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Policy Recommendations for the Advancement of Health Care

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Current Status and Future Policy Directions for Health Care

Chapter 1 Current Status and Future Policy Directions for Health Care

The focus of Korea's health care has been on quantitative growth and provision of access to health care through expansion of services delivered by the private sector and implementation of health insurance scheme across the nation. The government's efforts to ensure health security through such means as Medical Aid Program have greatly contributed to securing universal coverage of health care services in Korea.

Implementation of such health programs and improvement of related systems have resulted in improved health of the general public. As of 2006, the average life expectancy of Koreans was 79.2 years, older than the OECD average of 78.9 years. Infant mortality rate as a key indicator of a country's health care level has declined to 4.1 deaths per 1000 births in 2006, a level similar to the OECD average of 4.9 deaths per 1000 births in 2007. When it comes to medical human resources, however, the number of practicing doctors and nurses per 1000 population in Korea is small compared to other OECD countries. Other health care resources such as the number of beds, although primarily used for acute care treatment, and the number of medical devices also have improved.

〈Table 1〉 Average life expectancy of Koreans

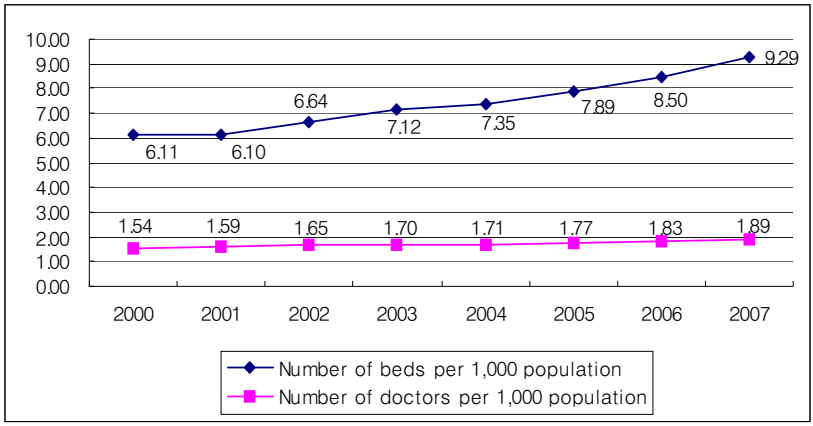
(Unit: age)

Year	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006
Overall	65.7	68.4	71.3	73.5	76.0	76.5	77.0	77.4	78.0	78.6	79.2
Male	61.8	64.5	67.3	69.6	72.3	72.8	73.4	73.9	74.5	75.1	75.7
Female	70.0	72.8	75.5	77.4	79.6	80.0	80.5	80.8	81.4	81.9	82.9

Source: Ministry for Health, Welfare and Family Affairs, Statistical Yearbook, 2008

[Figure 1] Number of beds and doctors per 1,000 population

(Unit: bed, person)



Source: Ministry for Health, Welfare and Family Affairs, Statistical Yearbook, 2008

On top of improved health, improvement of health care in Korea can be found in enhanced access to health care services. The share of population that has no access to health care services has greatly declined from 40 percent in 1970 to 7 percent in 2007. Benefit coverage by the National Health Insurance (NHI) has increased to 64.6 percent in 2007. Coverage for cancer patients exceeds 70 percent and coverage for high-cost medical services costing more than 20 million won is as much as 73.7 percent.

〈Table 2〉 Benefit coverage by National Health Insurance (NHI)

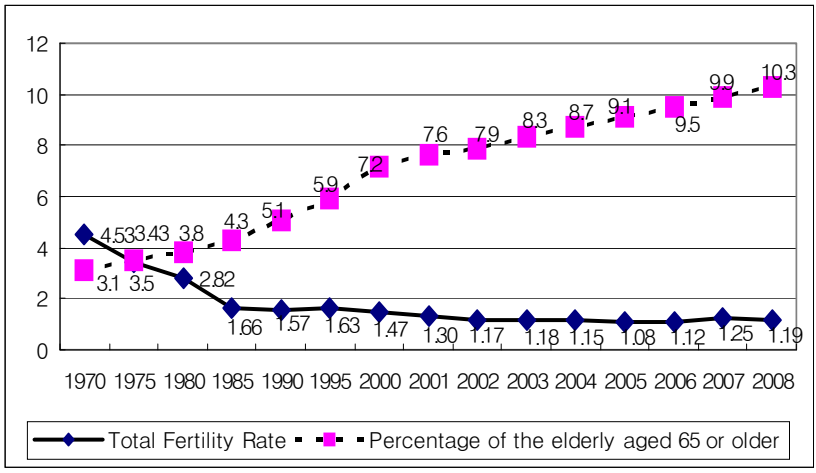
(Unit: %)

		2004	2005	2006	2007
Total coverage		61.3	61.8	64.3	64.6
Coverage for cancer patients		49.6	66.1	71.0	71.5
Coverage for high-cost medical services	More than 5 million won	49.0	59.6	64.7	67.6
	More than 20 million won	46.8	66.0	69.5	73.7

Source: National Health Insurance Corporation, survey on medical charges borne by NHI patients in 2007.

Despite such quantitative growth in health care, Korea still faces several challenges. Health care needs to be more responsive to changing requirements both internally and externally, and more attention needs to be paid to quality. Fast shrinking working-age population caused by low birth rates and aging society, coupled with rising average life expectancy, is projected to exacerbate burdens on the society, which in turn will lead to slumping competitiveness of the nation. This concern must be seriously taken into consideration in health and welfare policies. If this trend continues, Korea's population will start to shrink from 2018 and the share of the elderly population will reach its highest level among OECD members by 2050. The median age during that same period is expected to reach 56.7 years in Korea, more than 10 years older than 45.6 years in the developed nations (source: Statistics Korea, 2009). By 2016 Korea's senior citizens will outnumber its children.

[Figure 2] Total fertility rate (TFR) and the percentage of the elderly



Source: Statistical Korea, National Statistics Portal

The working-age population declines in proportion to the growing elderly population, which always results in less taxes and higher social welfare costs. While 7.0 persons in labor force could support one senior citizen in 2007, 1.4 persons in the labor force is expected to support one senior citizen in 2050. While those enrolled in the National Pension is forecast to peak, then drop in 2014, those entitled to old-age pension will continue to increase, raising the question whether there will be enough funds to sustain the pension. By 2070, the institutional cost, calculated by dividing the number of old-age pension recipients by the number of enrollees, is forecast to exceed 100 percent. Senior citizens have higher demand for medical care than other age groups and consume great portion of NHI finances. While senior citizens account for only 9.2 percent of total enrollees in NHI in 2007, they are responsible for 28.2 percent of total medical expenditure. Medical expenditure per senior citizen is

3.1 times higher than the average medical expenditure per person. Therefore, NHI expenditures spent for senior citizens are projected to increase.

[Figure 3] Current status and outlook of financial burden to support the elderly: Financial resources of old-age pension and NHI

Source: Government of the Republic of Korea, Plan No. 1 for the Low Fertility and Aging Population, 2008.

The growing number of people who cannot afford decent medical services and widening health gaps between rich and poor following the Asian financial crisis in 1997 and the recent global economic downturn in 2008 necessitate more proactive approach to securing

health care safety net and expanding public health care services. Of course, as mentioned earlier, access to health care services has continuously improved. However, economic difficulties, as we know from the experience of the Asian financial crisis, make it more difficult for low-income families to use services when needed, raising a risk of creating a larger number of people who are vulnerable to poverty due to illness. It is estimated that about 3 million people have limited access to health care due to the current economic crisis and if the economic downturn continues for five years, up to 15 million people are forecast to have limited access to health care.

〈Table 3〉 Estimated number of people with limited access to health care in the aftermath of economic crisis (2008)

	Total	Inpatient	Outpatient
Number of people	3,106,666	1,788,013	1,318,653

Among households headed by the elderly aged 65 or older who experienced the economic crisis in 1998, prevalence rate of chronic diseases in families belonging to first-tier bracket and second to fifth-tier bracket of monthly average income shows big difference (Table 4), and relative death rate of the elderly with monthly family income of 2 million won is inversely proportional to the income level: Relative death rate is 1.81 times for households with an income of 1 to 1.99 million won and 2.33 times for households with an income of less than 1 million won income (Table 5).

〈Table 4〉 Prevalence of chronic diseases among the elderly aged 65 or older by income bracket

Year	Income Bracket	Male	Female
2001	First-tier 1	86.1	93.0
	Second to fifth-tier	79.4	89.5
1998	First-tier	84.7	93.4
	Second to fifth-tier	83.4	89.9

Note: Age-adjusted result.
Source: Kim Hye-ryeon and others, Health gaps among different social classes and policy directions, Korea Institute for Health and Social Affairs (KIHASA), 2004

〈Table 5〉 Comparison of death rates of the elderly aged 65 or older by income bracket

Monthly Household Income	Relate Rate of Deaths [1)]
2 million won or higher	1.00
1 ~ 1.99 million won	1.81
Below 1 million won	2.33

Note: 1) Rate of deaths relative to the number of deaths of households with 2 million won or higher income
2) Age-adjusted result.
Source: Kim Hye-ryeon and others, Health gaps among different social classes and policy directions, The Korea Institute for Health and Social Affairs (KIHASA), 2004

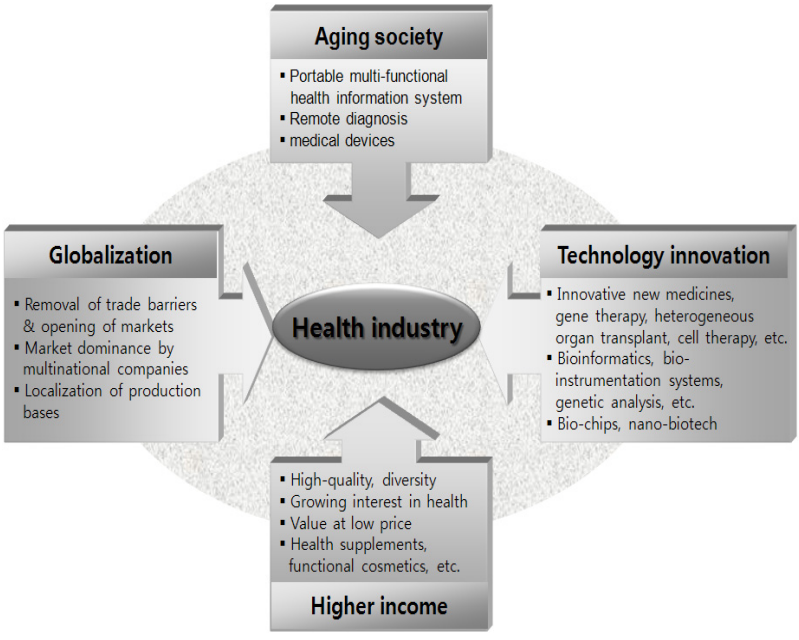
Another noticeable change in health care in Korea is that people are increasingly afflicted by chronic diseases rather than acute diseases. As shown in the swine influenza outbreak in recent months, epidemics and acute diseases still remain a main priority concern for Korea's health policies, but the fact that more and more Koreans are falling prey to chronic degenerative diseases due to complex etiological factors such as westernized dietary habits and lifestyles and environmental changes will have a big impact, together with the aging of the population, on NHI's financial health, supply of health care resources and policy direction regarding health promotion programs.

The aging population and chronic diseases trigger dramatic increase in medical costs, and current financial facilities of NHI are not enough to meet all demand. Therefore, it is necessary to re-define roles between public insurance and private medical insurance to achieve sustainable health insurance scheme and financial stability. Changes in disease patterns are also expected to bring about changes in the way health and medical care resources are utilized. Currently, these resources are concentrated on acute care. In 2006, the number of acute care beds per 1000 population in Korea was 6.8, which is 2.9 more beds than the OECD average of 3.9 beds, and the number of acute care hospital days was 1.6 times more than that of the OECD average. As of 2004, acute care beds were oversupplied by about 30,000 beds but long-term care beds were short by about 70,000 beds. It is necessary to secure more long-term care beds by turning acute care beds to long-term care use. Lastly, today's chronic diseases can mainly be attributed to people's lifestyle habits but their exact causes are varying and complex. As such, health promotion policies need to be studied and approached from various aspects, taking into account a number of health-related factors and the need for preventive health measures.

In the course of setting health policy directions, global health developments are another important element to be considered. The most noticeable change in recent years is growing efforts towards development of high value-added and competitive health care industry as a new growth engine. If the primary growth engine for the past 10 years was IT, the bio-industry is emerging as a new growth engine and many countries are rushing to develop new health products using bio-technologies involving bio-medicines and

bio-artificial organs. New investments abound in developed countries to gain the upper hand in the global bio-technology markets. The aging population across the world is also creating new health fields where use of elderly-friendly and e-Health-oriented IT technologies are actively applied, and health service paradigms are changing towards more tailored and personalized services that emphasize prevention and early diagnosis, maintenance and promotion of health, rather than simple treatment.

〔Figure 4〕 Global trends in the health care industry



As of 2006, revenue in the Korean healthcare industry from the sale of medical supplies, medical devices, foods, cosmetics and medical services amount to 36,727 billion won, accounting for 10.24

percent of GDP. Although investments and markets in health care are smaller in Korea than in other developed countries, it has sufficient human resources with good intellectual capability and creativity in the medical and life science fields, as well as excellent technologies in the core fields of bio-technology such as dielectric and stem cell research. Korea has a big growth potential as it has well established and globally competitive IT infrastructure.

