Health Service Delivery Profile

Republic of Korea

2012

Compiled in collaboration between
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Republic of Korea health service delivery profile

Demographics and health situation

In 2010 in the Republic of Korea (Korea), the population was 49,410,366 and getting increasingly older with 72.8% of the population aged 15 to 64 years and 11% aged 65 years or older. Korea is a predominantly urban, densely populated country with over half the population concentrated around the capital city, Seoul, and only 18% in rural areas. It is an ethnically homogenous: of the 2.8% non-Koreans, 677,954 are Chinese and of that number, 69.4% are of Korean ethnicity but were born in China.

Economic and social progress over the past 50 years have transformed Korea from a poor agrarian state to a first-world country and an important economic power. The health system reflects its history of rapid industrialisation, swift move towards democracy and market economy. Health service delivery mechanisms have contributed to dramatic improvements in mortality and avoidable morbidity and Korea now has life expectancy that matches the OECD average.

Table 1. Key development indicators in Korea

Key development indicators	Measure	Year
Human development index	0.897	2011
Gini coefficient	0.314	2009
Total health expenditure	7.1% GDP	2010
Incidence of poverty	15.2%	2006
Literacy rate (male/female)	99.2/96.6	2002
Life expectancy at birth	80.8 years	2011
Infant mortality rate	3.5 per 1000 live births	2008
Maternal mortality rate	12.4 per 100,000 live births	2008

Sources: UNDP 2011; WHO *CHIPS* 2011, OECD Health Data 2011

Improved living conditions, better access to health services and advancements in health technology mean that communicable diseases are no longer the leading cause of death, although imported tropical diseases, water- and food-borne diseases, and hepatitis-A are increasing. Chronic and non-communicable diseases account for over 70% of all deaths. Prevalence rates of diabetes, high blood pressure, overweight, smoking and alcohol use are all high. Hypertension, arthritis, and dental caries have the highest morbidity rates, and cancer, cerebrovascular disease, heart disease and suicides are the leading causes of death.

Health strategies, objectives, and legislation

Universal coverage through national health insurance has broad political support. The Ministry for Health and Welfare (MoHW) has strategic oversight of health service delivery and the country views health services as one of the prerequisites for social and economic development. The MoHW produces a number of strategy, policy, standards and certification, and program documents. These address key aspects of the health system, including financing, insurance and benefits systems, health promotion, maternal and child health, traditional medicine, mental health, dental health, long-term care, etc. Key health legislation includes the Constitution of the Republic of Korea Act *(1948),* Pharmaceutical Affairs Act (1953), Medical Technicians etc. Act (1995), Communicable Disease Control and Prevention Act (1954,) Regional Public Health Act (1956), Medical Service Act (1962), Blood Management Act (1970), Prevention of Acquired Immunodeficiency Syndrome Act (1987), Emergency Medical Service Act (1994), National Health Promotion Act (1995) Mental Health Act (1995), National Health Insurance Act (1999), Internal Organs Transplant Act (1999), Framework Act on Health and Medical Services (2000), Medical Care Assistance Act (2001), Medical Devices Act (2003) Act on Long-Term Care Insurance for the Aged (2007),

In addition to health service delivery policy, planning, regulatory framework, and the social and public health safety nets, the MoHW is responsible for fostering an environment where the market can be responsive to health and social needs.

Korean traditional medicine is a longstanding and integral part of Korean cultural heritage. Since 1989, traditional medicine has been formally incorporated into the health system and used alongside western medicine. The MoHW is responsible for advancing, managing and developing the traditional medicine industry and establishing and evaluating traditional medicine hospitals. In 1993, the MoHW established a national programme for Korean traditional medicine, a Bureau of Oriental Medicine, and an advisory council on oriental medical policy. The Korea Institute of Oriental Medicine was established in 1994. A standard classification of diseases for Korean Oriental Medicine was enacted in 2001 and revised in 2009.

The Korean Centre for Disease Control and Prevention and local governments are also key agencies in health service delivery.

