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2014 Modularization of Korea's Development Experience:

The Empirical Review of National Health Insurance in Korea

2014

MINISTRY OF HEALTH & WELFARE

h·well National Health Insurance Corporation

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The Empirical Review of National Health Insurance in Korea

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Preface

The study of Korea's economic and social transformation offers a unique window of opportunity to better understand the factors that drive development. Within about one generation, Korea transformed itself from an aid-recipient basket-case to a donor country with fast-paced, sustained economic growth. What makes Korea's experience even more remarkable is that the fruits of Korea's rapid growth were relatively widely shared.

In 2004, the Korean Ministry of Strategy and Finance (MOSF) and the Korea Development Institute (KDI) launched the Knowledge Sharing Program (KSP) to assist partner countries in the developing world by sharing Korea's development experience. To provide a rigorous foundation for the knowledge exchange engagements, the KDI School has accumulated case studies through the KSP Modularization Program since 2010. During the first four years, the Modularization Program has amassed 119 case studies, carefully documenting noteworthy innovations in policy and implementation in a wide range of areas including economic policy, admistration·ICT, agricultural policy, health and medicine, industrial development, human resources, land development, and environment.Individually, the case studies convey practical knowhow and insights in an easily accessible format; collectively, they illustrate how Korea was able to kick-start and sustain economic growth for shared prosperity.

Building on the success during the past four years, we are pleased to present an additional installment of 19 new case studies completed through the 2014 Modularization Program. As an economy develops, new challenges arise. Technological innovations create a wealth of new opportunities and risks. Environmental degradation and climate change pose serious threats to the global economy, especially to the citizens of the countries most vulnerable to the impacts of climate change. The new case studies continue the tradition in the Modularization Program by illustrating how different agents in the Korean society including the government, the corporations, and the civil society organizations, worked together to find creative solutions to challenges to shared prosperity. The efforts delineated include overcoming barriers between government agencies; taking advantage of new opportunities opened up through ICT; government investment in infrastructure; creative collaboration between the government and civil society; and painstaking efforts to optimize

management of public programs and their operation. A notable innovation this year is the development of two "teaching cases", optimized for interactive classroom use: Localizing E-Government in Korea and Korea's Volume-based Waste Fee System.

I would like to express my gratitude to all those involved in the project this year. First and foremost, I would like to thank the Ministry of Strategy and Finance for the continued support for the Modularization Program. Heartfelt appreciation is due to the contributing researchers and their institutions for their dedication in research, to the former public officials and senior practitioners for their keen insight and wisdom they so graciously shared as advisors and reviewers, and also to the KSP Executive Committee for their expert oversight over the program. Last but not least, I am thankful to each and every member of the Development Research Team for the sincere efforts to bring the research to successful fruition, and to Professor Taejong Kim for his stewardship.

As always, the views and opinions expressed by the authors in the body of work presented here do not necessarily represent those of the KDI School of Public Policy and Management.

December 2014

Joon-Kyung Kim

President

KDI School of Public Policy and Management

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Summary

The medical insurance system in Korea was established in 1963, with the passage of the Medical Insurance Act. However, the socio-economic base in Korea at the time was not mature enough for the implementation of a compulsory medical insurance system. Therefore, the country had a voluntary medical insurance system for more than ten years before the adoption of a compulsory system. By the time the compulsory medical insurance system was introduced, the GDP per capita was only about 1,000 USD. However, because of a strong national political will, the South Korean national government implemented compulsory medical insurance and realized Universal Health Coverage (UHC) within only 12 years. Today, the medical insurance system in Korea has been recognized as an exemplary model in the international community with regard to medical service accessibility and cost-effectiveness. The Republic of South Korea has implemented medical insurance-related political cooperation and support treaties with other countries on the basis of that recognition. Therefore, in the following of the report 'The Operation of Nationwide Health Insurance and its Implication (KIHASA, 2011)', the author touches on the principles of executive operational management, coordination, and cooperation with insurers, in order to provide substantive support for countries that may be planning to introduce a compulsory medical insurance system or to implement universal health coverage.

This report consists of 5 chapters. The first chapter gives a general description of the legal nature and the functions of a medical insurance operational organization (an insurer), and the transition process of the organization to a compulsory system. The second chapter concentrates on the management of eligibility, and the calculation methods of contributions. The third chapter looks closer into the estimation of medical insurance finance and its trends, solutions to financial crisis, and to the efforts to collect sufficient premium contributions for

the financial stability of the system. The fourth chapter explores types of insurance benefits, coverage-expansion policies, and medical resources and environment. This is followed by management methods for the determination process of medical insurance fees and pharmaceutical prices, as well as a discussion of the impact and management of fraudulent and wrongful claims. Lastly, the fifth chapter makes the case for data utilization in medical insurance administration and systematic management for practical application, and explains the current information management system of National Health Insurance Service (NHIS).

Medical insurers in Korea were initially organized and managed by non-governmental public organizations called Medical Insurance Cooperatives (MICs). This multi-insure system has given way to a single insurer system that is managed by NHIS. Smaller organizations like MICs were the most optimal groups for the initial expansion of medical insurance. They could manage voluntarily within their own constituencies, and enable the minimization of the political pressure and the amount of government subsidy requirement. NHIS was eventually launched in order to resolve the financial disparity between cooperatives and to provide consistency in the treatment of insureds under the UHC system.

In 1963, the voluntary medical insurance system enabled by the passage of the Medical Insurance Act could not be stabilized due to the immature environment. Factors such as a lack of skilled staff to manage organizations, adverse selection caused by the voluntary entry system, and passive participation of medical institutions all contributed to the system's ineffectiveness. Over time, the system evolved to include the compulsory participation of companies with more than 500 employees. Unlike other countries that were attempting to implement a national health insurance system, Korea had the advantage of a strong commitment to the policy by the National Government and active participation of the private business sector. Utilizing the lessons learned during the voluntary participation phase, the experience gained from subsequent regional projects and from the development of professional organizational management, the country has developed the present dynamic system.

Korea initially implemented the medical insurance system among formal sector workers such as employees and the public officials like other priori countries but the system may be distinguished from that of those countries in the aspect of medical insurance application and expansion progression. Korea implemented regionally based demonstration projects, in parallel with expansion of the workplace eligibility for the medical insurance. In addition to these, government permitted the self-employed working in the same occupational categories to establish the medical insurance cooperatives, with expansion policy of the informal sector eligibility, thereby achieving expansion of the eligibility at a faster rate than the other priori countries.