〈Table 6〉 Production output and revenue of health care products

(Unit: 100 million won, %)

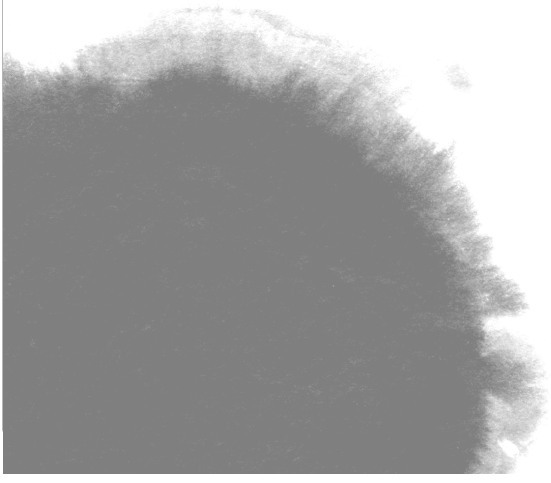
	2000	2001	2002	2003	2004	2005	2006
Medical supplies	71,359	76,912	84,276	87,417	96,374	105,985	114,728
medical devices	8,724	11,941	13,481	13,271	14,782	17,042	19,492
Foods	255,495	276,852	353,881	210,464	300,453	295,794	326,948
Cosmetics	31,050	34,100	37,457	34,515	34,369	36,927	39,803
Medical services (revenue)	187,795	222,496	257,197	279,519	310,223	338,746	367,270
Total	554,423	624,301	746,293	625,186	756,201	794,494	868,240
% of GDP	9.58	10.07	10.91	8.63	9.70	9.90	10.24

Source: Korea Health Industry Development Institute, Heath Care Industry Statistics Book, 2007

Finally, it is urgent for Korea to address the high-cost, low-efficiency health care structure, establish an advanced health care system to gain efficiency, satisfaction and sustainability and strengthen competitiveness in medical services. To be responsive to market demand for self-autonomy and higher competitiveness, more efforts are needed to pursue public benefits and offer citizens more convenient and safer access to health care services, which should be accompanied by more competitive health care institutions and easing of unnecessary regulations to the extent that public good is not hampered.

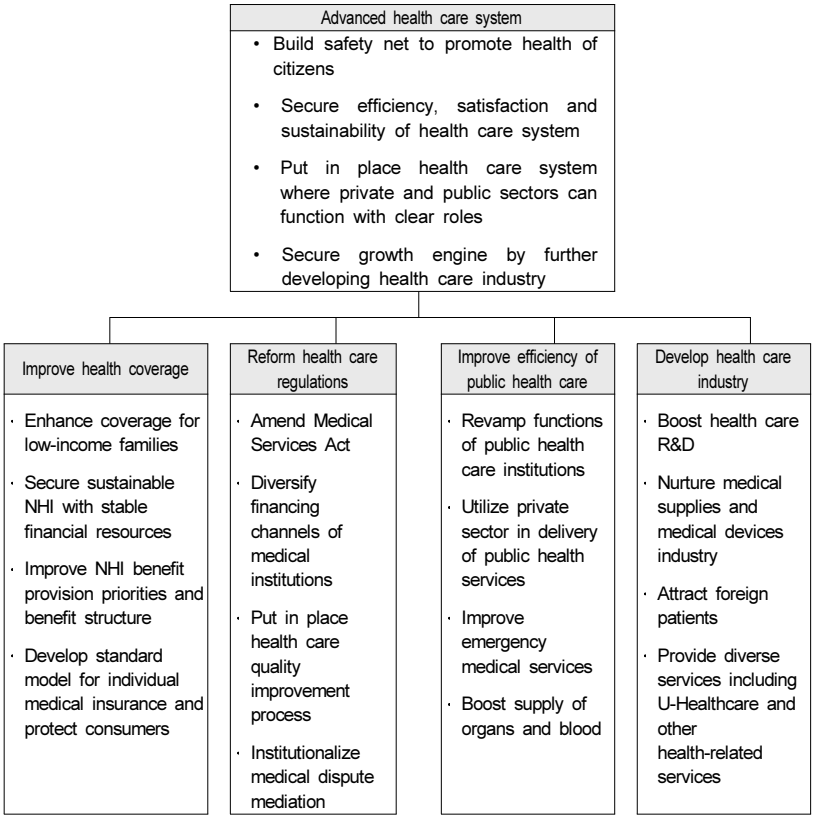
02

Vision for Advanced Health Care



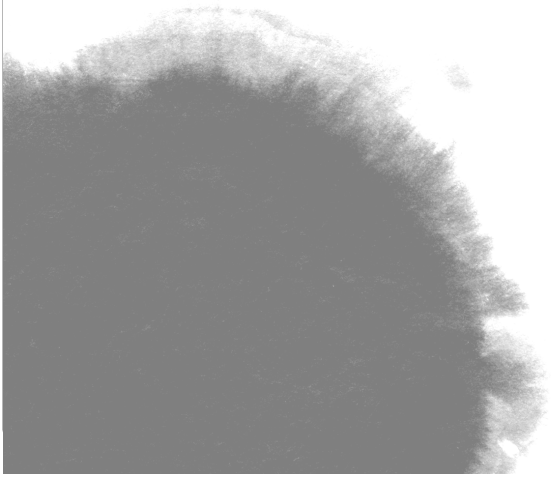
Chapter 2 Vision for Advanced Health Care

[Figure 5] Vision for advanced health care



03

Improvements Needed for Every Aspect of Health Care



Chapter 3 Improvements Needed for Every Aspect of Health Care

A. Improvement of health security system

1) Assessment of national health security scheme and area for improvement

Korea is considered as successfully having established nationwide health insurance coverage 26 after the enactment of the Medical Services Act and just 12 years after the launching of health insurance for the employed. When the scheme was first introduced on July 1, 1977 for workplaces with 500 employees or more, only 3.2 million people were covered by health insurance. By 1990, one year after health insurance was applied to all Koreans, 44.11 million people were covered. As of 2005, 47.39 million people were covered by the health insurance.

〈Table 7〉 Population coverage by year

			1980	1985	1990	1995	2000	2005
Total population (in thousands)			38,124	40,806	42,869	45,093	47,008	48,294
Health coverage			11,368,055	21,253,682	44,110,412	45,429,041	47,465,758	49,153,617
NHI	Total		9,226,365	17,994,913	40,180,023	44,015,900	45,895,749	47,392,052
	Work place	Sub-total	9,160,998	16,424,491	20,758,592	21,559,210	22,403,872	27,233,298
		Employee	5,380,968	12,214,830	16,155,231	16,744,064	17,577,672	22,561,285
		Public/ Schools	3,780,030	4,209,661	4,603,361	4,815,145	4,826,200	4,672,013
	Self-employed		-	375,242	19,421,431	22,456,690	23,491,877	20,158,754
	Occupational		-	954,108	-	-	-	-
	Voluntary		65,367	241,072	-	-	-	-
Medical Aid Program	Total		2,141,890	3,258,769	3,930,389	1,413,141	1,570,009	1,761,565
	Type 1		641,732	642,434	695,000	498,399	810,684	996,449
	Type 2		1,499,958	2,616,335	1,958,920	914,742	759,325	765,116
	Assistance		-	-	1,276,469	-	-	-

Application of health insurance to the entire population has significantly contributed to improving access to health care services and to the overall health of the general public. For example, the percentage of untreated patients declined from 40 percent in 1975 to 7 percent in 2006. Inpatient length of stay of NHI recipient increased from 0.1 day per person in 1977 when the health insurance system was introduced to 1.32 days per person in 2006. Outpatient length of stay also increased from 0.7 days to 14.7 days during the same period.

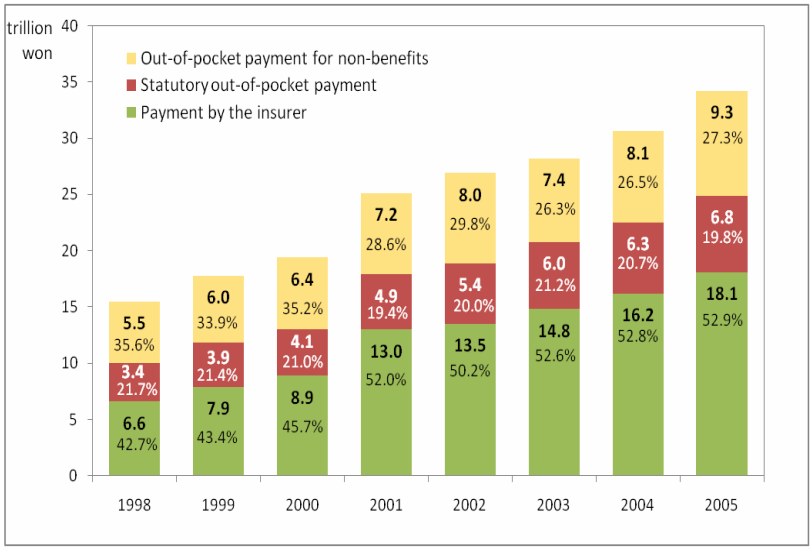
Despite these achievements, however, health security system in Korea has quite a few shortcomings. Gaps exist in health care. Overdue contributions, among other things, continues to grow. The number of families who cannot afford to pay insurance contributions temporarily declined in 2002, but has since continued to increase to up to 25 percent of all the self-employed insured. 'Economic difficulties' are cited as the biggest reason for failure to pay contributions. It is reported that most of these delinquent families either give up health care services or pay full amount of medical charges out of their pockets.

〈Table 8〉 Self-employed insured in arrears of health insurance contributions

	2001	2002	2003	2004	2005	2006
Number of households (in thousand)	1,616 (19%)	1,361 (15%)	1,563 (18%)	1,919 (23%)	1,952 (24%)	1,987 (25%)
Total contributions in arrears (in 100 million won)	7,640	7,237	9,060	12,006	11,566	12,449
Contributions in arrears per household (in thousand won)	47	53	58	62	59	63

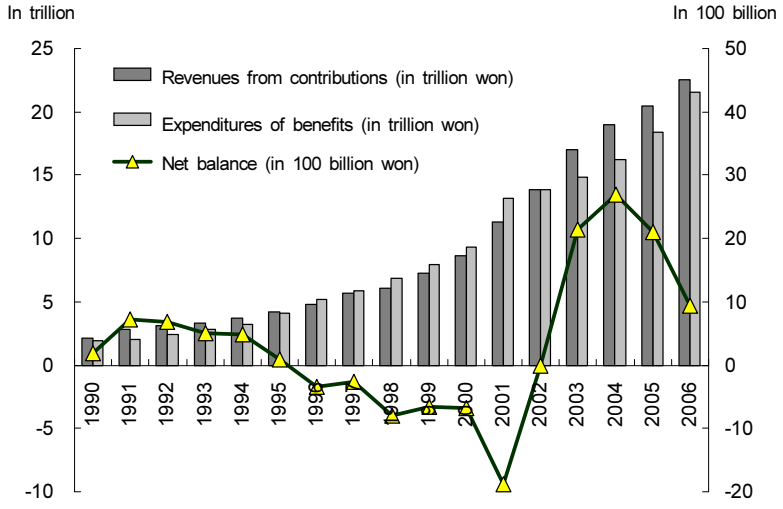
Coverage expansion is another task that must be undertaken continuously for further development of the health insurance program. Of course, there have been continued policy efforts to offer wider range of benefits ever since the implementation of the health insurance program for the entire population in 1989, but limited benefit scope and excessive portions of out-of-pocket expenditures remain problems. In particular, weak coverage for serious illnesses that incur expensive medical spending is cited as a major drawback of the health insurance program as a broad social safety net. Therefore, health policies must be aimed at securing "sound and sustainable operation of financial resources based on social solidarity and equity." Both vertical and horizontal equity of medical costs borne by individuals must be obtained and financial stability of NHI must be secured without compromising acceptance and convenience.

[Figure 6] Time series changes in benefit ratio (1998~2005)



Unstable finance of NHI is another issue that must be addressed to achieve sustainable health insurance scheme. NHI was consistently in surplus until the mid-1990s: Reserves reached about 4 trillion won in late 1995. However, expanded benefit coverage, population aging and growing interest in health caused NHI to turn into a deficit from 1996; NHI posted a deficit of 1.9 trillion won in 2001 after consuming all accumulated reserves, and began to resort to short-term loans. A number of emergency measures including increased government subsidies were taken in 2001 and 2002 to remedy the financially troubled NHI.

[Figure 7] Yearly trend in NHI finances



Note: Revenues from contributions include 'government subsidies' and earmarked 'tobacco tax' in addition to 'pure insurance contributions.'

It can be said that the health security program has so far expanded its service scope focusing on treatment of diseases. Going forward, health service coverage needs to be more comprehensive enough to include prevention, benefit follow-up, health promotion and rehabilitation so that 'health security' in its true sense can be ensured. It is therefore recommended that future NHI coverage expansion be pursued in the following directions.

First, health promotion, disease prevention, disease control and rehabilitation should be covered to promote individuals' ability to better manage their own health. Second, health insurance as a social safety net program should be further promoted by covering expensive medical charges to prevent families from falling into bankruptcy due to illness. However, to improve effectiveness of the coverage and efficiency in the use of financial resources, target groups should be

clearly identified. Third, there should be efforts to remove 'dead zone' of health care. Fourth, completeness of health security should be obtained by properly defining roles of private medical insurance. Private medical insurance can work to fill gaps of NHI. A healthy virtuous cycle of complete health care and financial sustainability should be created by properly defining roles between public and private health care players.

〈Table 9〉 NHI finance outlook

(Unit: trillion won, %)

	Medical costs	NHI Finance					
		Total expenditures	Total revenues			Estimated contribution rate	
			Contributions	Government subsidies	Tobacco surcharge	Levy base 7%	Levy base 8%
2005	48.1	21.1	16.9	2.8	0.9		
2006	54.0	22.4	18.3	2.9	1.0	4.47	4.47
2007	63.2	28.4	23.3	3.8	1.3	4.77	4.77
2008	70.5	32.1	26.4	4.3	1.4	5.04	4.99
2009	78.9	36.4	29.9	4.9	1.6	5.33	5.23
2010	86.4	40.4	33.1	5.4	1.8	5.53	5.37
2011	92.4	43.6	35.8	5.9	2.0	5.59	5.38
2012	101.1	48.4	39.7	8.7		5.78	5.52
2013	108.6	52.5	43.1	9.4		5.87	5.55
2014	117.2	57.4	47.1	10.3		5.99	5.62
2015	128.4	63.6	52.2	11.4		6.21	5.76

Note: 1) Based on the assumption that benefit coverage will increase to 70 percent by 2030 from 52.9 percent in 2005. Figures related to NHI finance in 2005 and 2006 represent actual total expenditures and total revenues and figures from 2007 represent total revenues calculated by aggregating revenues from each source based on the estimated total expenditures.

