes, specialist rehabilitation nurses usually serve as the overall care co-ordinator and provide rehabilitation care directly. Provided proper training opportunities are put in place, this may present another opportunity for expanding the role of advanced practice

nurses who work in primary care clinics. Better rehabilitation services can also have a powerful bearing on the success or otherwise of cardiac surgery.

Policy makers should consider building upon support for services delivered in long-term care hospitals by seeking to provide financial support for community-based rehabilitation (especially home care services for especially patients who have to live with the consequences of stroke) by a broad range of health professionals. Efforts to ensure that community-based and specialist rehabilitation services are accessible to patients who have suffered from an acute cardiovascular condition would represent a value for money investment in improving CVD care in Korea. This will help reduce readmission rates and holds the potential to reduce expenditure on expensive cardiac interventions such as CABG and PCI.

4.3. Conclusion

The quality of cardiovascular care in Korea in many respects mirrors the broader challenges for quality of care facing the Korean health system. To the extent that hospitals are highly available and generally provide good hospital care, they are too often the centrepiece of health care services. The institutional structure is unlikely to be delivering value for money for Korea's substantial investment in health care services. Effective health promotion, prevention and primary care can be influential in helping people manage their risk factors, and reduce unnecessary hospitalisations. Establishing stronger rehabilitation structures – to support those patients who are amongst the most likely to require re-admission – could also increase quality of life and decrease the chances of occurrence of another acute episode.

Notes

1. All rates from OECD (2011) presented in this chapter are age and sex standardised.
2. The body-mass index (BMI) > 25 for overweight population and BMI > 30 for obese population. OR BMI between 25 and 30 are defined as overweight, and those with a BMI over 30 as obese.

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