There are two types of insured management systems: employment-based, and region-based. These disparate systems cause many problems such as the gain and loss of eligibility, and the change of eligibility-type between the employment-based and region-based in multi-insurer system. However, the issues mentioned above had been overcome with systematic eligibility management that uses individually-given ID card numbers and medical insurance cards, as well as the introduction of electronic data processing from an early stage for the optimization of administration processes.

The contribution system for the employment-based insured is simple. The contribution can be computed by multiplying the income and the contribution rate, while the region-based insured contribution calculation method was somewhat complicated. Since the region-based insured are composed of diverse occupational group (self-employed, farmer, fisher, unemployed, and retiree) and their income type cannot be estimated easily, the contribution calculation method, in the early phase of the system implementation, was made by taking the basic contribution, income and properties into account. Later, other factors such as the types of automobile and eligibility to work, as well as age were added. Thus, the current contribution for self-employed insured is calculated based upon the level of income, properties and automobile. Other factors such as gender and age are considered if an individual has no income or income below the standard. It is now being considered to assess the contribution solely based on income because improvements have been made in determining the level of income for self-employed insureds.

In 1977 when compulsory medical insurance began, the expenditure on medical benefits costs was only 5.1 billion KRW, while that expenditure has risen to 40 trillion KRW as of the end of 2013, reflecting the rapid growth of the medical insurance system. However, during 2002 through 2013, the average annual increase in the medical insurance expenditure recorded 9.2%, which is 1.46 times faster than the annual percentage growth rate of GDP, 6.3%, and higher than that of OECD, 3.9%, during the same period. Such a high increase rate of the insurance benefits costs is now threatening the sustainability and safety of the medical insurance system. It is acceptable to say that the increased medical usage and coverage expansion policies caused such expenditure increase, but it is also undeniable that increased medical costs and administrative inefficiencies contribute greatly to the increases. Therefore, it recently has been pointed out that it is necessary to explore additional sources of revenue in order to stabilize the system along with an enactment of new policies to improve and control the payment method of treatment costs.

The fee payment of the medical insurance in Korea has been managed by Fee-For-Service (FFS) from its initial introduction. Although Diagnosis-Related-Group (DRG) and Payment-Per-Diem has been subsequently implemented as supplementary, the FFS serves as the main method of payment for treatment costs. FFS accounts for 93.7% of fee payments while the DRG and Payment-Per-Diem account for 1.7% and 4.7% respectively. Currently, the FFS based on the Resource Based Relative Value Scale is implemented.

In 1977, at the time of compulsory medical insurance implementation, the number of the benefits items regarding medical services was only 763 but that number has expanded to 7,487 as a result of the introduction of new medical service technologies, and benefits expansion policies. Coverage under plans is presumed unless a procedure or service is specifically excluded or limited.

The pharmaceutical price determination system has progressed in isolation of the medical insurance cost system. Initially under the prescription drug system, benefits for pharmaceuticals included all pharmaceuticals as eligible for the medical insurance unless specifically excluded; a so called negative system. Since 2007 however, prescription drug coverage has been limited to pharmaceuticals products that show a high level of cost effectiveness and are therefore listed under the coverage. The pharmaceutical price was decided through a process of price negotiation between the insurer and the supplier, followed by the notification of the negotiation result by the Minister of Health and Welfare.

The level of coverage for the medical insurance is affected by the principle of insurance benefits and the budget of the insurance finance. The determinant factors for the level of coverage include the cost of co-payment in accordance with the range that applies to the insurance benefits and the use of medical service. In order for the settlement of the medical insurance, the Korean government initially started with a policy of low contribution and low benefits, and then gradually expanded the coverage. In other words, during the early phase of the medical insurance, the government had maintained the financial balance with a high rate of co-payment, and the limited benefits coverage and number of benefits coverage days. Following the implementation of the Medical Insurance Act of 1963, benefits were limited to the medical security-oriented items as follows: the medical examination, medicines and treatment materials, treatment services such as medical actions and operations, in-patient care, nursing and transportation services. However, from July 2000, along with the organization integration, NHIS attempted to make a change of paradigm in the system through the expansion of insurance benefits to include not only benefits for the treatment of illness but also the more inclusive services such as disease prevention, health promotion and maintenance, and protection of household finance from excessive medical expenses.

The information system of NHIS has developed along with the medical insurance system in Korea. However, the technology and environment for data processing today has exponentially changed compared to the past when the system was firstly constructed and thus, based on the idea of regarding the operational experience on data processing in the past as insignificant, this report has focused on the recent status of the medical insurance system in Korea. NHIS is not only performing the data collection on its own but also has built a network for the data link with 36 external agencies such as National Tax Service etc., on 211 different types of data. An enormous amount of data that NHIS possess is utilized in the medical insurance administration, as well as in construction of Data Warehouse (DW) for the calculation and analysis of statistics. Moreover, on the basis of the DW, a separate management system is also operated for the medical insurance policy decision-making and organization operation. The most representative case would be Executive Information System (EIS), a decision support system that provides significant information in right time for the executives to make an active and strategic policy-making. Another example would be 'Big Data Analysis System', which has been devised for the provision of disease prevention and lifetime tailored healthcare service for the lifecycle of individuals. Subsequently, for the purpose of detection and prevention of fraud and wrongful claims, the Fraud Detection System (FDS), a system used for private insurance companies and credit card companies, has been adopted in NHIS with some modifications. This system is called the National Health Insurance Benefits Management System (NHI-BMS). NHIS strives to provide a user friendly information system that is also secured again data breach and identity theft.

In summary, as political, economic, social and cultural environments change and evolve, the medical insurance system in Korea is also dynamic. This report explores the experiences of insurers such as overcoming challenges along with the historical transition of medical insurance. Korea is now entering into an aged society with super low birth rates. With a reduction of the working-age population, the population segment that actually pays for the system, a steep increase in medical costs for elderly now threatens the sustainability of the medical insurance system. Currently, the government and NHIS, the insurer, are putting constant exertions into the medical insurance system in order to overcome the current issues that have hitherto been mentioned and achieve an insurance coverage at a level of OECD-standard.