2) For the self-employed insured, actual figure of 4.77 percent contribution rate of the employed insured in 2007 was used.

3) As tobacco surcharge is a temporary tax effective until 2011 under the current law, tobacco surcharge was applied until 2011, and an assumption that government would contribute 20 percent of revenues after 2011 was used.

4) Based on two scenarios with average 7 percent and 8 percent levy base, respectively. For your information, KDI estimates that Korea will post about 6.9 to 7.5 percent economic growth each year until 2015. Considering that the levy base increased to about 8.8 percent in 2006, such assumption seems reasonable.

2) Wider coverage for low-income families including expansion of Medical Aid Program

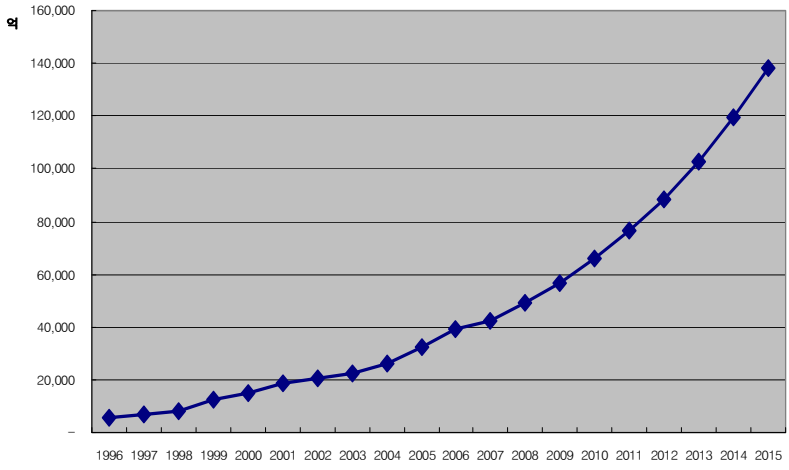
Economic difficulties driven by the recent global economic recessions put heavy medical cost burden for low-income households. There still remain gaps in health care despite the universal health care coverage through NHI and Medical Aid Program. Not a few households find out-of-pocket medical charges excessive and fail to pay contributions. Problem with the Medical Aid Program is that it has a benefit structure that incurs more expenditures than revenues, which inevitably results in benefits payable. In fact, expenditures (for medical charges) exceed appropriated budget every year. If the program continues to be operated this way, expenditures will dramatically increase due to several reasons, such as increasing medical expenditures for the elderly in an aging society and the growing number of chronically ill patients.

〈Table 10〉 Payable benefits, by year

(unit: 100 million won)

	2002	2003	2004	2005	2006	2007
Budget	22,119	23,073	24,631	29,057	34,885	46,752
Government funds	16,901	17,612	18,807	22,145	26,621	35,766
Municipal funds	5,218	5,461	5,824	6,912	8,264	10,986
Benefits payable (government liability)	902 (722)	239 (166)	1,069 (823)	4,255 (3,277)	8,570 (6,599)	3,738 (2,878)

[Figure 8] Medical Aid Program finance trend and outlook



Note: Actual medical fees were used for period until 2007 and 16 percent growth rate, which is the annual average growth rate of medical fees for the past 5 years, was used from 2008

To offer wider health coverage for low-income households, increasing the number of Medical Aid Program recipients can be first considered. This means that the program beneficiary base needs to be expanded by 0.5 percent (about 240,000 persons; 440,000 persons in 2009 when 200,000 near-poor individuals are scheduled to be covered by NHI) each year from current 3.8 percent of the entire population to 7 percent in the long run (3.45 million persons). Social consent is needed as to who should be selected as the new recipients, but those living in poverty who are not entitled to the program due to existence of family members need to be considered as first priority. In this case, additional fund required is estimated to be 382.4 to 910.3 billion won (2009, government fund) depending on the support method (based on target group of recipients and subsidy type). If the scope includes quasi-poor class individuals covered by NHI,

additional 796 to 1,033.8 billion won will be needed. If this option seems to be too much burden, helping low-income (including quasi-poor class) NHI enrollees with their payment of contributions or out-of-pocket medical fees can be considered as another option. One of the hotly debated issues in connection to coverage expansion is the establishment of a 'Medical Safety Net Fund.' Medical safety net fund involves integrating various medical expense subsidy programs to increase efficiency and at the same time relieve medical cost burden for low-income households. However, it is not easy to find stable financial resources while meeting the fund's special conditions. Therefore, instead of creating the medical safety net fund, it will be necessary to refine roles and functions of existing health care programs and properly leverage them before renewing discussion on the new fund set-up in the future.

Lastly, the management and operation of the Medical Aid Program needs improvement. If more recipients are embraced under the program, financial burdens will definitely worsen and other welfare programs will be affected. Short-term tasks for reviewing case studies using data of National Health Insurance Corporation and Health Insurance Review & Assessment Service and medium and long-term tasks for revamping administrative scheme of the medical aid program need to be undertaken concurrently. Three options can be suggested: option 1 whereby the program makes own efforts to improve its financial health; option 2 whereby the program works with NHI in operation and payment; and option 3 whereby the program is combined with NHI.

3) Financial stability of NHI

A) Current status and outlook of NHI finance

National health insurance is characterized by its short-term nature. In estimating NHI's finances each year, benefit expenditures are forecasted and then required contribution rates and government subsidies are calculated. The amount of NHI's financial resources has doubled every 5 to 6 years for the past 10 years. Total revenues increased from 7.9 trillion won in 1998 to 16.8 trillion won in 2003 and are projected to grow to 28.6 trillion won in 2008. Total expenditures increased from 8.7 trillion won in 1998 to 15.7 trillion won in 2003 to grow to 28.9 trillion won in 2008. NHI's finance including accumulated reserve turned into a deficit in 2001 before turning into a surplus in 2004 through government's financial stabilization measures. However, it has remained again in the red since 2006 when benefit expenditures significantly rose following an expansion in coverage.

〈Table 11〉 Yearly trend of NHI finance

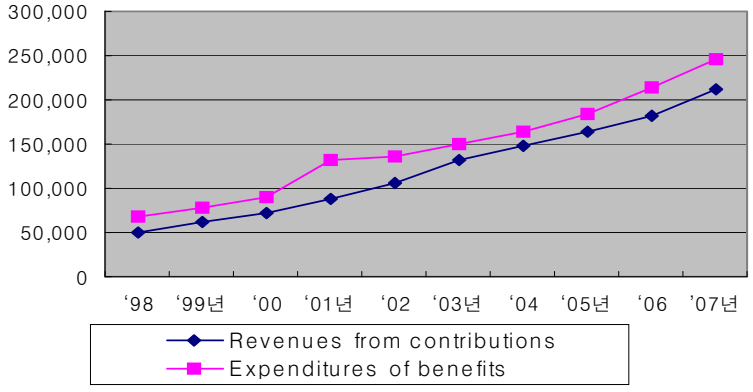
(Unit: 100 million won)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Revenues	78,508	86,923	95,294	116,423	138,903	168,231	185,722	203,325	223,878	252,697
Expenditures	87,157	95,614	105,384	140,511	146,510	157,437	170,043	191,537	224,623	255,544
Net Balance	△8,649	△8,691	△10,090	△24,088	△7,607	10,794	15,679	11,788	△747	△2,847
Cumulative	30,359	22,425	9,189	△18,109	△25,716	△14,922	757	12,545	11,798	8,951

In the meantime, expenditures of benefits increased at an annual average rate of 17.4 percent for the past 10 years and revenues from

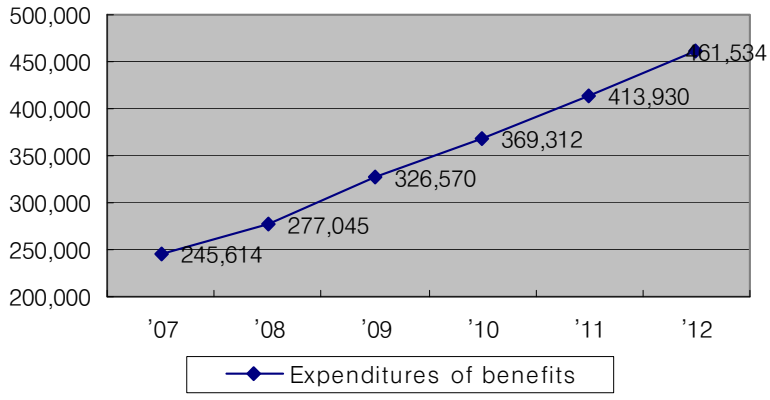
contributions raised to cover such expenditures stood at an annual average rate of 15.3 percent during the same period. The net contribution increase rate, barring the portion of increase by income growth, remains at 6 to 8 percent each year.

[Figure 9] Increase trends in contribution revenues and benefit expenditures



The mid- and long-term prospect regarding the financial health of NHI does not look bright at this moment. As the nation enters an aging society, chronic diseases like hypertension and diabetes are on the increasing trend and subsequently a 12 to 13 percent growth in benefit expenditures is expected to continue. Furthermore, overall medical expenses spent by Koreans are one of the lowest when compared with other countries and are certain to continue to increase. Increase in NHI expenditures will be therefore unavoidable. Even without coverage expansion, expenditures of benefits are forecast to rise by at least 88% to reach 46 trillion won in 2012 from 25 trillion won in 2007.

[Figure 10] Mid and long-term financial prospect of NHI



〈Table 12〉 5-year prospect of NHI finance

(Unit: 100 million won)

		2007	2008	2009	2010	2011	2012
Revenues	Total	252,697	286,334	337,980	386,401	438,654	495,959
	Contribution revenues	212,530	241,987	282,779	324,484	369,583	418,981
	Government subsidies	27,042	30,425	41,250	47,687	54,540	62,121
	Tobacco surcharge	9,676	10,239	10,009	10,009	10,009	10,009
	Others	3,449	3,683	3,942	4,221	4,522	4,848
Expenditures	Total	255,544	287,767	337,828	381,133	426,341	474,565
	Contribution revenues	245,614	277,045	326,570	369,312	413,930	461,534
	Administrative costs	9,734	10,099	10,604	11,134	11,690	12,274
	Others	196	623	654	687	721	757
Net balance		△2,847	△1,433	152	5,268	12,313	21,394
Cumulative balance		8,951	7,518	7,670	12,938	25,251	46,645
▸ Contribution raise		6.5%	6.4%	8.3%	5.0%	5.0%	4.5%
▸ Medical fee raise		2.3%	1.94%	2.8%	2.8%	2.8%	2.8%

Note: Government subsidies are based on statutory rate. If actual subsidies fall short of estimated statutory amount, contributions must be raised as much as the shortage amount to keep balanced account. Government subsidies include subsidies for quasi-poor class households.

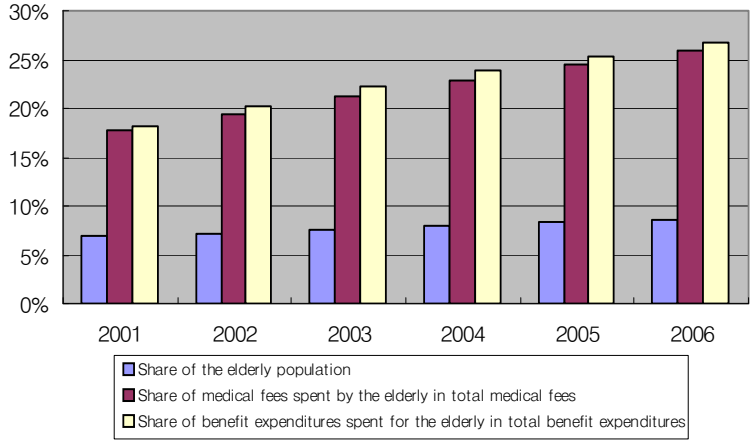
B) Problems regarding revenues and expenditures of NHI

Problems with NHI finance need to be looked into in terms of revenue and expenditure. In expenditures, the growing elderly population, the growing number of patients with chronic diseases and rising drug costs are the main concerns. In revenues, increasing

contribution delinquency and insufficient support by the government and Health Promotion Fund are the main problems.

As the elderly population that generally uses heavy medical expenses grows, the increase in benefit expenditures for the elderly is noticeably higher. The elderly population that accounts for 8.6 percent of total population uses 25.6 percent of medical fees and 26.7 percent of benefit expenditures, and medical fee per senior citizen is increasing at a much faster pace than the average per capita medical fee.

[Figure 11] Growing medical expenses spent for the elderly



〈Table 13〉 Comparison of per capita medical fee and medical fee per senior citizen

(Unit: won, %)

	2001	2002	2003	2004	2005	2006	2007
Medical fee per capita	384,727	403,598	440,356	475,092	524,593	599,260	677,319
Medical fee per senior citizen	983,368	1,086,971	1,242,751	1,370,487	1,549,492	1,804,583	2,182,101
1 senior citizen/ 1 population	255.6	269.3	282.2	288.5	295.4	301.1	322,2

Note: The index represents medical fees spent by one senior citizen under the assumption that one average person uses 100 medical fees

The growing number of patients with chronic diseases driven by growing elderly population and changing living customs adds another financial burden to NHI. Medical expenses spent for chronically ill patients accounted for 32 percent of total medical expenses in 2005 and are growing as much as 17 percent each year, driving up drug costs (Table 14).

Use of medical institutions by Koreans is one of the highest in the world. Outpatient service volume and hospitalization days are higher in Korea than in other OECD countries. Korea's weak medical care delivery system, induced demand created by insufficient segregation of health care functions and excessive competition among medical institutions result in more use of medical services.