Service delivery model

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. The service delivery model is largely private sector led, market-oriented, and operates in a rather deregulated environment, with funding through mandatory health insurance and fee-for-service. The MOHW sets policy for management and supervision of the National Health Insurance program. As a non-profit institution, the National Health Insurance Corporation (NHIC) is a single insurer providing health insurance for all citizens living in the country. The Corporation is responsible for operating the health insurance program including enrolment, collecting contributions, contracting with medical suppliers, setting reimbursement levels and making payments. The Health Insurance Review and Assessment Service (HIRA) evaluates medical fees, quality of care, and adequacy of medical services. All Koreans, except those in the lower-income groups, are required to pay to the health insurance premiums. The poor are subsidized by government. Healthcare providers may not reject socially insured patients.

Around 90% of health services are provided by private practitioners or organisations. Government sets the framework for health service delivery with quality requirements. A universal package of care is documented in the national health insurance schedule of benefits, and the national health insurance outlines coverage and minimum standards for services and facilities. Never-the-less, there remains broad scope for health providers to function and focus in the way they see appropriate. The National Health Insurance Corporation endeavours to balance equitable access to a range of services against containing costs and maintaining affordability.

Long-term care insurance is the other social protection system that provides support to the elderly who have difficulty taking care of themselves for a period of at least 6 months due to old age or geriatric disease. The national health insurance covers services provided by clinics, hospitals and pharmacies including diagnosis of disease (such as Alzheimer's, stroke, etc.), hospitalization, outpatient treatment, and rehabilitation. However, the Long-Term Care Insurance for the Elderly covers services for physical activities or housework including bathing, meals, cooking, laundry, cleaning, nursing, and shopping.

Korean traditional medicine represents about 5.8% of services and for around 5% of health expenditure through out-of-pocket payments and national health insurance. Currently, acupuncture, moxibustion, cupping, 68 kinds of herbal medicine, 56 prescriptions, 3 physical therapies are covered by the national health insurance. In addition to Korean traditional medicine, other complementary and alternative therapies, including Chinese traditional medicine and chiropractic, are commonly used in Korea.

Most (86%) Koreans have used Korean traditional medicine at some point in their lives. Between 40-50% of the population have used Chinese traditional medicine and acupuncture, 20-30% have used herbal medicines, and up to 19% have used chiropractic services. Traditional medicine is seen as safe and effective, particularly by older Koreans. Use is also attributable to a demand for natural products, and an increase of self medication. Traditional medicine is often used in parallel with conventional

medicine, often without knowledge of the physician, and often at considerable cost to the patient. Thus, potential synergy in service delivery is not always harnessed.

The provider network

Central and local government and private insurers are important providers of health promotion and disease prevention services for their respective populations, and tailored programs address social determinants of health and inequitable outcomes, for example smoking and obesity programs are implemented in areas of high need.

Primary care facilities and services are mostly privately owned, run by physicians that are not specialists in general practice or primary care, but are specialists in other areas. Service delivery is determined by provider interests, and the focus of primary care is towards curative rather than preventative services or health promotion. Under the *Medical Act (1951, 2009),* secondary and tertiary facilities are not-for-profit, though most hospitals act like for-profit institutions, run either by doctors, universities, religious groups or NGOs. Secondary and tertiary institutions are the main providers of healthcare irrespective of whether the presenting illness is a primary care concern, or appropriate for higher levels of care. Rehabilitation and long-term care services are struggling to meet the demands of the rapidly aging population and the traditional approach of family members providing aged care is becoming increasingly difficult.

Facilities are classed into 9 types:

- general hospitals have more than 7 specialties and 100 beds and include 44 tertiary hospitals
- hospitals with 30 inpatient beds, offering inpatient and outpatient services
- dental hospitals
- oriental medicine hospitals
- long term care hospitals
- clinics
- dental clinics
- oriental medicine clinics
- midwifery clinics

Since deregulation in 1990, the number of health care institutions has risen dramatically with between three and fivefold increases in secondary, oriental medicine and dental beds. This reflects both an unmet need and how service availability shapes demand. Although length of stay is decreasing, overall acute care stays are longer than the OECD average, which in part is attributable to the lack of long term care beds.

Facilities and services are unevenly spread across the country, although the government regulates large expensive equipment in an attempt to promote equitable spread. Most institutions (83.93%) and service providers (84.13%) are concentrated in urban areas and there is no mechanism to ensure facilities or staff numbers and expertise align with population health need, leaving the 18% in rural areas underserved.