Chapter 1

Organization of Management and Operation of Medical Insurance in Korea

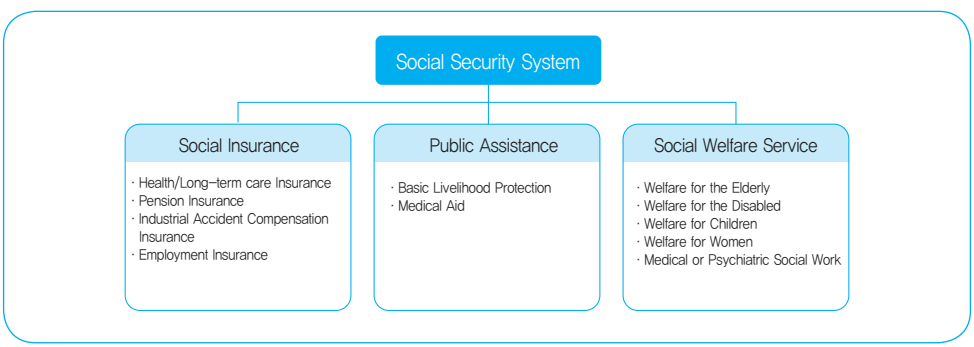
Organization of Management and Operation of Medical Insurance in Korea

1. Health Security System and Operational Organization

1.1. Health Security System

Article 34, Clause 2 of the Constitution of Republic of Korea stipulates "The State shall have the duty to endeavor to promote social security and welfare". Accordingly, Korean government has taken the role of democratically accountable stewards for the people's wellbeing and the Korean government establishes the social security system as seen in [Figure 1-1] including social insurance, public assistance and social welfare service, in order to protect citizens from the social risks pertaining to birth, nurture, unemployment, aging, disability, disease, poverty and other risks, and promote the quality of life of citizens with income and services.

Figure 1-1 | Social Security System in Korea



Source: NHIS (2014).

The social insurance provides protection against various social risks such as illness, loss of income due to sickness, old age, or unemployment and in which participation is compulsory, while the public assistance is a kind of public aid program by the central or local government in order to assure the minimum standard of living and support self-reliance for citizens who have no ability to sustain their lives or are in economic hardship. The social welfare service is a system addressed to all citizens who need help in welfare, health and medical treatment, education, employment, housing, culture, and environment, so that the living worthy of human dignity can be secured. Meanwhile, the actual support is provided in a way of consultation, rehabilitation, caring, information dissemination, use of related facilities, competency development, and social inclusion, so that improvements in the quality of life of all citizens can be achieved.

Within the social security system, illnesses and injuries have been dealt with the medical aid and the health insurance system (hereinafter medical insurance system).[1] Prior to the medical insurance, the Medical Aid scheme had been implemented for the low-income group and persons of national merit since 1969. The medical insurance started with Medical Insurance Act when firstly enacted in 1963, where the system began to apply as voluntary entry system, and later it changed to apply as a compulsory entry system for workers in work places with 500 or more employees in 1977, which then expanded to agricultural and fisheries regions in 1988, and urban areas in 1989, achieving Universal Health Coverage (UHC) for the entire nation. As of 2013, the persons who are eligible for medical insurance amount to total 49.989 million people. That number constitutes 97.1% of the total population, and persons eligible for medical aid amount to total 1.459 million, 2.9% of the total population. The following bullet points show the historical origins and legislative development of the health security system in Korea:

- 1961. 12 Legislation of 「National Assistance Act」
- 1963. 11 Legislation of 「Act on Social Security」
- 1963. 12 「Medical Insurance Act」 enacted permitting voluntary medical insurance
- 1969. 11 Enforcement ordinance of 「National Assistance Act」 beginning medical aid for the poor
- 1976. 12 2nd Amendment of 「Medical Insurance Act」 as a compulsory entry system

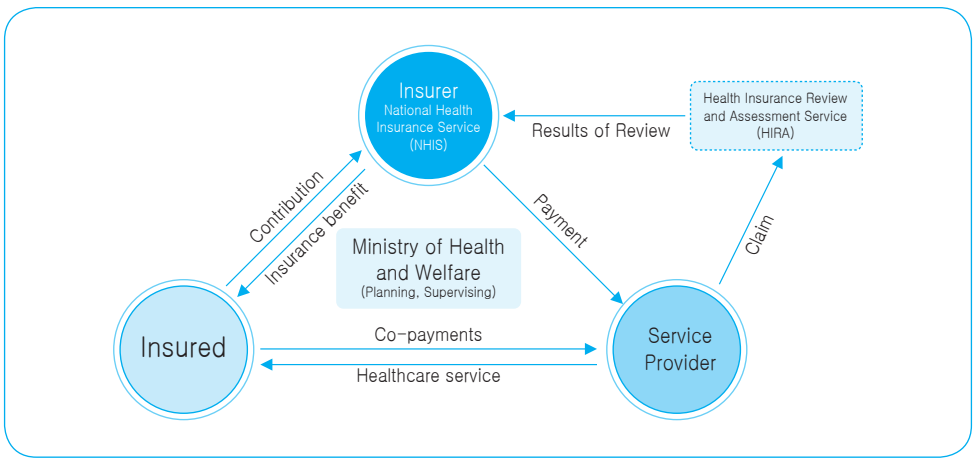
1. 'Medical insurance' is a term that has been used for the concept that the scope of the guarantee is limited to the treatment and prevention of disease in the early stage of the system. After achieving UHC, the term, 'health insurance', expands not only medical care but also maintaining and improving health from birth to death. This report will use only medical insurance for the convenience of understanding.

- 1977. 1 Implementation of medical aid program based on「National Assistance Act」
- 1977. 7 Introduction of compulsory medical insurance program for companies over 500 employees
- 1977. 12 Legislation of「Medical Insurance for Public Officials and Private School Personnel」and「Medical Aid Act」
- 1979. 1 Implementation of medical insurance program for public officials and private school personnel
- 1981. 4 4th Amendment of「Medical Insurance Act」stipulating compulsory entry requirement for self-employed and local resident
- 1981. 7 Implementation of the demonstration project on regional medical insurance in 3 rural areas
- 1988. 1 Implementation of medical insurance program for the rural area
- 1989. 7 Achievement of UHC by expanding to urban area, Expansion of medical insurance for the work place with 5 employees or more
- 1998.10 Establishment of National Medical Insurance Management Corporation (NMIMC) by the first integration of regional medical insurance cooperatives and Medical Insurance Management Corporation for public officials and private school personnel
- 1999. 2 Legislation of「National Health Insurance Act」providing the single insurer method
- 2000. 7 Integration of entire insurance cooperatives combining NMIMC with employment-based medical insurance cooperatives to NHIS; single insurer
- 2003. 7 Financial Integration of employment-based medical insurance and self–employed medical insurance
- 2008. 7 Implementation of Long-term Care Insurance for Senior Citizens
- 2011. 1 Unification of the collection process of the four major social insurance programs under the NHIS

The current medical insurance operational system in Korea is as shown in [Figure 1-2]. The Ministry of Health and Welfare (hereinafter MOHW) is a Korean government ministry charged with health policy in Korea by managing and supervising the medical insurance system, as a policy decision-maker. NHIS serves as the single insurer, responsible for

the operation of medical insurance system. The Health Insurance Review & Assessment Service (hereinafter HIRA) takes a role of reviewing and assessing insurance benefits, and providing reports of the benefits cost to NHIS. The main feature of Korean medical insurance is; under the provision of National Health Insurance Act, the entire population is entered in the medical insurance as compulsory and all medical institutions in Korea also follow compulsory designation method for the medical insurance. The medical service is provided by medical institutions, a third party, and 94.1% of the medical institutions are managed by private sector.