〈Table 14〉 Medical fee trend for patients with chronic diseases

(Unit: 100 million won, %)

	2001	2002	2003	2004	2005
Total	42,158(100.0)	47,355(100.0)	55,990(100.0)	64,862(100.0)	79,374(100.0)
Percentage to total medical fees	23.7%	24.8%	27.3%	29.0%	32.0%
Hypertension	17,088(40.5)	19,350(40.9)	23,107(41.3)	27,449(42.3)	32,439(40.9)
Diabetes	9,005(21.4)	10,312(21.8)	12,207(21.8)	14,145(21.8)	17,120(21.6)
Cancer	8,764(20.8)	9,610(20.3)	11,158(19.8)	12,827(19.8)	16,578(20.9)
Cardiovascular	3,333(7.9)	3,760(7.9)	4,437(7.1)	4,580(7.1)	6,140(7.7)
Cerebrovascular	3,968(9.4)	4,323(9.1)	5,081(9.0)	5,861(9.0)	7,097(8.9)

Concerns regarding revenues of NHI include persistent contribution delinquencies and insufficient contribution by the government and the Health Promotion Fund.

Despite various efforts, such as creation of a collection team within the National Health Insurance Corporation, encouragement of contribution payment, engagement in contribution support programs in collaboration with municipal governments and social welfare institutions, conversion of Medical Aid Program recipients to NHI

recipients and disposal of deficits, 2 million households are in arrears in paying contributions each year – about 1.7 trillion won in arrears so far – and the number of workplaces that fail to pay contributions in time is rapidly growing since the expansion of coverage to workplaces with less than 5 employees.

〈Table 15〉 Contributions in arrears

(Unit: 1,000 cases, 100 million won)

		2000	2001	2002	2003	2004	2005	2006	2007
Total	Number of households (workplaces)	1,912	1,631	1,374	1,585	2,069	1,987	2,139	2,109
	Amount in arrears	7,550	7,964	7,488	9,593	12,936	12,633	15,330	17,168
Self-employed	Number of households	1,901	1,616	1,361	1,563	2,038	1,952	2,093	2,056
	Amount in arrears	7,312	7,640	7,237	9,060	12,007	11,566	13,873	15,547
	Amount in arrears per household	38	47	53	58	59	59	66	74
Employed	Number of workplaces	11	15	13	22	31	35	46	53
	Amount in arrears	238	324	251	533	929	1,067	1,457	1,621
	Amount in arrears per workplace	216	216	193	242	299	305	319	306

According to a report, about 40 percent of these delinquents are those who are unable to pay contributions because they are struggling just to make ends meet. When measured by income, 37 percent of all households in arrears pay 20,000 won or less contribution a month. This translates into 760,000 households, or 298.9 billion won, accounting for 19.2 percent of total amount in arrears. 70.3 percent, or 210.2 billion won in arrears by these low-income households is long-term overdue of 2 years or longer. Of long-term (2 years or longer) overdue payment households, 35.7 percent, or 730,000 households account for 65.3 percent of total overdue amount, or 1 trillion and 14.7 billion won. As individuals cannot receive full health care coverage if they don't pay contributions for more than three months, there is a danger of NHI not covering certain people under

the current program. And this problem will be further complicated when the near-poor who are currently receiving medical expense subsidies begin to covered by NHI.

Deficient assistance by the government and the Health Promotion Fund is another issue that needs to be addressed. Under the current law, 20 percent of total annual projected revenue is subsidized by the government (14 percent from general taxes and 6 percent from the Health Promotion Fund), which accounts for 17 percent of total revenues. Hence, the government's financial assistance has direct impact on the overall financial health of NHI. Problem is that this government assistance cannot keep up with the pace of expenditure growth, which grows by 15 percent each year and that heavier financial burden on the insured meets resistance by the insured.

〈Table 16〉 Actual government subsidies versus statutory requirement

(Unit: 100 million won, %)

	2002	2003	2004	2005	2006	2007	2008(Est.)
Contributions from the self-employed	70,525	74,370	77,019	81,844	91,781	212,530	241,987
Total subsidies	30,139	34,238	34,830	36,948	38,362	36,718	40,262
% compared to contributions from the self-employed	42.7	46.0	45.2	45.1	42.5	17.3	16.6
Shortage	5,124	2,947	3,680	3,974	7,529	5,788	8,135
Taxes	25,747	27,792	28,567	27,695	28,698	27,042	30,023
% compared to contributions from the self-employed	36.5	37.4	37.1	33.8	31.3	12.7	12.4
Shortage	2,463	1,956	2,241	950	3,425	2,712	3,855
Tobacco surcharge	4,392	6,446	6,263	9,253	9,664	9,676	10,239
% compared to contributions from the self-employed	6.2	8.7	8.1	11.3	10.5	4.6	4.2
Shortage	2,661	991	1,439	3,024	4,103	3,076	4,280

Note: 1) Statutory: 40 percent from taxes, 10 percent from Health Promotion Fund in 2002 ~ 2004, 35 percent from taxes, 15 percent from Health Promotion Fund in 2005 ~ 2006
2) For 2007, 20 percent of projected total revenues (14 percent from taxes, 6 percent from Health Promotion Fund) was used instead of using contributions from the self-employed insured

Moreover, the Health Promotion Fund has contribution ceiling of "within 65 percent of tobacco surcharges" and this subsidy is provided until 2011 only. Unless other special measures such as tobacco price hikes are taken, the 65 percent ceiling will make the statutory contribution rate set at "6 percent of total annual projected revenues" meaningless soon.

C) Policy direction to improve financial health of NHI

NHI financing is carried out under the principles of equal contributions based on income levels, stable financial resources, secured acceptance, least painful levy structure, stable and sustainable future financing. An appropriate level of contributions needs to be studied under these principles. As of 2008, contribution rate was about 5.08 percent of income. When the targeted 70 percent coverage is reached in 2015, the contribution rate is projected to grow to 8.13 percent of income (Future Strategy Committee, 2007). Contribution rates vary across countries: It was slightly over 8 percent in Japan, 7.4 percent in Belgium, 6.4~9.1 percent in Austria, and 13.6 percent in France, in 2002. When required coverage and overall social insurance cost burdens are factored in, contribution rates as shown in the table below can be considered in the long run.

〈Table 17〉 Long-term direction for social insurance costs

Total social insurance costs	National Pension	Retirement Pension	NHI (Medical benefits _ long-term care)	Industrial accident compensation, employment insurance
30%	9%	9%	9%	3%

Contribution levy scheme needs improvement also. First of all, for farmers, fishermen, low-income households and poor self-employed households for whom the current levy scheme doesn't work effectively, a separate scheme needs to be designed. In doing this, ways should be considered to simplify the levy scheme for the self-employed and change the way contributions collection method from the current household-based to individual-based. If it is difficult to identify accurate income levels of individuals and reform contribution levy scheme accordingly, either wider coverage must be given up altogether or other indirect taxation must be sought.

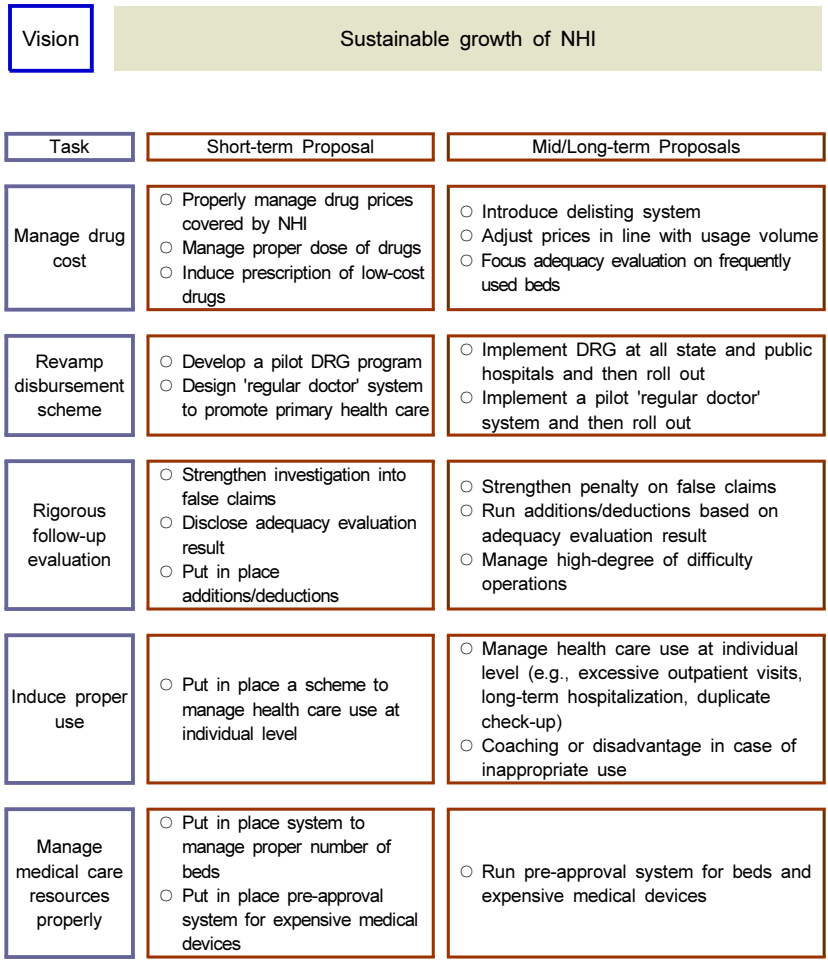
In the case of government's assistance for NHI financing, the comprehensive assistance approach offers the benefits that assistance can be made flexibly to the extent allowed by the comprehensive scheme, but there is a risk of subsidies being utilized in an inappropriate manner. While the comprehensive assistance approach can be considered, its operation and execution needs to be carefully and strategically decided by the insurer.

Restructuring of NHI benefits is also needed. Although wider range of benefits are being offered to patients with high-cost serious illnesses, there still remains concern that medical cost burden on patients is excessive. New technologies to treat serious illnesses have inherent problems that they are largely not covered by NHI or subject to arbitrary medical charges, making it difficult to lessen financial burden on the patients. On the other hand, low-cost minor illnesses are relatively sufficiently covered by NHI. However, frequent outpatient visits, medical ‘shopping’ and other practices pose a threat to the financial health of NHI and thus a mechanism to control such moral hazard is needed. Therefore, the direction for NHI benefit

restructuring needs to be set in such a way a 'negative system' is run whereby majority of non-benefit items required to treat serious illnesses are turned into benefit items while uncovered items are selectively covered. This way, medical cost burden borne by patients with serious illnesses can be mitigated and out-of-pocket spending for outpatient visits to community clinics and simple inpatient treatment and outpatient treatment at hospitals can be adjusted upward. At the same time, excessive prescriptions can be restrained.

Rationalization of NHI expenditure structure is another important task in building a sustainable health insurance program. For this purpose, I have drawn up short-term and mid- and long-term proposals in five areas, namely, management of drug costs, revamping of disbursement scheme, rigorous evaluation of follow-up management, inducement of proper use and proper management of medical care resources.

[Figure 12] Sustainable growth of NHI through rationalization of expenditure structure



4) Improvement of NHI benefit provision priorities and benefit structure

Recent trends in NHI benefit provision reveal several issues. Continued increase in of benefit expenditure is most distressing. In addition to the growing elderly population and the growing number

of chronic degenerative diseases, improved economic and living conditions, increased educational level and growing interest in the quality of life raise expectations about overall heal care services and health status and bring about further increase in expenditures of NHI benefits. However, the fact that benefit package in Korea is not comprehensive enough and that benefit coverage for mandatory and serious disease areas is weak compared with other countries makes it imperative to expand coverage.

Despite these imperatives, it seems that Korea's current benefit scheme is not responsive enough. While demand for medical services changes with growing number of senior citizens and chronic degenerative diseases, current benefits largely deal with treatment of acute diseases. Benefit scheme needs to be revamped to live up to changing expectations. Also, the rigid operation of benefits limits stakeholders' right to choose and deteriorates quality of health care services. Inefficient use of health care by health care consumers and inefficient health care delivery lead to inefficient use of benefit expenditures and threaten financial health of NHI.

Therefore, NHI's benefit scheme needs to be revamped in such a way that expenditures are efficiently and reasonably spent while attempting to expand benefit coverage. Expansion of benefit coverage must be carried out under the principle of offering wider benefits for diseases that must be treated, but priorities of benefit provision need to be adjusted based on severity of diseases and financial burdens on patients. Out-of-pocket payment burden on the vulnerable groups needs to be lessened to the extent that it does not create moral hazard. As a growing number of chronic degenerative diseases is creating new health care demand, appropriate benefits should be

available to address the new demand. Additionally, there should be enough preparations to cope with growing health care demand by the fast growing elderly population.

Besides benefit coverage expansion, improvement of benefit determination process is urgently needed. To minimize criticism that political interests were the main factor in the determination of benefits, data that reasonably supports decisions about benefit expansion must be gathered and used in setting criteria for determining priorities in benefit provision. As a near-term goal, a sub-committee dedicated to in-depth discussions and opinion collection regarding benefit priorities can be set up under the Health Insurance Policy Review Committee. The sub-committee can be convened as needed and serve to monitor and reflect technology changes and consumer requirements. Benefit coverage has been expanded with emphasis on meeting social demand over financial stability of NHI. Financial unstability leads to shrinking benefits and works as a barrier to sustainable and reliable provision of benefits. Therefore, benefit expansion should be pursued to the extent that NHI's financial stability is not hampered, and a minimum level of reserve is secured. That is, a process needs to be in place where decisions regarding benefit coverage expansion are made in line with projected increase in revenues so that benefit expansion does not pose a threat to NHI's financial health.

There are certain health insurance benefit services where stronger government intervention is needed. These benefits should be financed by taxes, not by contributions paid by the insured, and managed under separate programs of the Ministry for Health, Welfare and Family Affairs, while their operation can be entrusted to NHIC.

Examples of diseases that require such benefits as part of social safety net include intractable and catastrophic diseases. These programs are growing fast and NHI, as a program run with contributions raised from the insured, is not capable of, nor suitable for, operating them.

5) Development of standard model for private medical insurance and consumer protection

To establish complementary relationships between public insurance and private insurance, it is imperative to have laws that can control moral hazards accompanying private health insurance services, encourage development of standard indemnity insurance products and allow private insurance to complement public insurance.

Under the current insurance law, non-life insurers were allowed to sell indemnity products from 1998 and life insurers from May 2005. The first indemnity products by life insurers were launched in May 2008. Accordingly, the size of private medical insurance stood at 10 trillion won in 2007 in terms of insurance premiums – life insurers with 8.3 trillion won and non-life insurers with 1.7 trillion won, which is 40 percent of that of NHI's revenue of 25 trillion won.