Some hospitals are members of the Korean Hospital Association and some foundations manage a network of hospitals These are influential groups because they form a larger organizational network under which a wide range of services are delivered, including primary, secondary, tertiary, and community services, and may also run research programs and act as tertiary/training hospitals. In general the Korean public is reasonably distanced from and is not routinely engaged in decisions about health service delivery.

Table 2. Number of traditional medicine services in Korea

Type	1999	2009
Oriental medical doctors	9,914	
Oriental clinics	6,590	11,705
Oriental hospitals	107	158
Oriental hospital beds		8,694

Table 3. Level and type of services provided in the Republic of Korea, 2012

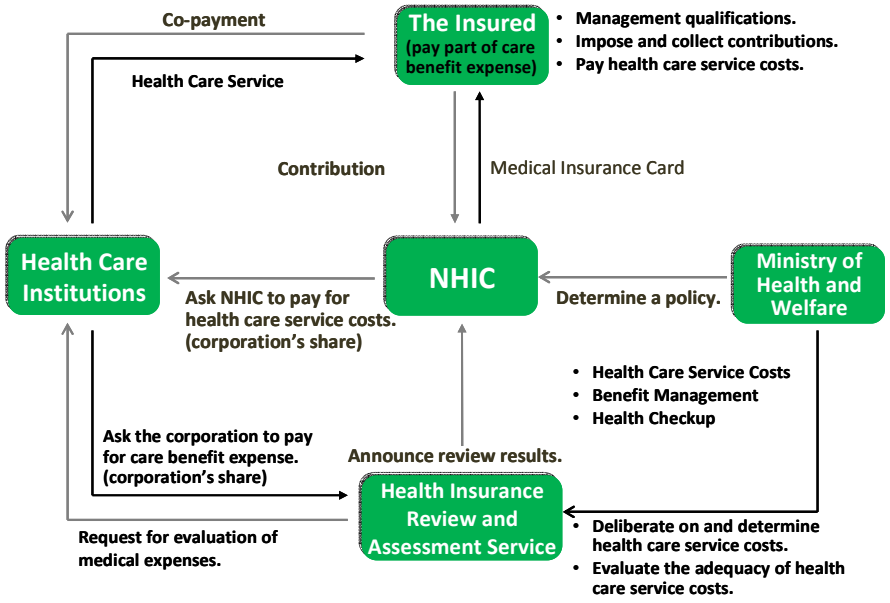
Heath services		Public sector	Private sector
Health promotion and disease prevention	Oversight of services Communicable disease surveillance	Korean Centre for Disease Control and Prevention	
	Screening, Health checks (Emphasis on NCD prevention and smoking cessation)	Korean Association of Health Promotion 16 centres nationwide	
	Population group services: maternal and child health, infants and toddlers	The Ministry of Health and Welfare	
	Social marketing campaigns, for example family violence	Ministry of Gender Equality and Family	
	Health promotion and disease prevention	Local public health units and Hospitals	Hospitals
	Free healthcare for children	national health insurance	
	Occupational health	Employers	
Primary services		Hospitals Public sector provides few services	Primary care clinics Hospitals Private sector delivers most services
	Dental services - examinations, diagnosis, root canal work and extractions, for different age groups and those with disabilities	Central government and local authorities Dental clinics Dental hospitals	Dental clinics Dental hospitals
Secondary and tertiary services	Inpatient and outpatient Range from primary care to complex specialised services	44 tertiary hospitals	Clinics Hospitals
	Teaching and research in tertiary hospitals		
	Emergency care, admission, acute care	Government provided (MoHW) 40 designated emergency care hospitals	
Long term care services	Rehabilitation – acute or inpatient services for accidents		Hospitals
	Elderly care - home help, residential care Mobility, cognitive functioning and personal services	Long term care hospitals The long term care assessment committee assesses and develops personalised services	Long term care hospitals
	Palliative care – home visits, improving quality of life, pain management, education		Hospitals Religious organizations Not-for-profit organizations
	Mental health services including hospital and community care (case management, day-care programmes, education, connection with other institutions), rehabilitation, health promotion and suicide prevention	Long-term facilities Community services	Hospitals (temporary care) Long-term facilities Community services

Health financing

Health services are mostly provided by the private sector but largely financed by the country's social health insurance. In 2009, public expenditure on health (mainly contributions to the health insurance program) was 58.18% of total health expenditure, and out-of-pocket payments were 32.43%. Korea spends less on health care compared to other OECD countries, but is experiencing faster rates of growth in health care costs contributed to largely by hospital services.