Figure 1-2 | Operational Structure of the Medical Insurance System



Source: NHIS (2014).

1.2. Operational Organization and Function

The operational organization of medical insurance refers to organizations that perform the role of the insurer. Organization to operate medical insurance in each country may develop into several different types from each other, depending on the way of ensuring healthcare, the philosophy of social welfare, and the historical experience that each country has been through. In particular, the legal nature of the organization is being decided, depending on who takes the operational responsibility of the medical insurance business, and the number of insurers is decided by the eligibility coverage management for medical insurance.

With respect to the operational entity, as seen in <Table 1-1>, some countries show that the government takes the authority and responsibility for the management of medical

insurance, performing as insurer while some other countries show that the government entrusts the role as the main medical insurance operator to the public bodies, including local governments or public corporations, or even to the private sectors. From the point of view of management objectives, there exist two different insurance systems: the single-insurer system and the multi-insurer system; and they are distinguished from each other by the number of insurer operator in a country. The single-insurer system refers to the type that the entire nation is regarded as one management unit and is being managed by one insurer, whereas the multi-insurer system defines the type that a multiple number of insurers exist based on either the type of individuals eligible for the medical insurance or the region. The legal nature and the number of insurers are significant factors since they may represent the current state and the future direction of medical insurance policy in a country. <Table 1-1> shows the various types of insurance management organizations throughout different countries.

Table 1-1 | Management Organization of Medical Insurance by Country

Number of Insurer / Management Entity	Single Insurer System	Multi-Insurer System
Government	Taiwan, Belgium, Australia	N/A
Local Governments	N/A	Japan (self-employed health insurance)
Public Corporations (Cooperatives etc.)	Current Korea, Ghana	Japan (employment health insurance), Germany, France, Past Korea
Private Agency	UAE (medical insurance for expatriates)	Netherlands

Source: NHIS (2014).

From the early stage of medical insurance, the government of South Korea has hitherto adopted and defined public bodies including medical insurance cooperative and corporation, as insurers rather than placing the medical insurance under the direct management of the government.[2] The Medical Insurance Act was initially enacted in December 1963 and this

2. Legal nature of cooperative and corporation, governing bodies of insurance in South Korea, has the characteristic of a non-profit public organization established by special laws and performing the task of medical insurance business which is entrusted by the government. According to this, the insurer is not able to pursue profit and operate the insurance business in accordance with the principle of the balanced budget. Furthermore, the insurer should perform the function under the purposes of the establishment and the survival is determined by the government.

defines medical insurance cooperative (hereinafter cooperatives) as the insurer. Considering the economic level[3] of that time in Korea, since it was not possible for the government to provide health care to all citizens, and most private companies could not afford the contribution towards social insurance, the government started the medical insurance in a form of voluntary entry system. In this structure, the cooperative self-regulating body was adopted as the insurer. At the time of the introduction of compulsory entry of medical insurance in 1976, Ministry of Health and Social Affairs (hereinafter MHSA) decided the policy direction[4] to introduce the system of management and operation in a cooperative way. The reason for that is that, MHSA thought that the cooperative method was the best system of management and operation for achieving UHC. Moreover, MHSA focused on a case in Japan that showed medical insurance led by government might cause financial strain unlike medical insurance led by a cooperative.[5] During and after 1988, while medical insurance started to expand the coverage to the agricultural and fisheries regions, there still was a conflict about which type of organization was proper to operate and manage to medical insurance. But the policy stance that the cooperative-form organization can minimize the burden of government finance and develop the scheme through the democratic and autonomous operation was maintained notwithstanding different views. In 1979, however, a separate corporation[6] for the public officials (including professional military officers) and employees in private school was established named as Medical Insurance Management Corporation for the Public Officials and Private School Personnel (hereinafter KMIC), and defined as an insurer. That is why the welfare issues of the public officials and military officers has put greater emphasis on the responsibility and administrative efficiency of government, and why government subsidies are essential.

3. At that time, South Korea had suffered from aftereffects of the Korean War, which lasted three years due to the invasion from the North in 1950. Social turmoil continued and the economic level belonged to the poorest countries internationally, recording $80 of GDP per capita as an agricultural country.
4. The then Minister of Health and Social Affairs Hyun-Hak Shin decided the body type of the insurer as cooperative, which is the in-between format of a state-run organization and private insurance and to incrementally expand the size and scope of the cooperative.
5. Through the inspection of insurance system in Japan in December 1976, government made a decision that cooperative management system can ease the financial burden compare to the state-run management. Medical Insurance system under municipal government such as region-based self-employed medical insurance was rated as a structure that the insured feel less responsibility of financial management and suffers from chronic financial deficits or aggravate financial strain due to political linkage.
6. In case of cooperatives, in principle, the head executive and the steering committee have to be designated through an election by members of the committee and the operational management expenses are intended to be provided by self-supply. However, the chairman of the board for NHIS is appointed by the government, and the operational management expenses are appropriated by government subsidies. This indicates that the corporation is an organization that the responsibility of the government is more emphasized than any other organizations.

An implementation of the medical insurance organization can largely be divided into two types: 1) fundamental functions that are based on the principles of social insurance, and 2) derivative functions that stem from the factors other than the principles of social insurance. The fundamental function refers to management of the eligibility of the insured, management of benefits, imposition and collection of insurance contribution, management of payment of benefits costs, and assessment of contribution. Meanwhile, the derivative function refers to newly assigned task of changed role in organization along with socio-political environmental change. For instance, in 2011, to improve efficiency in social insurance, NHIS took full charge of collection of the four major social insurances. Another case of secondary function is where NHIS puts in a claim for damages against private companies that posed a health threat to the insured.[7]

In case of South Korea, the function had been strengthened to fit the role of the insurer before the organization was integrated into NHIS. However, after going through the time of financial crisis, the function of the insurer was reduced. Compulsory participation and collection of insurance are good examples to show the enhanced function of the insurer. Under the Medical Insurance Act 1963, the logic that compulsory participation is against the principle of freedom of contract was strong, it was therefore voluntary to apply for the insurance and to establish cooperative. However, with the Medical Insurance (the first amendment) Act 1970, voluntary articles changed to mandatory articles and a mandatory levy system was allowed for the arrears of contribution in the Medical insurance (the third amendment) Act 1979.[8] These two mandatory articles were accepted as public welfare as a way of standing up for citizen's rights, not as limiting rights. As a result, an insurer was allowed to investigate workplaces that are reluctant to join the insurance in order to avoid the responsibility of the contribution payment. Moreover, an insurer could confiscate the property of the insured without extra civil proceedings in case of when the insured defaulted contribution adding similar function to tax administration agency. On the contrary, there are cases that weakened the function of the insurer. One case is that when the National Medical Insurance Act was enacted for the organizational integration in 1999, HIRA was

7. In April 2014, NHIS filed a suit against tobacco industries for insurance benefits costs arose from the diseases resulted from smoking of the insured.