Although private health insurance market has doubled for the past five years, consumer protection measures such as sufficient product information and strict benefit payment criteria are still insufficient. Moreover, indemnity products currently available were designed without considering impact on public insurance: they even cover petty-sum outpatient service charges and drug costs. This is expected to create confusion in medical care delivery and increase in demand

for medical care. On the other hand, as NHI cannot practically cover the rapidly growing medical expenses caused by aging population and increasing number of chronic diseases with its own financial facilities, it is needed to define roles between NHI and private health care providers so that private health care providers also contribute to the promotion of the health of citizens.

In defining roles between public and private health care providers, the proposition that the entire population must be covered remains valid (with private providers playing a complementary role). While private health insurance should be allowed to thrive, its impact on the financial soundness of NHI must be kept at a minimum. In this process, a mechanism to protect consumers must be in place to ensure that private health insurance contributes to promoting the health of the general public. For instance, development of standard policy provisions is needed to ensure that indemnity-type insurance products guarantee rights to health and that development of standard products is encouraged. In addition to imposing more rigorous requirement for posting product information disclosure, other measures that prohibit or penalize false and puffery advertisements regarding private health insurance products must be incorporated in related laws and regulations (through amendment of the insurance law, for instance).

B. Reform of health care regulations

1) Amendment of Medical Services Act and deregulation

Now is the time to amend the Medical Services Act to improve medical service environment and boost competitiveness of medical

services. It has been pointed out that the law itself is complicated and lacking consistency. There have been only partial amendments so far and time is ripe for the government to create a new framework with emphasis on promotion over regulations so that medical practitioners and medical institutions can more flexibly respond to changing requirements. For example, if a patient wants to receive both western and oriental medical service, he has to visit two different clinics and cannot consider medical charge as he does not know what portion of the medical fee will not be covered by NHI and must be thus borne by him. Furthermore, if same prescriptions are made repeatedly, the patient must visit medical institutions as often even if he has difficulty moving around. In addition, there is no sufficient protection of patients' medical information. On the part of medical institutions also, it is difficult for them to drive incapable medical service providers out of business or attract patients actively because they are largely restricted from soliciting patients. Moreover, as medical institutions are categorized based on the number of beds, it is difficult to raise professional medical service institutions. 4,000 to 5,000 doctors are churned out each year but there is a limited number of fields where they can practice. Therefore, it is necessary to amend the Medical Services Act so that patients are offered wider and more convenient access to health care services, their rights and interests are protected and medical service providers become more competitive with eased or removed regulations. Proposed health care reform is as follows:

First of all, regulations unnecessary for the management of medical institutions need to be eased, competitiveness of health care services needs to be strengthened to the extent that health care as a public

function is not hampered, and the deregulation must be aimed at promoting interests of the general public. For instance, businesses run by medical institutions such as funeral parlors need to be revamped according to changing market requirement. To improve competitiveness of medical institutions, more health care-related information produced by public institutions like Health Insurance Review & Assessment Service should be made available in a transparent and efficient manner as part of efforts to guarantee consumer rights. In parallel, regulations need to be eased through amendment of the Medical Services Law. Mechanism to further protect consumers should be prepared, for instance, by revising insurance-related laws, clarifying service areas covered by private health insurance and formulating standard policy provisions. Expensive medical charges for plastic surgeries, dental implants, dermatology care and other cares not covered by NHI should be disclosed in advance, and patients' family members should be allowed to receive prescriptions on behalf of the elderly or disabled who have difficulty moving around. Patients' medical information should be further protected by proper means. For this, instances where patients' medical records can be accessed need to be categorized in detail and medical service staff should be prohibited from disclosing patients' medical information to protect patients' privacy. Finally, hospital infection prevention guideline must be further strengthened to prevent hospital infections. To this end, clinics of a certain size need to have infection prevention boards and general hospitals need to allocate a certain amount of human resources to infection prevention efforts to protect hospital users.

Amendment of the Medical Services Act should be carried out in

a way that strengthens competitiveness of medical institutions through deregulation. Among other things, hospital-level medical institutions should allow users to receive both western and oriental medical service, and unstable medical service conditions should be improved. For example, any act of violence or threat to medical practitioners and other medical service staff should be strongly punished, and once a student passes doctor's license examination, he needs to be allowed to practice as a doctor even before the license is issued. Current medical records are too complicated with too many items to be filled out. Doctors need to be punished more lightly when they miss out recording optional items, not mandatory items. When medical institutions cease operations, they should be allowed to move various medical records to public health centers in electronic documents. Doctors also need to be allowed to work as 'freelancers' so as to be able to work for several hospitals.

Solicitation of foreign patients is allowed since May 2009 following the amendment of the Medical Services Act, but more aggressive activities to attract foreign patients need to be allowed to boost competitiveness of local medical service providers. For example, following activities carried out by Singapore to strengthen its global competitiveness can be referenced:

※ "Singapore Medicine" to boost global competitiveness of Signaporean health care services
▷ Build a network to attract patients through medical care exchanges and publicity activities
▷ Disclose medical fee information of each hospital on the Ministry of Health web site for enhanced cost transparency
▷ Provide tax benefits to hospitals that attract foreign patients
▷ Simplify immigration procedures

In addition, current classification of medical institutions based on the number of beds needs to be stopped. Instead, medical institutions can be broadly classified between clinics and hospitals and then hospitals that meet certain conditions can be designated as 'special function hospitals.' This is to promote use of specialized hospitals and offer health care services in more diverse forms. As there is no way of forcing uncompetitive medical institutions out of business under the current law, inappropriate operation and management can persist. To encourage medical corporations to rationalize their management, mergers and acquisitions among medical institutions, efforts should be exerted to deregulate incidental businesses and introduce independent audit for more transparent accounting.

2) Diversification of financing channels

A) Introduction of profit-oriented hospitals

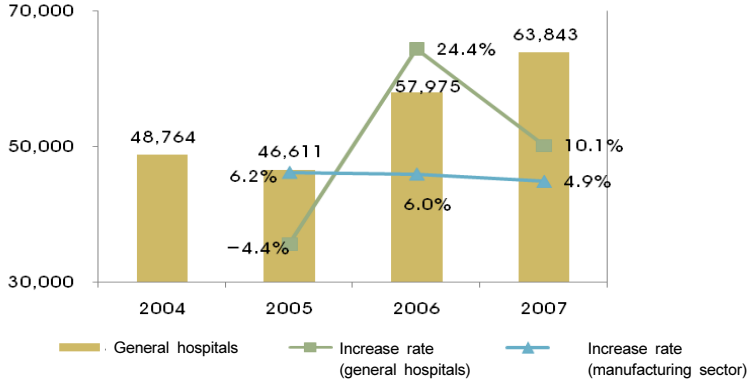
Rapid advancements in medical technologies and demand for better services by medical service users require large-scale investment in medical equipment and facilities. Under the current law, however,

only individual doctors and non-profit entities (e.g., medical entities, social welfare entities and entities established under the civil law) can establish a hospital. As a result, sufficient investments do not flow into the medical service sector. Most of domestic medical institutions are run on equity capital only and have to borrow a large sum of money for operation. As of 2007, general hospitals with 300 beds or more (including general care hospitals) on average held an amount of 63,843 million won in tangible assets, and the share of loans was as high as 74 percent for general care hospitals and 62 percent for general hospitals (see Figures 13 and 14). On the other hand, operating profit of domestic medical institutions with 300 beds or more is 0.7 percent for general hospitals and 1 percent for general care hospitals as of 2007, indicating that it is difficult for hospitals to attract investment under the current system of management. Lack of transparent accounting, heavy regulations and lack of expertise about medical service market all deter investment in this sector.

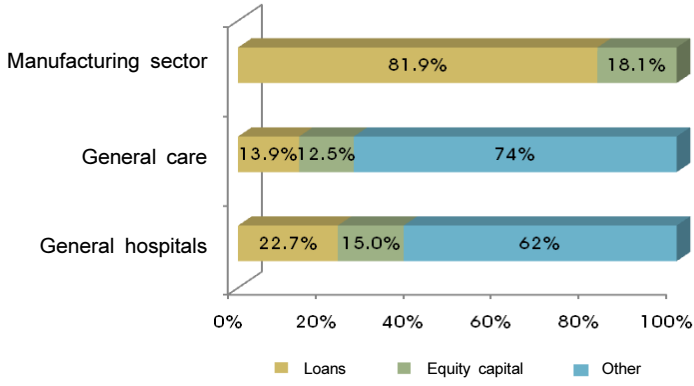
〈Table 18〉 Dependence on borrowed capital (liability/total shareholder's equity) by medical institutions

	2001	2002	2003	2004	2005	2006
Hospital total	60.9%	62.9%	65.1%	65.3%	62.9%	60.6%
Private-run hospitals	61.9%	64.5%	68.6%	67.7%	66.5%	64.2%
Manufacturing sector	64.6%	57.5%	55.2%	51.0%	50.2%	49.7%
Specialized service sector	60.2%	48.8%	44.8%	50.9%	60.9%	63.5%

[Figure 13] Changes in tangible assets



[Figure 14] Financing through financial activities (2007)



Furthermore, even non-profit entities are levied corporate income tax because they are considered as corporations under the tax law, and founders of these entities are not allowed to have equity interest or seek return on investment (i.e. profit allocation), another reason for sluggish investment. As medical institutions largely borrow money from banks who demand collateral, financing is not easy and they often have to bear high financial cost burden due to high interest rates.

〈Table 18〉 Financial cost ratio (interest paid and discount/medical service revenue)

	1999	2000	2001	2002	2003
Hospital total	3.5%	2.7%	2.8%	2.1%	2.1%
Private-run hospitals	3.8%	2.9%	3.0%	2.3%	2.3%
Manufacturing sector	6.9%	4.7%	4.2%	2.6%	1.9%
Specialized service sector	0.8%	0.6%	0.7%	1.3%	0.7%

To improve such situation, introducing profit-oriented hospitals needs to be carefully considered. The review must conducted under two premises: first, the country's system of standardized medical insurance price and coverage schedules should remain; and second, non-profit entities should not be allowed to turn into profit-oriented hospitals. Whether profit-oriented hospitals should be considered as professional corporations or stock companies under the commercial law should be reviewed. A phased approach would be needed whereby profit-oriented hospitals are established in different regions at different timings considering the potential impact these hospitals will have on the medical service sector.

〈Table 19〉 Benefits of phased approach

	Impact on the medical service sector	Expected benefits
Option 1 (Establish hospitals in free economic zones)	· Impact can be minimized as profit-oriented hospitals will be set up in selective regions · Equity issue can be raised · Can be a barrier to attracting foreign hospitals	· Limited capital influx and limited effect of boosting the medical industry · Difficult to set up large hospitals in free economic zones as local governments want to attract foreign hospitals
Option 2 (Establish hospitals nationwide)	· Concern about negative effects can be alleviated by subjecting profit-oriented hospital to certain regulations · Demand for deregulation is expected for profit-oriented hospitals to create profits	· Various types of medical service providers and services will be available · Hospitals with competitive sizes can be established in locations where there is medical demand

〈Table 20〉 Strength and weakness by entity type

	Hospital run by doctors	Compulsory corporation	Stock company under the commercial law
Rationale	· Similar to existing professional corporations like law firms · Medical expertise and restrictions on excessive profit motive can be secured	· Takes the form of professional corporations	· Profit-oriented corporation · Profits are allocated to shareholders
Strength	· Medical services are mainly delivered by medical professionals	· Capital can be attracted while keeping benefits of professional corporation · Expertise can be combined with capital	· New profit opportunities can be sought in partnership with other sectors · Medical service quality can improve using investment
Weakness	· Shareholders are limited to doctors, hence limitations in attracting investment · Weakens the purpose of introducing profit-oriented hospitals · Insufficient funds, lack of collaboration with other sectors	· Dominance by doctors due to their controlling interest · Difficult to attract investment as gaining management rights is difficult	· Excessive profit motive is feared · Resistance from civic groups is expected · Distortion in medical service delivery is feared due to participation and potential dominance by large corporations · Increased medical cost burden and possibility of polarization

Four types of profit-oriented hospitals can be created as shown in Table 21 below when regional limitations and available corporation types are combined. First, if the hospital takes the form of professional corporation and is allowed to be established in certain locations only (Type A), negative effects that may result from the establishment of profit-oriented hospitals can be minimized and there is enough time to review benefits and shortcomings by running a pilot program before allowing the establishment of these hospitals across the nation. The drawback is that this way of operation will

weaken the very purpose of establishing profit-oriented hospitals. Second, if the hospital takes the form of professional corporation and is allowed to be established across the nation (Type B), benefits are that existing hospitals can easily turn into profit-oriented hospitals and operate using borrowed capital. This option is likely to have similar drawback as the first option in that attraction of large-scale investments will be difficult, which was the rationale behind the new system. Third and forth options involve establishment of profit-oriented hospitals with (Type C) and without location limitations (Type D). In these cases, attraction of investment will be easy, which is in line with the purpose of establishing such hospitals, but efforts are needed to convince civic groups and doctors' associations.

〈Table 21〉 Types of profit-oriented hospitals and strength and weakness based on location limitations

	Strengths	Weaknesses
TYPE A (Professional corporation/limited locations)	· Negative effects resulting from introduction of profit-oriented hospitals are minimized · Existing private hospitals can easily turn into profit-oriented hospitals · Medical professionals can easily attract capital · Enough time before deciding to roll out nationwide	· Significantly weakens the purpose of introducing profit-oriented hospitals · Policy effects are minimal compared to social cost spent in the course of introducing new system · NHI may come under pressure · Not in line with the purpose of running free economic zones. Except for Incheon free economic zone, other locations are not likely to be candidate locations
TYPE B (Professional corporation/across the nation)	· Existing hospitals can easily turn into profit-oriented hospitals · Medical professionals can easily attract capital	· Difficult to achieve the goal of attracting large investment · NHI may come under pressure

	Strengths	Weaknesses
TYPE C (Stock company/limited locations)	· Investment can be attracted easily · Enough time before deciding to roll out nationwide · Negative effects resulting from introduction of profit-oriented hospitals will be few	· Resistance from civic groups and doctors' associations · Not in line with the purpose of running free economic zones. Except for Incheon free economic zone, other locations are not likely to be candidate locations
TYPE D (Stock company/across the nation)	· Most suitable type under the new system	· Negative effects of profit-oriented hospitals may be experienced across the nation · Resistance from civic groups and doctors' associations

B) Issuance of medical bonds

Korean medical institutions have virtually no other means than their own profits and bank loans for financing. Diverse channels for financing are needed for these institutions to raise long-term funds effectively, boost competitiveness and provide quality medical services. To this end, the government may consider allowing medical institutions to issue medical bonds. Medical bonds are expected to help medical institutions make investments in facilities, raise required fund to run hospitals and cope with liquidity crisis effectively as many of them suffer from heavy short-term debts.