The national health insurance fund is pooled from member premiums, employer contributions and government payments. Every citizen is automatically enrolled either under the national health insurance scheme (as an employed or self-employed contributor) or under the Medical Aid system (for the very poor and veterans). 96.7% of the population is covered by national health insurance. There are no premiums under the Medical Aid system, and people enrolled are exempted from other health service costs.

Figure 1. National Health Insurance Operation



Source: National Health Insurance Corporation of Korea (http://www.nhic.or.kr/english/main.html)

Table 4. Out-of-pocket payments in Korea for selected types of health services, 2011

	Type	Copayment
Inpatient		20% of total treatment cost (registered cancer patient: 5%)
Outpatient	Tertiary Care Institute	60% of total treatment cost and other expenses
	General Hospital	45 to 50% of total care benefit expenses (depending on the administrative district)
	Pharmacy	30 to 50% of total care benefit expenses (depending on the administrative district)
	Hospital	30% of total care benefit expenses
	Clinic	30% of total care benefit expenses
Long-term care	In-home services	approximately 15% of total expenses
	Institutional care	approximately 20% of total expenses

Source: NHI Programme, Insurance Benefits, Republic of Korea Health System Review, 2011

MoHW services and core health promotion and disease prevention services covered by the national health insurance are free, but co-payments are required for many other services outlined in the insurance package. These vary across services, as shown in Table 4. The price of services, whether included or excluded from the benefit lists, is regulated by the Insurance Corporation. Providers commonly offer services not included on the benefit lists, since it is a major source of their income. Co-

payments are a barrier to accessing services, and in cases of serious illness, can be financially crippling. Because of this, many people also have private insurance to protect against the cost of services not covered under the national health insurance. Privately insured patients are reimbursed for co-payments. Recently, the government committed to increase coverage of costs under the benefit schedule from 60% to 72% of costs (OECD average level), and there is now an annual maximum out-of-pocket payment limit of 2-4 million won depending on the monthly contribution of the insured.

Human resources

As with facilities, health professionals are concentrated in urban areas. The MoHW licences health professionals and manages the mix and numbers of staff by controlling entry into tertiary training. Staffing ratios per head of population (Table 5.) tend to be lower than OECD averages.

Table 5. Number and ratio of selected health professionals in Republic of Korea 2010

	Total number	Ratio per 1000 population
Physicians	101,443	2.05
Nurses	270,393	5.47
Dentists	25,390	0.51
Pharmacists	60,956	1.23

In order to practice, Oriental Medicine Doctors must complete training in a recognised medical college and pass the qualifying examination. The role of traditional medicine continues to grow, in part because of two key laws. The *National Medical Services Law (1951)* activated the opening of traditional medicine hospitals, and the *Civil Medical Treatment Law (1951)* recognizes oriental medical doctors and western medical doctors separately but equally. Under Korean medical law, traditional medicine trained doctors can only practice traditional medicine and Western trained doctors can only practice western medicine. However, the 2010 revision of the *Medical Service Act* allows joint consultation between Western and traditional medicine. The *Korean Institute of Oriental Medicine Act (2003)* fostered further development of Oriental Medicine. In addition to traditional medicine doctors, Korean law also recognizes four groups of 'quasi-medical persons' (acupuncturists, moxibustionists, bone setters and massage therapists), who are subject to limitations on their business and who must meet criteria for their treatment facilities as determined by the Ministry of Health and Welfare. While they are not subject to licensing requirements, these traditional medicine practitioners must possess a 'certificate of qualification' in order to practice these forms of therapy. Practitioners of western complementary therapies such as homeopathy and chiropractic are not legally recognized at this stage and can therefore, cannot practice legally.