8. It was controversial that cooperative collect the arrears of premium according to the case of dispositions on national taxes in arrears. The precedents of the supreme court in this issue is that " ... medical insurance cooperative, as a special public corporation approved by government according to the rules of the constitution and Medical Insurance Act, is given the limited self-enforcement for the collection of insurance premium for the achievement of goal under the condition of government approval." (Precedent of Supreme Court, September 27, 1988. Refer to Sentence 87 DaKa 428: Medical Insurance Society Association, 1995).

established as the separate organization taking charge of function of review & assessment of benefit costs. Another case is that provisions of the temporarily enacted 'Special Act on Sound Finance of National Health Insurance' (January 2002) entrusted the function of determining contribution rate and medical fee schedule, the primary functions of insurer, to 'Health Insurance Policy Deliberative Committee (HIPDC)'. HIPDC is a committee under the authority of the Minister of Health and Welfare to deliberate and determine key issues pertaining to medical insurance, including the criteria for benefits package, treatment benefit costs, the level of insurance contributions for the insured, and more. The HIPDC is composed of a total of 25 members with the Vice-Minister of Health and Welfare serving as the head of the committee, and by 8 representatives of the insured, 8 representatives of the medical and pharmaceutical industry, and 8 representatives of the public interest (Article 4 of the National Health Insurance Act).

To conclude, the present NHIS is charged with conducting only peripheral and simple tasks such as management of eligibility, imposition and collection of contributions, and payment of benefit costs, rather than managing revenues and expenses. Challenged with low fertility rates and an aging society, there are an increasing number of voices advocating for the insurer to take charge of revenue and expenses in a democratic and autonomous way apart from the political pressures. The following <Table 1-2> shows the primary function and main governing body of decisions with regard to medical insurance.

Table 1-2 | Primary Function and Main Body of the Decision (2014)

Function of Insurer	Details	Main Body of the Decision and Functions
Management of the Insured	Acquisition and Loss of Eligibility	NHIS
Insurance Contribution	Determine Insurance Contribution	HIPDC
	Imposition	NHIS
	Collection	NHIS
Payment of Insurance Contribution	Criteria of Treatment Benefits	HIPDC
	Pricing system	HIPDC
	Assessment of Insurance Contribution	HIRA
	Evaluation of Insurance benefits	HIRA
	Payment of insurance benefit costs	NHIS

Source: NHIS (2014).

2. Development of the Scheme and Changes in the Organization

2.1. The Emergence of Medical Insurance and Voluntary Cooperatives

Changes in the medical insurance governing body of Korea are in line with the development process of the medical insurance system. The medical insurance system of Korea is classified according to the four major initiatives: the Medical Insurance Act of 1963, the appearance of employment-based medical insurance which provided for the compulsory entry in 1977, the achievement of UHC in 1989; and the integration in an organization, NHIS, in 2000.

The first modern medical insurance governing body of South Korea was 'Labor Hospital', a private healthcare institution, which operated the medical insurance cooperative method targeting 38,000 labor union members and their immediate families. Based on the empirical evidence, on August 1959, they submitted a report 'recommendation for the introduction of social security in South Korea focusing on medical security'. At the government level, a meeting called 'Research Association for the Introduction of the Medical Insurance System' was formed under the supervision of the bureau of health administration in MHSA and, as a result, the Medical Insurance Act was initially enacted in 1963 through the active researches and achievements on social security. This statute allows workplaces with 300 or more employees to voluntarily establish medical insurance cooperatives. 'Jungang Medical Insurance Cooperative', the first medical insurance governing body (the insurer) according to this law was established in 1965. 'Jungang Medical Insurance Cooperative' was a voluntary cooperative co-founded by seven workplaces and the first medical insurance cooperative for employees (hereinafter, employment-based cooperatives). The medical insurance business commenced with 511 people who agreed to participate among 3,424 employees, but approval was canceled by MHSA after only 7 months due to failure of fiscal management.

Voluntary cooperatives operated independently and autonomously and individual cooperatives were responsible for administration even though they received support all operating expenses and a small part of insurance benefits costs from the government by law. The director of the cooperative, elected by the steering committee according to the articles of association mandated by law took responsibility for the general affairs in the operation of cooperatives. The main facts were determined by voting in the steering

committee. The steering committee consisted of 10~14 people nominated by employers and the insured respectively. They also voted for matters relating to the budget and accounts, the management and disposition of the property, remuneration of employees, collection of insurance contributions and insurance benefits. However, most of the voluntary cooperatives only had been one step forward from the method of medical deduction.[9] Moreover, the cooperatives had an inherent systematic limitation that forced them to cooperate with directly- or indirectly linked hospitals and clinics, as main health care providers, and this made people use the selected medical institutions exclusively, thereby restricting the growth of the system. Apart from the socio-economic situation, the reasons why the voluntary cooperatives could not be stabilized were as follows:

- First of all, it was due to the nature of voluntary establishment and voluntary application method. Adequate financing was impossible because of adverse selection which allowed the insured to sign up for eligibility only when they needed it, as well as a tepid attitude toward insurance contributions made by the insured.
- Secondly, it was due to limited providers. Due to the fact that the medical supply was determined by a mutual agreement or contract between cooperatives and medical institutions, the number of hospitals which the insured could select was limited and determination of medical institutions affected the medical supply because of the weak financial level.
- Thirdly, it was because of lack of skilled human resources for the full operation of the cooperatives. Most of cooperatives were plagued with high staff turnover rates due to the low remuneration and insufficient job training, and they could not reach a level of proficiency that would allow them to effectively consult with the medical supply institutions on medical fee schedule.
- Lastly, the voluntary self-employed cooperatives had greater difficulties getting established than the employment-based voluntary cooperatives with regard to contribution collections. The voluntary self-employed cooperatives incurred significant administrative costs owing to wide jurisdiction, and were troubled with funding resulting from a flat rate contribution system regardless of insured's income level.