Medical bonds are similar to corporate bonds issued by corporations and other profit-making entities. The difference is that only non-profit corporations can issue non-guaranteed medical bonds. Separate laws need to be enacted to govern issuance of medical bonds, as different conditions should be applied to medical bonds regarding bond issuer, quorum requirement, restrictive use of raised funds, etc.

〈Table 22〉 Medical bond bill

	Medial bond bill	Commercial law
Bond issuer	Non-profit corporation	Profit-making corporation (stock company)
Method of passing resolution at BoD	Majority of directors designated by articles of incorporation cast favorable votes. If there is cap/floor limit in the number of directors, majority of directors within the limit cast favorable votes (Article 6)	Attendance by majority of directors and favorable votes by majority of directors (Article 391)
Usage	Establishment of medical institution, securing medical equipment and facilities, salary payment to doctors and staff, medical research, etc. (Article 5)	N/A

As there are currently no regulations regarding issuance of medical bonds, separate laws and regulations need to be enacted. Clauses regarding issuance of corporate bonds need to apply in medical bonds. Regulations regarding bondholders' rights and obligations and creditors' meeting can invoke clauses of the commercial law. Medical bonds need to be included in securities as stipulated by the Securities and Exchange Act for effective circulation, and obligation clauses relating to the issuance of medical bonds (e.g., submission of registration statement, obligation to prepare business report) must be abided by. As companies increasingly register their bonds with Korea Securities Depository rather than issuing real bonds under the 'Registration of Bonds and Debentures Act,' medical bonds should be applied by the same law, and enforcement of the medical bond bill needs to be carefully timed so as to go under the Capital Market Consolidation Act.

Issuing organizations of medical bonds should be primarily private medical institutions or non-private corporations that established medical institutions. Issuance of bonds needs to be limited to the

amount up to four times the net worth of assets to protect interests of bondholders as is the case under the commercial law.

C) Improvement of medical service quality by putting in place proper scheme

The Ministry for Health, Welfare and Family Affairs has been conducting evaluation on medical institutions since 2004 to improve the quality of medical services and promote consumers' right to know. Separately, Health Insurance Review & Assessment Service is also conducting evaluation on quality and adequacy of clinical services. Each department is also conducting or plans to conduct quality evaluation on various hospitals.

〈Table 23〉 Hospital evaluation led by the Ministry for Health, Welfare and Family Affairs

	Implementation Year	Evaluation Target	Evaluator
Evaluation of emergency care institutions	2002	Emergency care institutions (446)	Ministry for Health, Welfare and Family Affairs, National Emergency Medical Center, municipal governments
Evaluation of adequacy of nursing homes	2003	All nursing homes	Ministry for Health, Welfare and Family Affairs, Health Insurance Review & Assessment Service
Evaluation of medical institutions	2004	General hospitals or other hospitals with 300 beds or more	Ministry for Health, Welfare and Family Affairs, Korea Health Industry Development Institute, Korean Hospital Association
Evaluation of operation of community-based public hospitals	2006	Community-based public hospitals (40)	Ministry for Health, Welfare and Family Affairs, Korea Health Industry Development Institute
Evaluation of medical institutions that provide cancer examination	2008	Medical institutions that provide early cancer examination (total 2,893)	Ministry for Health, Welfare and Family Affairs, National Cancer Center
Evaluation of medical institutions that provide oriental medical service	2010	Oriental medical clinics with 70 beds or more	Ministry for Health, Welfare and Family Affairs, Korea Health Industry Development Institute

	Implementation Year	Evaluation Target	Evaluator
Evaluation of medical institutions that provide dental care	2010	Medical institutions that provide dental care	Ministry for Health, Welfare and Family Affairs, Korea Institute for Health and Social Affairs
Evaluation of medical institutions specialized in cancers		Medical institutions specialized in cancers	Ministry for Health, Welfare and Family Affairs, Korea Health Industry Development Institute
Expertise-oriented evaluation of general care hospitals		General care hospitals Subsidized hospitals	Ministry for Health, Welfare and Family Affairs, National Cancer Center, Korea Health Industry Development Institute
Evaluation of chronic diseases	Planned	Hospitals of general hospital level	Ministry for Health, Welfare and Family Affairs, Korea Centers for Disease Control and Prevention

Introduction of evaluation scheme by the government is meaningful in that it prompted domestic medical institutions to become more aware of the quality of health care services and that it laid the foundation for providing consumers with more information with which to choose medical institutions. With the system in place for 4 years now, issues regarding continued quality improvement emerge.

Among other things, as the number of policies that focus on quality evaluation increases, policy redundancy and administrative inefficiency is raised as a concern. On the part of medical institutions, making preparations for evaluation is burdensome. Expertise and feasibility is not sufficient. Another issue is that evaluation of medical institutions is not properly incorporated in other related policies. Some pilot indicators currently in use concern medical fees not reimbursed by NHI or not consistent with underwriting criteria. Furthermore, there are not enough efforts made to improve services deemed of low quality (e.g., emergency room, intensive care unit, infection control). The quality of the evaluation scheme itself remains an issue. The quality of evaluators, evaluation costs and mobilization of many

resources only during the evaluation period need to be improved. Additional efforts are needed to properly utilize know-how built on evaluation experience and evaluation results.

Evaluation of health care quality needs to be in 'dual system' whereby the government engages in part of the evaluation using minimum criteria needed for guaranteeing health protection and the rest is open to the market so that diverse evaluation mechanisms can work. To resolve duplicate evaluation functions within the government, roles and responsibilities between related departments should be clarified and a process must be in place for the government to use evaluation information in a proper manner in making subsidy decisions. In more medium and long term, the goal should be establishment of an organization dedicated to evaluation tasks. In doing this, having an independent and professional evaluation organization with proper status will be the key. If this organization can effectively collaborate with Health Insurance Review & Assessment Service, it will truly become a specialized and effective evaluation body. Evaluation details, tools, evaluator training and evaluator operation process should be refined and evaluation results need to be put together and disclosed by evaluation area and grade.

D) Institutionalization of medical dispute mediation and required financial resources

The GDP share of health care expenditure is estimated to be 6.2 percent (about 60 trillion won) in 2007. Medical spending is growing at about 13 percent each year compared to 1 percent growth in major developed countries and is expected to reach the level of the

developed world in about 3 to 4 years. Such rapid increase is due in part to increase in medical malpractices. For example, if adverse events incidence calculation formula is used, medical malpractice cost in 2007 is found to be as much as 2 trillion and 220 billion won, which is 3.7 percent of total medical spending of 60 trillion won in Korea. Moreover, patients who experience medical malpractices often suffer from aftereffects and lose ability to work, which leads to productivity loss for a nation as a whole, aggravated burden on family members and lost opportunity to learn for patients' children. Medical disputes raise concern about medical services and bring about the inefficiency of service. Patients, feeling that resolving a medical dispute is like throwing an egg at a wall, rather opt for a sit-down strike, violence, threatening or resorting to a court. On the part of doctors, reputation is damaged, doctors' rights are violated and there are fewer opportunities to practice medical services in the safe environment. Consequences are insufficient number of doctors in medical fields where malpractices are frequent, unnecessary or excessive checkups, defensive service and avoidance of high-risk patients. Medical disputes incur high cost burden not only on patients and doctors affected but also on the society as a whole as it often takes long time and effort to resolve disputes. A study on the relative value of medical service risks in 2005 found that the total cost spent to resolve medical disputes was estimated to be 185 billion won, or about 1 percent of total medical spending in Korea.

According to a survey by Korean Hospital Association on 41 hospitals, the number of medical dispute cases is increasing every year, from 4.47 cases in 2001 to 4.96 cases in 2002 to 5.54 cases in 2003. The current dispute settlement procedure under the Medical Services

Act is not effective enough to resolve medical disputes, and many patients are still resorting to civil suits. The survey revealed that many respondents chose voluntary settlement with patients as the solution to resolving disputes, but as much as 15.3 percent of respondents said that they would resolve disputes through legal means (civil suits).

〔Figure 15〕 Medical disputes and settlements

(Unit: case, %)

		General care hospital			General hospital			Hospital			Total		
		2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003
Mediation	Medical scheme mediation committee	-	-	-	-	-	-	-	-	-	-	-	-
	Korea Consumer Agency	0.11	0.25	0.17	0.02	0.07	0.02	-	0.08	0.08	0.14	0.40	0.27
		(5.9)	(13.9)	(8.5)	(2.0)	(6.1)	(1.8)		(4.2)	(3.7)	(3.1)	(8.2)	(4.9)
Out-of-court settlement	Korean Medical Association	-	-	-	-	-	-	-	0.08	-	-	0.08	
									(4.2)			(1.6)	
	Medical malpractice insurance	0.06	0.06	0.03	0.05	0.02	0.02	-	-	-	0.11	0.09	0.06
		(3.2)	(3.5)	(1.6)	(4.0)	(2.0)	(1.8)				(2.5)	(1.8)	(1.0)
	Out-of-court settlement with the patient	1.04	0.93	0.84	0.89	0.90	1.08	0.97	1.37	1.69	2.90	3.20	3.61
		(53.8)	(51.4)	(43.1)	(71.3)	(73.7)	(76.3)	(75.0)	(70.8)	(77.8)	(64.8)	(64.5)	(65.1)
Litigation	Civil suit	0.48	0.41	0.39	0.09	0.15	0.06	0.16	0.40	0.40	0.73	0.96	0.85
		(24.7)	(22.5)	(19.7)	(6.9)	(12.1)	(4.4)	(12.5)	(20.8)	(18.5v	(16.2)	(19.3)	(15.3)
	Criminal suit	0.06	0.03	0.04	-	0.01	-	-	-	-	0.06	0.04	0.04
		(3.2)	(1.7)	(2.1)		(1.0)					(1.4)	(0.9)	(0.8)
Pending		0.18	0.13	0.49	0.20	0.06	0.22	0.16	-	-	0.54	0.19	0.71
		(9.1)	(6.9)	(25.0)	(15.8)	(5.1)	(15.8)	(12.5)			(12.0)	(3.8)	(12.9)
Total		19.4	1.80	1.96	1.25	1.22	1.41	1.29	1.93	2.17	4.47	4.96	5.54
		(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Since medical associations had raised the need for a legislation to resolve medical disputes in the 1980s, attempts to enact 'Medical Dispute Mediation Law' began in the 1990s. Discussions abound but are still going nowhere amidst a number of legislation attempts and conflicting interests among different parties. Medical disputes are still largely resolved through claims for damages or claims for damages for non-performance of payment filed by patients for illegal practices, and 'Medical Scheme Mediation Committee' under the Medical

Services Law is not well established enough to get involved in resolving disputes.

Therefore, it is necessary to create a body that has the authority to make decisions that have the same effect as decisions made by the court of first instance. This body must be professional, fair and serve as a third-party neutral and win confidence from all parties concerned. What is being discussed to this end is creation of the 'Medical Dispute Mediation Committee.' This committee should be run as an independent organization under the Ministry for Health, Welfare and Family Affairs and should serve to mediate and arbitrate medical disputes arising from medical malpractices, no-fault medical accident cases and other disputes relating to medical practices. This organization should have its own medical dispute investigators and its decisions should have the same force as court settlements to ensure that the organization works as a specialized and valid body. Additionally, mediation preceding system must be in place to add effectiveness of the system.

As for financial resources needed for medical dispute mediations, it is recommended that all or part of risk-based relative value cost is appropriated. To this end, about 200 billion won included in the NHIC's 2007 budget to cover expenses for resolving medical malpractices and lawsuits and liability insurance premiums paid by doctors and medical institutions can be utilized. In parallel, deductions or insurance related to medical malpractices should be included in the legislation to encourage participation by health care professionals and improve effectiveness of the medication scheme. Funds raised in such a way can be used to pay for mediation-related activities, pay compensation, aid victims of medical malpractices, etc.

C. Improvement of public health care efficiency

1) New policy direction for public health care

In 2005, the government developed a "General Scheme for Promoting Public Health Care" aimed at revamping and increasing efficiency of public health care scheme; increasing roles of and investments into public health in preparation of aging society; establishing disease control scheme focusing on disease prevention; and securing health care safety net. In announcing the package, the government envisioned effective management of national medical expenditures and expanded delivery of health care services to deal with aging population and increase in chronic diseases with about 4.3 trillion won scheduled for investment between 2005 and 2009.

Major achievement with the scheme is that efforts were made to modernize facility and equipment of public health care institutions in relatively less developed provincial areas, but problem remains in that the emphasis of the plan was on raising number of facilities and beds to treat patients. In reality, it is difficult to increase beds at public health care institutions at a time when private hospitals continue to install beds. This is due to different understanding between those who own public health care facilities and others who run the facilities. As there was not enough interest in and support for private medical institutions, public roles of private medical institutions shrank as a result, Therefore, a paradigm regarding roles and functions of public health care need to change to provide public health care services effectively as shown below:

Focus on founder or owner of public health care facility	➡	Focus on service and functions
Focus on increasing facilities and beds to treat patients	➡	Focus on disease prevention and health promotion functions
Focus on public health care institutions	➡	Collaboration between public and private health care institutions

2) Revamping functions and improvement of management of public health care institutions

Public health care institutions played a major role in delivering health care to the public until the 1970s when there were not enough private medical institutions. From the late 1970s when national health insurance was introduced for the entire population, private medical institutions played a leading role in the delivery of health care, raising debate on the need for revamping functions and roles of public health care institutions. Today, critics of heath care institutions claim that pubic health care institutions, with less presence than private medical institutions, no longer serve the public good and their public roles and functions are shrinking. Red tape still prevails with less inclination to pursue technology innovation, not to mention insufficient collaboration among public health care institutions. For instance, public health care institutions, public health centers, public health sub-centers and primary health care posts all have different purpose of establishment and responsible departments, resulting in lack of collaborative efforts in undertaking public health care programs, providing education, training and medical information other than referring patients to each other. Finally, public health care institutions are less motivated to change and consequently their

service patterns are not much different from the way they were in the past. Therefore, it is necessary to promote roles and functions of public health care institutions to certain levels, increase efficiency and have the private sector keep certain public functions.