Medicines and therapeutic goods

Medicines are assessed by the Health Insurance Review and Assessment Service for safety, efficacy, and costs and benefits before being included on the insurance subsidised schedule or 'positive list'. The National Health Insurance Corporation and the drug companies negotiate the reimbursement prices for drugs on the positive list. Not all drugs approved by the Korean Drug and Food Administration are on the positive list. Pharmaceuticals are subsidized when prescribed through inpatient care, and are also available through prescriptions for outpatients or as over-the-counter. Since 2000, pharmaceutical prescribing and dispensing have been strictly separated. Pharmacies and wholesalers are able to sell pharmaceuticals at any price, and are encouraged to sell generic medicines.

There are three key laws which apply to herbal medicines in Korea. These are; the *Pharmaceutical Affairs Law (1950),* the *Korean Traditional Medicines Development Law (1995)* and the *Promotional Law of Natural New Substance Development (2000)*. A registration scheme is in place in Korea.

The first edition of the Korean pharmacopoeia was issued in 1959. The ninth edition was issued in 2010, and this includes Korean herbal medicines. The information in the Korean pharmacopoeia is legally binding. Good manufacturing practice requirements for herbal medicines in Korea are limited to adherence to the information in pharmacopoeias and monographs. Safety assessments are limited to demonstrating that traditional use will not lead to harmful effects. There are no control mechanisms for monitoring safety requirements. Herbal medicines can be sold with claims of therapeutic benefit. A

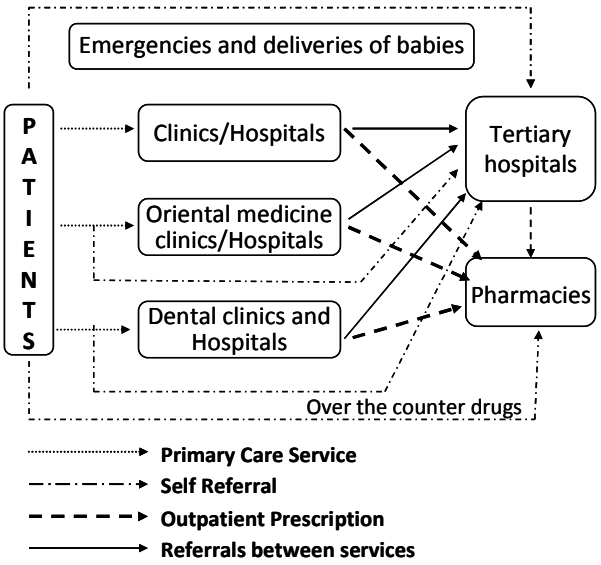
post-market surveillance system for the safety of medicines, including herbal medicines, was established in 2007.

In 2009, there were 49,271 herbal medicines licensed for sale in Korea. Of these, 21,900 were prescription herbal medicines and 17,884 were non-prescription. Herbal medicines may be sold in pharmacies as prescription medicines, or as non-prescription medicines, self-medication, or over-the-counter medicines or by licensed practitioners.

In 2008, the value of herbal medicines imported was $4.96 billion, and the value of exports was $1.62 billion. Demand increased from 2006, and it is thought that this is due to Korea's aging population.

Referrals and linkages through the provider network

Figure 2. Referral pathways in South Korea



Source: Health Systems Review: Republic of Korea, Health Systems in Transition, 2009

Overall links between parts of the health system are not strong. The community interacts with the health services at a number of different points. Figure 2 shows how patients might move through the health system.

There is little encouragement for patients to enter at the primary care level, and there is no gate keeping to higher level services, thus limiting efficiency.

Patients present at the service they think is most appropriate. If needed they will be referred to health promotion and disease prevention services but, if they present at a secondary level service for a condition that can be managed at primary level, they will be still be treated. The primary care services lack a framework that ensures comprehensive, continuous and coordinated care even though it has been demonstrated to be particularly valuable to vulnerable Korean populations, is associated with clinician satisfaction, and has potential to enhance health services.

Provider reimbursement is based on fee-for-service that has no link to the appropriateness of the service sought and may encourage over-provision and inefficiencies. Patients shop around among physicians and this impacts on continuity of care. Patients' perceptions of service quality are an important factor in choosing whether to access primary health care or to self-refer to a specialist. Referrals between levels are common only within the large service groups, although many primary care services are not co-located with secondary services and there is little integration. Communication, sharing of medical records or test results, and other linkages between different services and regions is not common.