9. A deduction for medical expenses refers to a private system that, in order to make provision for diseases and injury, each individual of an organization gathers up a certain amount of money under the principle of mutual aid and receives a benefit from the collected money on the point of medical service use.

In 1970, the government amended the Medical insurance Act of 1963 in order to improve the statute and to promote the medical insurance business in earnest. However, enforcement ordinances and regulations had not been able to be implemented on account of the lack of strong fiscal governance and the backlash from the medical community. Nevertheless, it was meaningful for the First Amendment Act of 1970 to provide the legal basis for voluntary self-employed medical insurance cooperatives. This was significant in relation to the inclusion of a comprehensive policy direction for the medical insurance system of the future. <Table 1-3> compares between the main contents of the medical insurance act of 1963 and the First Amendment Act of 1970. The First Amendment Act of 1970 had several features: 1) it implied the concept of UHC through methods such as compulsory entry for the all employees, public officials and military personnel, and voluntary entry for daily employed worker and the self-employed. 2) This was the only law that defined the government as an insurer taking charge of public officials and the military personnel while the cooperatives would be in charge of the employees and the self-employed. 3) It stipulated that the insurer was able to decide the rate of contribution in contrast to the Medical insurance Act of 1963 that required the minister of MHSA to determine the contribution rate. 4) It allowed for a Central Federation for Medical Insurance Cooperatives, suggesting that the government stick to the cooperative-form of management system.

Table 1-3 | Comparison between Medical Insurance Act 1963 and the First Amendment Act of 1970

Contents	Initial Medical Insurance Act	The First Amendment Act
Insurer	Medical insurance cooperative	The government, medical insurance cooperative
Eligibility	Workplaces with 300 or more employees	The whole nation
Method of Eligibility Implementation	Voluntary entry	· Compulsory entry (employees, public officials, the military personnel) · Voluntary entry (part-time workers, the self-employed)
Contribution Rate	The minister of MHSA determines the contribution within 3~8% of the income	The insurer determines the contribution within 2~8% of the income and it is approved by the minister of MHSA

Contents	Initial Medical Insurance Act	The First Amendment Act
Share of Contribution	Employer and Employee	- Employers and Employees in the companies - Public officials, The military personnel, the central or local governments in government organization - The self-employed in the informal sector
Benefits Package	medical benefits, funeral benefits, delivery payment	Identical to the left
Benefits in Kind	treatment, Provision of treatment material and drug material, surgery, accommodation, nursing, transport	Identical to the left
Period of Benefits	Within 6 months	Identical to the left
Review of Benefits Cost	Insurer (unspecified)	Identical to the left
Decision of Fee Schedule	Agreement between the insurer and medical institution	Identical to the left
Provider (healthcare institution)	Medical institutions by medical law	Identical to the left
Method for Designation of Healthcare Institution	Designation by the minister of MHSA according to the application of the insurer	Identical to the left
Government Subsidy	- All amounts of operating expenses -10% of whole benefits expense	Identical to the left

Source: Medical Insurance Association, the history trajectory of medical insurance (1997).

12 voluntary cooperatives, that had maintained the medical insurance system from the Medical insurance Act of 1963 to implementation of compulsory medical insurance system, were operated. There were 8 voluntary cooperatives for the self-employed and 4 voluntary cooperatives for the employee. The necessity for the introduction of compulsory entry system had come up since the population covered by medical insurance was 0.45% of the total population even though including the voluntary cooperatives that did not receive the approval from the government. When considering the voluntary cooperatives established by law, the population covered by medical insurance was only 0.19% of the total population. Voluntary cooperatives had barely kept themselves in existence even after the implementation of the compulsory entry system to employees and they completely disappeared from the society along with the introduction of regional based medical insurance.

2.2. Implementation of Medical Insurance and Obligatory Cooperatives

There have been many changes in the structure of national life and environment due to the acceleration of industrialization. National income per capita increased about 10 times from the early 1960s through the 3rd economic development five-year plan,[10] which was completed in 1976. However, the proportion of low-wage workers and low-income households remained the same as before so that aggressive social welfare policies were necessary. Because of the antagonism between North and South Korea,[11] publicity about free medical care in North Korea led the government to approach the medical security system from the perspective of national security. Nevertheless MHSA and Economic Ministries had a different view point on medical aid policy. Economic ministries worried that the medical insurance system could place a burden on the national economy. Accordingly, they showed interest in a government-led model, a limited liability model and a version of U.S. Medicaid, which focused on medical aid to low-income households. Meanwhile, MHSA continued to insist on a medical insurance system that targeted all the people. It was the Federation of Korean Industries (hereinafter FKI)[12] that had a significant impact on promoting both systems in parallel. The FKI judged that it was necessary to develop the medical expense deduction business, implemented by each company individually or partially, into a social security system and that it should intervene actively as a party to the medical insurance business. Therefore, FKI actively supported the introduction of the medical insurance system to the government. As a result, medical insurance commenced on January 1, 1977 and soon after, compulsory medical insurance came into effect as of July 1, 1977.

10. 5 year economic development plan of Korea was carried out seven times. It became the basis for the economic development and progress from 1962 to 1997 focusing on planned economic policies, management of public goods, national land development and financial policy. During the third period of 5 year economic development (1972~1976), it aimed the development of heavy and chemical industries and modernization of rural area. In spite of the global recession due to the oil crisis in 1973, Korea recorded more than 10% of average economic growth so that GDP per capita in 1976 was $ 831.
11. In 1945, South Korea was released from the colonial times of Japan and was divided into North and South by the United States and the Soviet Union. In 1950, the Korean War was caused by illegal invasion of North Korea, and North and South Korea have been confronted up to now from the armistice in 1953.
12. It was established in 1961 as a private comprehensive economic organization, which is composed of typical large-scale corporation members and organizations representing various industries such as manufacturing, trade, finance, and construction.

At that time, the government determined to insist that eligibility for the medical insurance apply to all citizens excepting those persons eligible for Medical Aid. It also insisted that eligibility distinguish between the employees and the self-employed as well as between soldiers, public officials and employees in private school, under the different laws that apply to each group. This was due to the fact that special occupation employees like military personnel · public officials and employees in private school had to face difficulties in managing an autonomic organization. Governmental responsibility was inevitable among these groups whereas the medical insurance for the self-employed and employees could be implemented with almost no government burden. Therefore, it was thought that the medical insurance for public officials, soldiers and employees in private school be operated in conjunction with the pension system under the provision of separate legislation.