While public health care institutions including National Medical Center need to maintain their role as public facilities, some of them need to turn into special corporations that are better positioned to pursue efficiency with more autonomy. These public health care institutions find securing skilled medical resources difficult because of low pay levels applied to public servants. Prevailing bureaucracy, relatively weak expertise due to job rotation, old facility and equipment and lack of differentiated service make the situation more difficult.

With regard to National Medical Center, many experts note that the enactment of the National Medical Center Law in August 2006 should serve as a momentum for the center to change to a special corporation to ensure that the center is run efficiently, provide required public health services and play a leading role within the public health care sector. Under the law, National Medical Center is mandated to manage chronic diseases, infectious diseases and rare diseases on top of basic patient treatment, and lead development and promulgation of clinical service guidelines and other activities where special management by the government is needed.

Of 34 local medical centers, 29 centers post deficit except for 5 locations (Seoul, Daegu, Cheongju, Chungju, Andong). Chronic deficit problems hamper development of these centers with their own capabilities. Up to 15 centers are known to have more than 50 percent of their capital impaired and the capital of 3 centers is 100 percent impaired. Government provides about 13.4 billion won every

year to reduce such deficits but is not of help as these centers are not capable of delivering differentiated health services.

Therefore, policy direction for local medical centers should be that these centers are raised as community-based hospitals to close health gaps for the working and middle-class families and people living in rural areas by providing them with wider access to health care services. Medical centers based in big or small cities where there is sufficient supply of health care by the private medical institutions need to be revamped to provide required public health care in respective regions, or their functions can be commissioned or sold to the private sector. As these medical centers receive government subsidies, first recipients of the program must be the vulnerable class such as Medical Aid Program recipients, the disabled and mentally-disordered people. Health service must be provided to people living in islands or remote areas where health care supply by the private health care providers is not sufficient or is expected to be insufficient for a long period of time due to non-monetary barriers. Health service to war veterans as part of national security and gratitude for their past service, as well as health service to areas shunned by the private sector is also needed.

Functions of public health centers and public health sub-centers need improvement to keep up with changing public health care environment and meet expectations of citizens. To this end, the focus must change from treatment of visiting patients to health promotion and disease control, and medical resources should be used accordingly. Each public health center needs to select and focus on key tasks, work more closely with private institutions and undertake projects that reflect local characteristics and that motivate participation by local residents.

3) Execution of effective public health care programs using the private sector

In recent years, mortality rate from chronic diseases is on the rapid increase with westernized living habits, improved nutrition levels and less physical movement. Analysis of causes of death in 2007 showed that the most common cause of death was cancer, with cerebrovascular disease, cardiac disorder, diabetes and hypertensive disease ranking 2nd, 3rd, 4th and 9th, respectively, which, when combined, account for 27.6 percent of all causes of death. This indicates that majority of deaths occur from chronic diseases.

〈Table 24〉 Death rate from cardiovascular diseases (National Statistical Office, 2007)

1	2	3	4	9
Cancer	Cerebrovascular	Cardiac	Diabetes	Hypertensive
(27.6%)	(12.0%)	(8.8%)	(4.6%)	(2.2%)

Note: Death rate from ischaemic heart disease has doubled for the past 10 years (from 13.1 persons in 1995 to 27.5 persons in 2005)

Incidence of chronic diseases is expected to further increase due to population aging, changing living and eating habits and declining physical activities, incurring heavy social and economic costs. For example, social and economic cost burden from cardiovascular diseases is projected to be 5.39 trillion won and social and economic cost burden from malignant tumors is projected to be 5.53 trillion won. Particularly, disability adjusted life year, or DALY of all males and females with cerebral apoplexy and ischaemic heart disease is estimated to be 2.7 times longer than that of patients with 5 major malignant tumors. Therefore, it is essential to pay more attention to

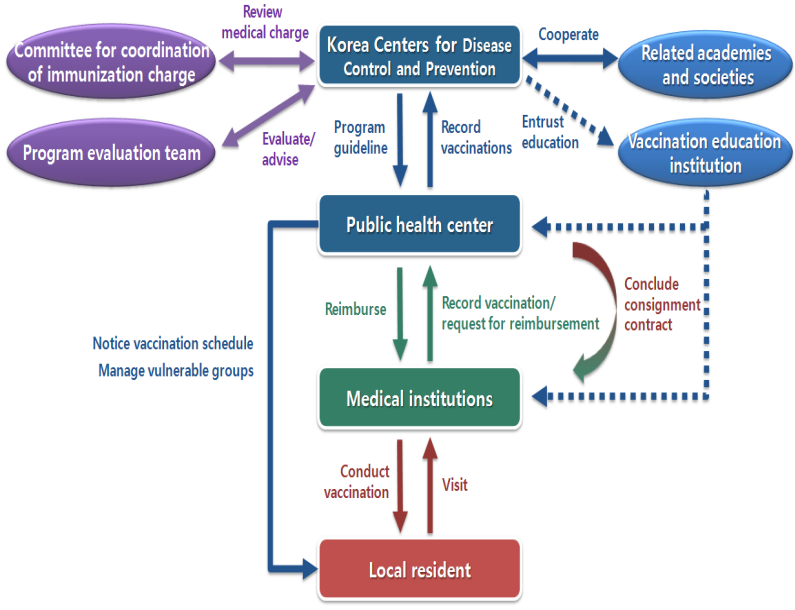
prevention and management of chronic diseases to minimize social and economic impact from chronic diseases and to extend healthy life expectancy. In this process, private sector resources need to be utilized to gain maximum results. To this end, initiatives that can be considered are as follows:

- Provide incentives to patients and medical institutions that successfully managed chronic diseases such as hypertension and diabetes
- Actively involve medical institutions in health programs intended to provide continued treatment
- Introduce performance-based payment (P4P) scheme whereby IT technologies are used in the evaluation of patient registration, continued treatment and compliance with standard guidelines.
- Provide registered patients with 'health points' based on their effort to manage health (regular treatment, continued medication, attendance to training, examination of complications, etc.). Accumulated points can be used to receive free examination of complications or medical services.

Undertaking health promotion programs relevant to each life cycle using private and public medical resources is another important task for the development of public health care. For example, supplemental nutrition program for pregnant women, infants and children or immunization program for children aged 12 or below that are currently subsidized by the government can create bigger synergy with clear segregation of roles and collaboration between public (public health centers) health providers and private medical institutions. Other programs that mainly target middle-aged and senior

people for management of chronic diseases or cardiovascular diseases can also be discussed as areas where effective segregation of roles and responsibilities between public and private health care providers can lead to higher survival rate, improved quality of life for patients, relieved burden on the part of family members and more effective hospice service.

[Figure 16] Effective collaboration between private and public medical resources (National immunization program)



4) Advancement of emergency medical services

Emergency medical service is an insurance for the survival of citizens. Aging population and growing number of chronic diseases are projected to cause demand for emergency medical service to

skyrocket. Death rates from cerebrovascular disease, cardiac disorder, suicide and other cases directly related to emergency care are on the increasing trend. In the case of ischaemic heart disease, number of deaths per 100,000 population has doubled from 13.3 persons in 1993 to 24.6 persons in 2003. Accelerating industrialization is expected to increase frequency of various kinds of accidents including traffic accidents and fall accidents. If deaths from these emergency care-related diseases are reduced by 10 percent each year, up to 780 billion won can be saved a year.

〈Table 25〉 Social cost-saving effect from reduced death rate from 3 major emergency diseases

Disease Name	Number of Deaths (2003)	Total Loss per Person (in thousand won)	Social cost-saving effect with 10 percent less death rate (in million won)
Injury	15,106	319,660	482,878
Cerebrovascular	21,740	97,024	210,930
Cardiovascular	9,742	85,709	83,498
Total	48,591		777,306

Source: National Emergency Medical Center, Expected Economic Benefits from Reduced Deaths from Emergency Diseases, 2003

The framework for emergency medical service system was prepared in 1995 when 'Act on Emergency Medical Service' was enforced after 'Plan for Establishing Medical Emergency Medical Service System' had been drawn up. Also, emergency care fund was set up under Article 20 of the law to build necessary emergency care infrastructure and ensure proper emergency medical services. The quality of emergency medical services in Korea, however, doesn't seem good enough to satisfy citizens' growing desire for a better quality of life by citizens. Among other things, low profit structure of emergency

medical services (cost maintenance ratio at 68.8 percent, Seoul National University, 2004) makes it difficult to run emergency rooms efficiently. As a result, small hospitals are intent on opening emergency rooms 24 hours a day and large hospitals misuse emergency rooms as beds for patients waiting for hospitalization. Among hospitals that run emergency rooms, few are capable of using the facility for 24-hour treatment for emergency patients. Only 18 to 24 percent of emergency medical service centers scattered across the nation can provide 24-hour emergency medical service for seriously ill patients, resulting in some extreme instances where emergency patients end up dying trying to find a hospital that provides emergency medical services at night time and during holidays also. The quality of emergency medical services varies across cities and between urban and rural areas: emergency medical services are out of reach for those living in rural areas, islands or remote places. Emergency medical resources are problematic also, with only 70 percent of emergency medical staff educated in emergency medicine. Poor working conditions, frequent night duty and relatively lower pay compared to other departments make emergency medicine less appealing to students. 119 emergency service still remains a 'dead zone' of medical services. While 119 emergency crews are strong in rescue work, they don't have sufficient medical expertise required during the first 30 minutes, which is considered as critical time that often determines survival and degree of aftereffects.

〈Table 26〉 Major indicators for each stage of emergency

Stage	Indicator	Result	Year	Remark
Overall	○ Preventable death rate from traumatic injuries ○ Satisfaction with use of emergency medical service	32.6% 38.8%	’07 ’08	State of Montana, U.S. 15% (2003) surveyed on 3,000 adults
Site	○ Adults capable of executing CPR ○ Use of ambulances by seriously ill patients	11.7% 48.2%	’08 ’07	
Transport	○ Arrival at site by 119 ambulance within 5 minutes ○ Average time taken to arrive at emergency room ○ Proper execution of emergency care ○ Improper first hospital choice by 119	57.1% 177.9 min. 0~37% 73.3%	’06 ’07 ’05 ’07	Patients who used 119 ambulance
Hospital	○ Average time seriously ill patients stayed at emergency rooms ○ Proper execution of reperfusion	6.0 hrs 55.3%	’07 ’07	2005 guideline of American Heart Association
Transfer to another hospital	○ Improper hospital transfer ○ Re-transfer by transferred patients	75.5% 6.7%	’07 ’06	

Note: Seriously ill patients refer to patients with 3 major emergency diseases (cerebral apoplexy, myocardial infarction and serious traumatic injury).

Therefore, it is urgently needed to develop a program to improve the quality of emergency medical services during 'site' and 'transport' stages, improve emergency care procedures and environment in emergency rooms and establish emergency care schemes suitable for each region for serious emergency diseases. In addition, citizens need to be educated as to how to deal with emergency situations for 5 minutes before the arrival of ambulances, and ambulance and transport service providers need to be managed effectively with proper institutional guideline and effective segregation of roles so that emergency medical services better serve the public as a social safety net.

5) Effective supply of organs and blood

While demand for organ transplants grows every year due to aging population and increase in chronic diseases, supply is not enough. Despite growing number of patients on the waiting list and waiting time, there are few programs that induce organ transplant medical institutions to find brain-dead people. Moreover, institutions engaged in organ transplants do not make enough efforts to identify organs, let alone lack of social consensus about organ donation and respect for organ donors compared to developed countries.

〈Table 27〉 Organ donation and transplant trend

(Unit: person, case)

	2000	2001	2002	2003	2004	2005	2006	2007
Number of patients on waiting list	5,723	7,399	9,016	10,418	11,477	13,120	14,947	15,898
Number of organ transplants	1,306	1,785	1,744	1,882	2,076	2,086	2,346	2,361
Number of organ transplants from brain deaths (Number of brain death donors)	233 (52)	216 (52)	167 (36)	285 (68)	363 (86)	400 (91)	598 (141)	675 (148)

Against this backdrop, the government amended 'Enforcement Regulation on Organ Transplant Act' in September 2008 to ease criteria for designating agencies that manage brain-dead people and allow for shared use of medical facility, equipment and human resources specialized in leukocyte antigen test. Going forward, more efforts will be needed to undertake programs to obtain organs, expand transplant donor network and improve public perception through publicity activities.

As for blood, system is not in place to effectively manage infection from blood transfusion by new pathogens as well as chronic shortage of blood caused by aging population. It is time to carefully discuss expansion of blood-related infrastructure such as increasing number of blood centers similar to those in the developed countries and expanding registered blood donor base while pursuing professional blood programs. To supply enough amount of safe blood, setting up an organization with leadership and expertise can be considered.