Quality

A legacy of Korea's rapid and continuous period of ongoing change is that efforts to improve the quality of care are not embedded in the health system. At the provider level, quality of care is often driven by motivated individuals rather than institutional systems. At the national level, the institutional architecture permits action to improve quality of care, but policy makers often struggle to prioritise quality over other objectives. Rapid increases in life expectancy in Korea in recent years mask increasing concerns about the quality of care for major chronic conditions.

There are no national standards for health promotion. It is difficult to maintain quality assurance in primary care as there is only a notional system of minimum requirements and no monitoring measures.

Hospitals must meet minimum requirements to get established, but thereafter are autonomous and have little government oversight. Korea does have a best practice system for hospital accreditation, but too few hospitals are being accredited. The Health Insurance Review and Assessment Service evaluations are influential and are used to improve practice. The Korean Food and Drug Administration approves pharmaceuticals. The Drug Utilisation Programme reviews prescribing practice and supports doctors and pharmacists to follow best-practice prescribing. The Mental Health Act requires the MoHW to review hospital performance and patient care every three years, and the Dental Care Service Review Task Force Team reviews dental services annually.

Korea has world class information technology, as demonstrated in its Drug Utilisation Review. However, the application of this information infrastructure has not yet been extended beyond pharmaceuticals. Korea has implemented electronic health records to help doctors improve the appropriateness and continuity of care.

There is a pressing need to develop better coordinated systems to monitor clinician performance and identify breaches in patient safety. The accreditation system needs to be used by all hospitals and extended to other services including primary care. Improving the quality of care in Korea hinges on strong primary care, which will be critical to supporting patients in co-ordinating their ongoing health needs across multiple health services and to help them to moderate the risk of their condition.

Equity

Universal coverage through national health insurance is important in Korea and has broad political support. However, while there is a commitment to equity at a policy level, operationalizing that commitment is difficult because levers to achieve equity are lacking within the context of a strong private sector. By law private hospitals cannot be for-profit organisations, and it is illegal to finance health services from capital markets. Hospitals must accept all patients who present, not only those with private insurance. However, there are significant financial and geographical barriers to accessing services. Facilities are spread unevenly and there are tensions in the balance between centralisation and decentralisation. Many services are concentrated in Seoul or in the largest cities, leaving underserved the 18% of the total population that live in rural areas. There is no government mechanism for ensuring distribution of facilities and staff to align with population health needs. Moreover, there is an imbalance of premium rate between employed and self-employed contributions due to difficulties in monitoring citizens' income and this has been disputed since 2000 when the national health insurance was integrated into a single scheme.

Demands and constraints on the service delivery model

The universality of health insurance is often noted as a sign of success towards greater service coverage and equity of access. However, within Korea there are concerns about how many people can realistically access timely and appropriate services that are affordable because of the political and controversial nature of redistribution of resources. Indeed, patient choice is often discussed before equity. Although a large number of people are covered by insurance, the package of services is relatively narrow and some common conditions are excluded because they do not cause problems considered serious. However, the practical and financial consequences to individuals can be significant.

The Korean health system has a continuing expansion of acute services that is not an adequate model to deal with the demographic changes of rapidly ageing population rising incidence of chronic diseases. The extensive private sector with invested provider interests and health financing policies mean that the government has difficulty in containing health budgets. Korea's growth in health care expenditure per capita 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 interventions by hospitals is a significant concern for the quality of care. Extension of services for universal coverage will need greater efficiencies and changes in provider payment mechanisms to encourage an appropriate amount of care for individual patients when they visit a hospital, as well as 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. Health service planners recognize the obligation to take a more preventative approach,

possibly through a greater emphasis on primary care and traditional medicine. Having a single insurer helps to make changes to improve quality. However, the National Insurance Corporation doing will need to become a more proactive purchaser of services and not simply a passive or reactive payer. Diagnosis-related group and capitation based payments instead of fee-for-service; refinements to pharmaceutical purchasing, and strengthening the primary care gate-keeper function are possible changes that have been suggested to reduce service delivery costs and shift focus towards preventative care.