Accordingly, employees and the self-employed were subject to the amended medical insurance act in December 1976 (hereinafter The Secondary Amendment Act of 1976). Public officials, military personnel and private school personnel were subject to the 'medical insurance act for public officials and private school personnel (hereinafter public and school medical insurance act)'. The public and school medical insurance act was enacted on December 1977 and implemented from January 1979. In addition to The Secondary Amendment Act of 1976, the government completed the framework of the medical insurance system by fixing the enforcement ordinances and regulations. Meanwhile, along with the second amendment, the government enacted a criteria for fee schedules, pharmaceutical prices and benefits costs, which had been showing systematic inertia, by the announcement from MHSA. Fee-For-Service system was inevitably introduced as the payment system since Fee-For-Service system was well matched the Customary Fee Schedule determined arbitrarily by medical institutions without breaking the medical insurance. In order to set a reasonable fee schedule, MHSA investigated the customary fee of all treatment procedures and completed the fee-for-service system. Fees at the time were determined at the level of 75% of customary fee and differentiated by the type of medical institution and region. Pharmaceutical costs were also settled at the level of 12% of margin rate through the determination of cost. (More detailed information is described in Chapter 3). <Table 1-4> shows the main contents of the second amendment.

Table 1-4 | Significance and Features of the Secondary Amendment Act and Regulations

Related Regulations	Features of the Secondary Amendment Act and Regulations	The Purpose of Revision
Eligibility	All the people except for public officials, private school personnel and the person subjected by medical aid	Medical insurance system was divided into three parts; employment-based & self-employed, public officer and private school worker, medical aid
Method of Eligibility Implementation	Compulsory entry for workplaces with 500 or more employees & Voluntary entry for the rest	Providing opportunity by making room for small scale workplaces to establish voluntary cooperatives
Insurance Contribution	- Standardized monthly wage amount × contribution rate in 30 grades - The rates within 3~8% are determined by the cooperative's articles of cooperatives	- Setting contribution ceiling by adopting scaled-system for the assessment and collection - Assigning decision of contribution rate to cooperative autonomy
Share of Contribution	- The employer and employee each contribute 50% for employment-based cooperatives - The insured contribute 100% for the self-employed cooperatives	Specify that self-employed should be responsible for the entire contribution themselves
Organization	Establishment of Central Medical Insurance Cooperative Association (CMICA)	Specification of the role of CMICA by defining the purpose of establishment as to support medical insurance business, and to co-manage financial risks
Benefits Package	- Statutory benefits : medical benefits, delivery benefits, medical benefits and delivery benefits after the disqualification - Additional benefits: funeral allowances	- After losing eligibility the insured can be secured for a certain period in order to prevent social isolation - Allowing the cooperatives to determine additional benefits by separating from statutory benefits
Designation Method of Medical Institutions	By the insurer	Stipulated that the cooperatives may function as an insurer
Government Subsidy	Can afford within the budget	Change a charge on the National Treasury from compulsory provisions to voluntary provisions
Co-payments	In-patient care: the insured 30%, the dependent within 40% outpatient care: the insured 40%, the dependent within 50%	Enforcement ordinance defines the upper limit of differential co-payments between the insured and dependents

Related Regulations	Features of the Secondary Amendment Act and Regulations	The Purpose of Revision
Medical Insurance Card	Introduction of a format for the Medical Insurance Card, and approval seal system	The qualification management should be done by bearing the stamp on the Medical Insurance Card and Medical institutions should check it when they provided medical services

Source: NHIS (2014).

Before the implementation of the compulsory medical insurance in January 1977, the FKI constructed the 'medical insurance council' as the organization to promote the medical insurance business. In spite of the fact that the medical insurance council was a private organization, it formulated itself as an organization to support the establishment of medical insurance cooperative officially, in cooperation with MHSA. It prepared for the establishment of the cooperative and the enforcement of medical insurance with 'regional guiding group for promotion of establishment' of MHSA.[13] Two TF teams promoted the establishment of cooperatives, education and employing human resources responsible for the initial cooperative tasks, various guidelines and formats required for the cooperative operations, ensuring the list of hospitals, clinics and doctors for the designation of treatment institution, Fee Schedule for the implementation of health care benefits and preparing the billing format for benefit costs.

At that time, the medical insurance cooperative, which was developed from the Medical Deduction Association of companies, had a structure in which the secretary general oversaw the cooperative tasks as the highest administrator in the cooperative organization. The permanent representative director system had not yet been established. The sub-organizations of the cooperative were made up of 3 sections which included a general affairs section, a collections section and a reimbursement section. There were no common criteria for the wages of employees, but the wage that is commensurate with that of a mother company was a general method that was used. As of at the end of 1977, 2,978 workplaces participated and 531 cooperatives were established. Workplaces with 500 or more employees established a single cooperative. Businesses located within an industrial complex where a number of small workplaces were located grouped as a single cooperative.

13. Medical Insurance council instructed the policy of the government and supported the administration and establishment of each cooperative. It performed the function of the association that had been planned in the legislative process taking responsibility for reviewing medical expenses from July 1979. 'Medical insurance council' was dismantled on September 1981 after comprehensive succession of all the features to 'central medical insurance cooperative association', which was a legal organization.

At that time, the average number of insureds per a cooperative was about 2,400 people and the administrators, including dependents, were about 5,900 people in aggregate. As of the end of 1977, the medical insurance enrolled population had sharply increased to 3.2 million, which comprised 8.8% of the total population. <Table 1-5> shows that the medical institutions designated as a treatment institution reached 4,436, which accounted for 69.4% of all medical institutions, numbered at 6,390.