D. Development of health care industry

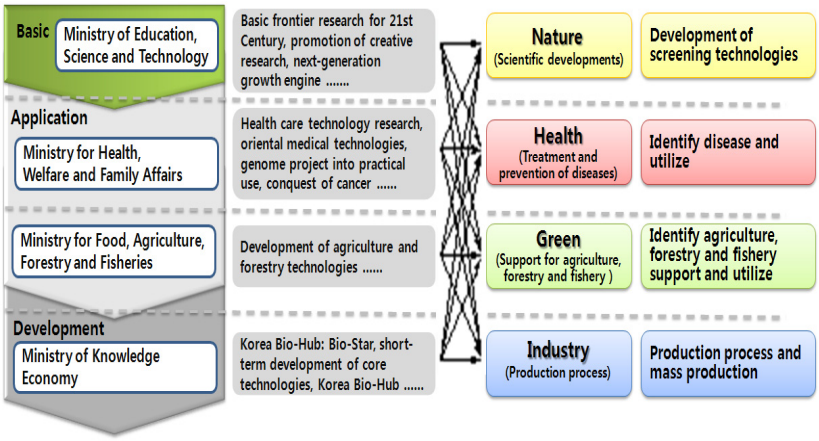
1) Proposed direction for health care R&D

There is increasing need for increased R&D in the health care industry related to products and services for better health, improved quality of life and sustainable development. Health care industry, combined with IT and NT, is already considered as a future growth engine in many developed countries where investment in high value-added health care products and services is growing. Although investment in health care R&D is increasing every year in Korea, its overall scale doesn't seem enough. For example, the share of health care R&D spending in total R&D spending is significantly low at 8.4 percent, compared with 22.7 percent in the U.S., 18.9 percent in the U.K. and 12.6 percent in Japan. Per capita R&D investment of $10 in Korea is merely one-thirteenth of $129 in the U.S. In reality, combined health care R&D investment in Korea is smaller than research spending by one company of the developed countries. The Ministry for Health, Welfare and Family Affairs is responsible for

21.6 percent of all health care R&D budget, which is significantly low compared with developed countries. The fact that R&D activities are mainly financed by funds is another barrier to investment as stable and consistent financing is not easy.

Therefore, it is necessary to expand the overall R&D size and secure stable sources of financing to foster the health care industry as a future growth engine. Among other things, health care R&D budget, currently appropriated from Health Promotion Fund, needs to be financed by general taxation, and it is desirable for the Ministry for Health, Welfare and Family Affairs to lead coordination and execution of health care R&D budget. Currently, several government departments are involved in coordination and execution of health care R&D activities. Focus of medium and long-term direction regarding investment in health care R&D needs to be placed on areas that can produce economic value and advanced technologies. Research functions of hospitals should be strengthened so as for medical science to contribute to improved health care, and creative application fields should be identified and practical health care technology know-how should be built to generate success cases in the near term. The ultimate and longer-term goal should be aimed at fostering the health care industry as a future growth engine for the nation, capable of leading changes in the overall industry structure and generating national wealth.

[Figure 17] Proposed coordination and administration of health care R&D



2) Development of drugs and medical devices industry

The bio-industry is increasingly gaining attention as a next-generation growth engine and a solution to aging society. Developed countries are keen on expanding investments and developing related markets. Global drug market grew 6.4 percent year-on-year to $712 billion in 2007 while medical device market is projected to grow at an annual average rate of 4.5 percent from $149.5 billion in 2004 to $186.8 billion in 2010. Demand for drugs and medical devices is expected to increase rapidly with aging population and increase in chronic diseases in Korea and globally.

However, Korea's health care industry faces many problems. Share of domestic drug market in the global market is a mere 1.2 percent and revenues of major domestic companies remain at 1 to 8 percent of that of global pharmaceutical firms. Furthermore, the level of core technologies in Korean drug industry stands at 64.3 percent of that of the developed world, or 4.1 years of technology gaps. R&D

resources, logistics infrastructure and share of investment in R&D all stay behind developed countries at 54.9 percent, 53.9 percent and 4 to 5 percent, respectively. The same is true for the medical devices sector. The production output of medical devices in Korea has increased by 14.4 percent year-on-year to 1 trillion and 949.1 billion won in 2006. Although the annual average growth rate from 2001 to 2006 is relatively high at 10.3 percent, Korea's health care industry leaves something to be desired in terms of technology and competitiveness when compared to developed countries.

〈Table 28〉 Annual growth of global drug market

(Unit: $ billion)

Year	2000	2001	2002	2003	2004	2005	2006	2007
Global market	365	392	428	499	560	605	649	712
YoY growth (%)	11.5	11.8	9.5	10.3	8.0	7.3	7.1	6.4

Although there are gaps between Korea and developed countries in the areas of drugs and medical devices, there are other areas where, if developed intensively, significant achievements are expected. For example, Korea is as competitive as the developed world in the fields of stem cells, vaccines, anti-cancer medicines, fermentation, genetic rearrangement and cell fusion. Prospect for the electronic medical devices market that accounts for 50 percent of the entire medical devices industry is particularly promising if Korea's competitive IT technologies are properly leveraged in this area. This will provide additional market opportunities in a variety of fields from medical devices for hospital use and portable home medical devices to silver medical devices, rehabilitation medical devices and

oriental medical devices.

FTA agreements that are concurrently progressing with the U.S., ASEAN, EU and other countries are expected to accelerate opening of domestic health care market. Accordingly, it becomes imperative to foster globally competitive companies by addressing shortcomings of domestic health care industry which has focused on domestic demand, strengthening global competitiveness, identifying niche markets and improving national ability to respond to increasingly specializing global market. With people increasingly concerned about safety, proper management of drugs and medical devices is also very important. Safety particularly matters and requires continued attention because it is directly related to perception about Korea, its global competitiveness and future development of the health care industry as a whole.

Industrial infrastructure must be improved to support proper development of new drugs and medical devices. To this end, research for the development of innovative new drugs, Super-Generic and bio-medicines must be supported. In the advanced medical devices field, support for research for the development of new technologies, development of senior-friendly rehabilitative devices, development of strategic medium and low-class medical devices must be increased. Through development of global companies and extensive support for export of drugs and medical devices, 8.5 percent annual average growth rate for drugs and 11.5 percent annual average growth rate for medical devices by 2010 in export should be targeted, and based on this target, the target export growth rate of the entire health care industry should be upwardly set to 6.40 percent a year.

〈Table 29〉 Export of health care industry and targets

(Unit: $ thousand, %)

Target Export Amount	2004	2005	2006	2007	2008	2009	2010	Annual Growth Rate
Drugs	778,462	844,653	916,472	994,397	1,078,949	1,170,689	1,270,230	8.50
Medical devices	569,635	634,996	707,857	789,079	879,619	980,549	1,093,060	11.47
Industry total	253,844,672	270,090,731	287,376,538	305,768,636	325,337,829	346,159,450	368,313,655	6.40

As part of efforts to support new drug development, increasing the number of regional clinical test centers (currently 12 centers in 2008) to 15 in phases can be considered, which will have to come with a clinical test agency to gain synergy from collaboration among centers. In doing this, a clinical test technology center and clinical test manpower development center need to be set up to provide technologies and professional resources necessary for new drug development. As for medical devices, related infrastructure and institutional mechanisms such as clinical test facilities, human resources and training programs are not sufficiently in place, 'infrastructure plan for supporting clinical test on medical devices' needs to be developed first.

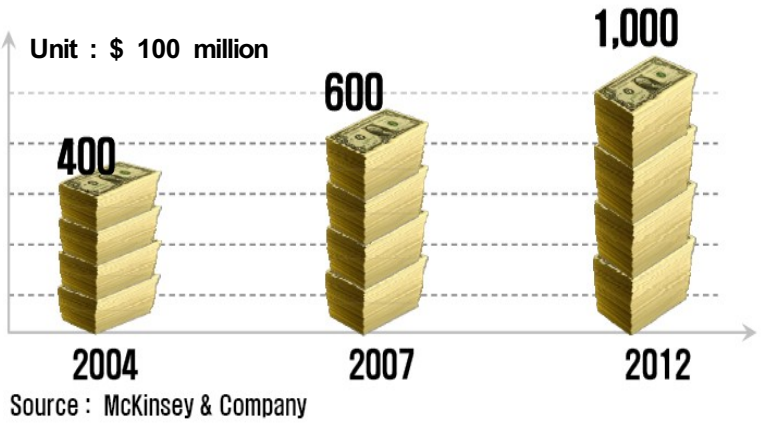
As mentioned earlier, safety and proper use of drugs and medical devices is critical. In order to build a systematic drug quality management scheme, current GMP management by drug form can be changed to management by item and execution of validation, one of GMP requirements in the developed world, can be made mandatory. At the same time, drug utilization review can be conducted to promote proper use of drugs. For medical devices, the global medical device collaboration task force team created in 2007 needs to perform the task of further classifying medical devices into 2,000 item groups,

along with other efforts to adjust grades of medical devices based on potential damage to the human body and use purposes. Additionally, risk management, sterilization validation, software validation and other quality control measures need to be added to the GMP program in operation since 1997.

3) Attraction of foreign patients

Use of medical services beyond borders is rapidly increasing. Globally, medical tourism industry is projected to grow from $40 billion in 2004 to $100 billion in 2012, and the number of medical tourists is also projected to grow from 19 million people in 2005 to 40 million people in 2010.

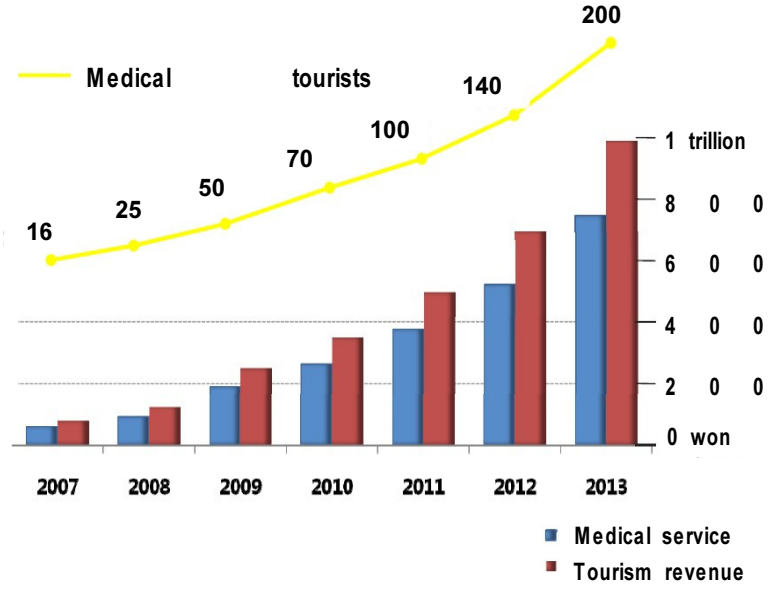
[Figure 18] Global medical tourism market



Health care service of Korea has grown to 76 percent level of the U.S. and 85 percent level of Japan, and certain fields such as stomach cancer, cosmetic treatment and plastic surgeries are known to

have already reached a level close to the developed world. Despite its price competitiveness, however, overall current account in Korea's health care services is in deficit which has steadily increased to $60 million in 2006 and $71.5 million in 2007. Against this backdrop, the government is seeking to develop medical tourism industry through programs aimed at attracting foreign patients. For instance, the government amended the Medical Services Act in May 2009 to allow solicitation and referral of foreign patients by registered medical institutions. The government set a goal of attracting 200,000 patients by 2013 through these programs.

[Figure 19] Target number of foreign patients to be attracted



Deregulation and system improvement is needed to meet the target and to use the result of the programs as an opportunity to boost

national competitiveness and further develop medical technologies. With the amendment to the Medical Services Act, it can be said that Korea has taken the first step toward regulation improvement. To gain trust in health care services, it is now necessary to introduce national accreditation system to evaluate medical institutions, pursue global certification regarding evaluation criteria and evaluation organizations and establish a mechanism for prevention of disputes arising from medical malpractices. To support effective attraction of foreign patients and their family members, effective delivery of medical services and provision of tours, proper infrastructure including human resources (medical coordinators and international hospital marketing specialists), service delivery scheme (call center for medical tours, monitoring) and medical service institutions and facilities (medical tourism cluster, free economic zone) should be in place. Individual medical institutions, travel agencies and the government should carry out marketing activities, part of which can be establishment of global network for publicity purpose, support for entry into foreign markets by domestic medical institutions or offshore training by medical professionals.

4) u-Healthcare

u-Health services leverage IT technologies to provide remote medical care and health management services anytime and anywhere. u-Health offers prevention, early diagnosis and health management services and contributes to improved quality, cost and delivery of medical services. Not only access to health care and convenience is improved, but medical inequality felt by medically vulnerable people

can get resolved also. As a future growth engine, u-Health service industry is well positioned to create high value, when developed in connection with both upstream and downstream sectors. Because of this potential, developed countries and global corporations are keen on expanding investment in this sector. Related sectors and businesses that are likely to grow in tandem with u-Health include medical services, medical devices, IT, u-City construction and home network. As u-Health is a new way of delivering health care services, its safety and economic benefits are under heavy discussions. Pilot programs in various forms must be undertaken to validate its effectiveness and raise acceptance in the society, and related government departments must collaborate with each other with clearly defined roles to achieve desired outcome of investment.

〈Table 30〉 u-Healthcare services

Service	Description
Remote health monitoring for patients with chronic diseases	· Nurse measures bio-information of a patient with chronic disease (e.g., diabetes, hypertension) using remote health measuring device and transmits the information · Based on the bio-information and medial history of the patient, doctor prescribes proper exercise, diet, etc. from a distance
Remote medical service for people living on islands and rural areas	· Install remote medical office in public health facilities such as health sub-centers, primary health care units and town halls · Provide medical service by remote doctor through telemedicine (deliver drugs if necessary)

To raise a vital u-Health industry, following efforts are needed:

First, laws and systems to validate the safety and economic benefits of u-Health should be in place. Expansion of remote medical service scope, development of medical charges and development of

safety standards should be carefully reviewed. To this end, it is important to undertake various pilot projects for validation and acceptance in the society.

Second, professionals capable in both IT and medical services should be raised to provide u-Health services. For instance, curriculum consisting of medical science, medical engineering, IT and biotechnology can be introduced at medical schools. Standardization and accreditation system should be in place to boost domestic demand. u-Health can be first implemented at public health care facilities and for people living on islands and remote areas where access to health services is poor. Once sufficient operation experience and competitiveness is gained, it can be utilized in boosting marketing for export of related products and attracting foreign patients so that u-Health can lead to better access to health care services and national wealth.