For-profit hospitals are also an area of policy debate, including issues of competitiveness, allocation of resources, distortions on service delivery, and health as a commodity. 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.

The government is planning to improve and develop Korean traditional medicine as one of the bases of the health-medical industry of the 21st century, including integrating Korean traditional medicine into public health centres and clinics, and to make referrals available between services. This indicates that the long-awaited seamlessness of service may be developed.

Indicators of progress

Various agencies are responsible for monitoring their own programs and services, but there is no designated agency that brings it all together and tracks progress. The Korean CDC monitors outbreaks of communicable disease and has an advanced, high tech system for tracking disease. The National Health Insurance Corporation monitors quality of care, drug utilisation, and safety of pharmaceuticals; and the Red Cross looks after the blood supply.

Table 6. Comparison of health indicators in Korea with OECD Average

Indicator	*Korea*	*Year*	**OECD average**	*Year*
Total health spending as percentage of GDP	7.2%	2011	9.5%	2010
Total health spending per capita	2177USD	2011	3268 USD	2010
Growth rate in health spending per capita	9.1%	2000-10	4.5%	2000-09
Total health spending funded by public sources	57.3%	2011	72.2%	2010
Practising physician per 1 000 population	2.0	2011	3.1	2010
Nurses per 1000 population	4.7	2011	8.7	2010
Acute care hospital beds per 1 000 population	5.5	2010	3.4	2010
MRI units per 1 000 000 population	21.3	2011	12.5	2010
CT scanners per 1 000 000 population	35.9	2011	22.6	2010
Life expectancy	80.7 years	2010	79.8 years	2010
Prevalence of obesity among adults	4.1%	2010	22.2	2010
Proportion of adults smoking everyday	22.9%	2010	21.1%	2010

Source: OECD Health Data 2012 – Country Notes: How does Korea Compare

Table 7. Top Ten non-communicable diseases as measured by burden of diseases in Korean **men***

The estimation result of 2002		The estimation result of 2007	
Diabetes mellitus (E10-E14)	1,020	Cirrhosis of the liver (K70, K74)	1,113
Cerebrovascular diseases (160-169)	973	Cerebrovascular diseases (160-169)	1,112
Cirrhosis of the liver (K70, K74)	671	Diabetes mellitus (E10-E14)	1,091
Asthma (J45, J46)	663	Ischemic heart diseases (I20-I25)	990
Ischemic heart diseases (I20-I25)	601	Asthma (J45, J46)	609
Peptic ulcer disease (K25-K27)	559	Liver cancer (C22)	551
Liver cancer (C22)	467	Chronic obstructive pulmonary disease (J40-J44)	550
Trachea, bronchus and lung cancers (C330C34)	378	Stomach cancer (C16)	481
Stomach cancer (C16)	368	Hypertensive heart disease (I10-I13)	453
Chronic obstructive pulmonary disease (J40-J44)	270	Peptic ulcer disease (K25-K27)	202

*Unit DALYs per 100,000 populations.

Table 8. Top ten non-communicable diseases as measured by burden of diseases in Korean **women***

The estimation result of 2002		The estimation result of 2007	
Diabetes mellitus (E10-E14)	919	Cerebrovascular diseases (160-169)	730
Cerebrovascular diseases (160-169)	900	Diabetes mellitus (E10-E14)	708
Peptic ulcer disease (K25-K27)	794	Chronic obstructive pulmonary disease (J40-J44)	476
Asthma (J45, J46)	755	Ischemic heart disease (I20, I25)	432
Rheumatoid arthritis (M05, M06)	531	Asthma (J45, J46)	398
Unipolar depressive disorder (F32)	447	Schizophrenia (F20-F29)	373
Ischemic heart disease (I20, I25)	444	Hypertensive heart disease (I10-I13)	362
Osteoarthritis (M15-M19)	243	Epilepsy (G40-G41)	300
Skin disease (L00-L99)	221	Colon and rectum cancers (C18-C21)	254
Chronic obstructive pulmonary disease (J40-J44)	214	Breast cancer (C50)	240

*Unit DALYs per 100,000 populations.

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