Table 1-5 | Designation Status of Medical Institutions in 1977

(Unit: a site, %)

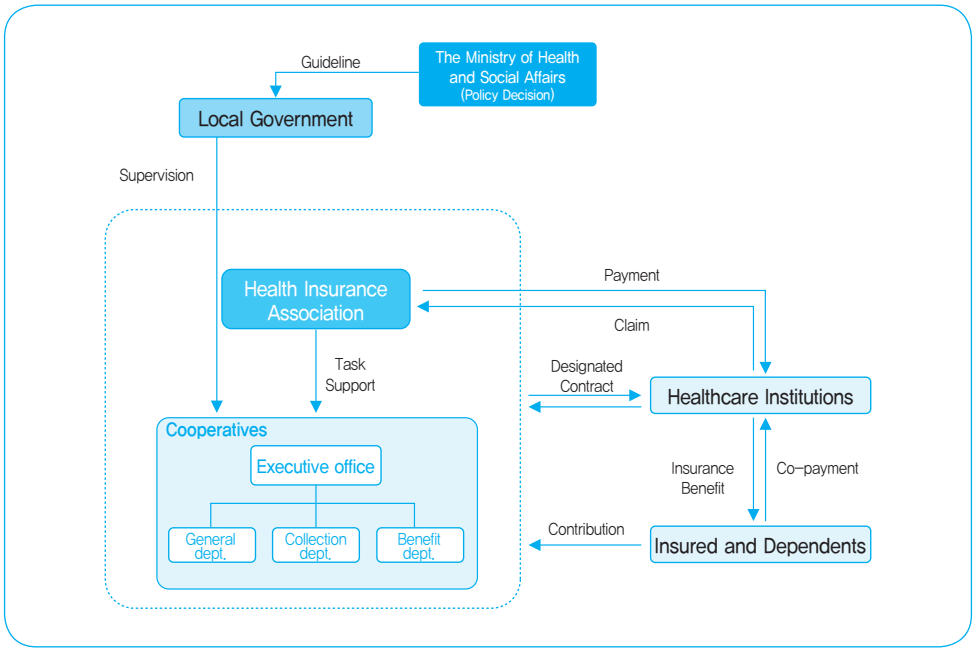
Total	General hospitals	Hospitals	Clinics
4,436 (69.4)	52 (100.0)	160 (86.5)	4,244 (69.0)

Note: ( ) is participation rate, which defines as participating institutions/Total institutions×100.
Source: Medical Insurance Association, the history trajectory of medical insurance (1997).

[Figure 1-3] illustrates the cooperative organization and administration system of the time. Local governments were delegated from MHSA to supervise budget approval and designation approval and revocation of treatment institutions as well as to to supervise the cooperatives within the jurisdiction. The Medical Insurance Council[14] managed business support of the cooperatives and the dispersion of risks upon the entire financial insurance, and took a charge of reviewing the insurance claims including its payment. Designation of healthcare institutions was achieved by contract between medical institutions and cooperatives.

14. 'Medical insurance council' changed into 'Medical insurance association' and the method that designated a treatment institution through the contract between medical institutions and cooperatives changed into the method that designated the entire medical institutions uniformly. However, the framework had been maintained similarly between 1989 and before going through the integration process.

Figure 1-3 | Cooperative Organization and Administration System



Source: Medical Insurance Association, the history trajectory of medical insurance, summing-up (1997).

Although there were many problems in medical insurance system, which had been at a standstill for 13 years since the Medical insurance Act of 1963, the background that compulsory medical insurance could be applied dramatically was as follows:

- Based on the political will of MHSA on implementation of medical insurance and administrative experiences of voluntary cooperatives, the system that suited our situation was introduced. At that time, MHSA suggested the logic that could be accepted by the economic ministries, which were skeptical about the introduction of medical insurance. The items that designed systematically were an autonomous operating method with almost no government burden, designating a cooperative as basic unit.
- By utilizing the operational experiences gained during voluntary medical insurance implementation, planners were able to design a concrete, systematic blueprint for the implementation of medical insurance, including the planning of contribution calculations and a collection system, as well as determine a criteria for a fee payment system and pharmaceutical pricing.

- Unlike other countries, economic organizations were strongly in favor of the introduction of medical insurance and took the lead in supporting its introduction. There was little opposition from employers since the Medical Insurance Council, composed by FKI, led the introduction of medical insurance system.
- Cooperative establishment began by hiring people who were prepared through prior training. Personnel responsible for the establishment of medical insurance cooperatives and medical insurance administration were educated step by step and then put into the actual field.

However, it was not that there were no problems. <Table 1-6> summarizes the most pronounced problems that appeared and the solutions implemented during the beginning of implementation.

Table 1-6 | Problems and Solutions for Implementation Process of Medical Insurance

Contents	Problems	Solutions
Designation Method of Treatment Institutions	Limited utilization resulting from a shortage of designated treatment institutions induced by the contract between cooperatives and medical institutions	Gradual implementation that allows for phasing in of insured medical processes while keeping traditional processes
Charging Treatment Benefits Costs	Dissatisfaction due to the increased work load at medical institutions as a result of the distinction between insurance fees and normal medical costs	Persuade medical institutions by simplifying the insurance billing format
Medical Delivery System	Due to the reduction of burden of medical expenses, medical use of tertiary care hospitals was increased	Gradual improvement was considered for medical delivery system since the wide gap of medical resources between urban and rural areas got no better and it might deepen the inequity in medical utilization of rural residents
Suitability of Fee Schedule	Request for increasing insurance fee of medical community	Adjusting appointments after analysis for the break-even point of medical institutions
Eligibility for Dependents	Mostly the person who maintained their living by the insured & limit its scope to lineal ascendants and descendants and a spouse	Expansion policies that considers traditional large family household unit

Contents	Problems	Solutions
Imbalance of Insurance Financing	Financial disparity among cooperatives	Solve the problems by the Co-Funding Plan
Review and Payment of Medical Expenses	Confusion due to the review and payment by insurers	Unification of the pay counter, Medical Insurance Council, for reviewing treatment costs
Medical Costs for Unqualified Person	The illegal use of medical insurance by unqualified persons with other person's medical insurance card	Introduction of approval seal system for medical insurance card

Source: Medical Insurance Association, the history trajectory of medical insurance, summing-up (1997).

As explained above, under the auspices of the Medical Insurance Act applied to employees in workplaces, as of January 1979, the government implemented a medical insurance plan to public officials (including military personnel) and private school personnel, stipulating KMIC, a separate insurer, as an operator. KMIC consisted of 276 staff members including the chairman, executive director, auditor and 3 chambers, 4 departments, 11 district subdivisions, as well as a treatment cost review committee. KMIC managed about 3,599,000 people in total (631,000 public officials, 73,000 private school personnel and 2,896,000 their dependents) and designated 8,367 organizations as a medical care providing institution by cities and provinces nationwide.

As a result of the policy of expanding medical insurance eligibility, the eligibility was extended to workplaces with 300 or more employees in July of 1979 and to workplaces with 100 or more employees in 1980. In the process, integration among the cooperatives with a small number of insureds was enforced in order to stabilize system finances and to increase the financial risk pooling, thereby controlling the size of the cooperatives. As a result of research by Financial Poverty Line, it was concluded that the minimum scale of the insured groups was 3,000 people. Existing cooperatives were integrated and emerging cooperatives established a joint cooperative with district units.[15] Emerging district joint cooperatives established 28 workplaces conjointly on average and the average number of the insured was 17,000 people.

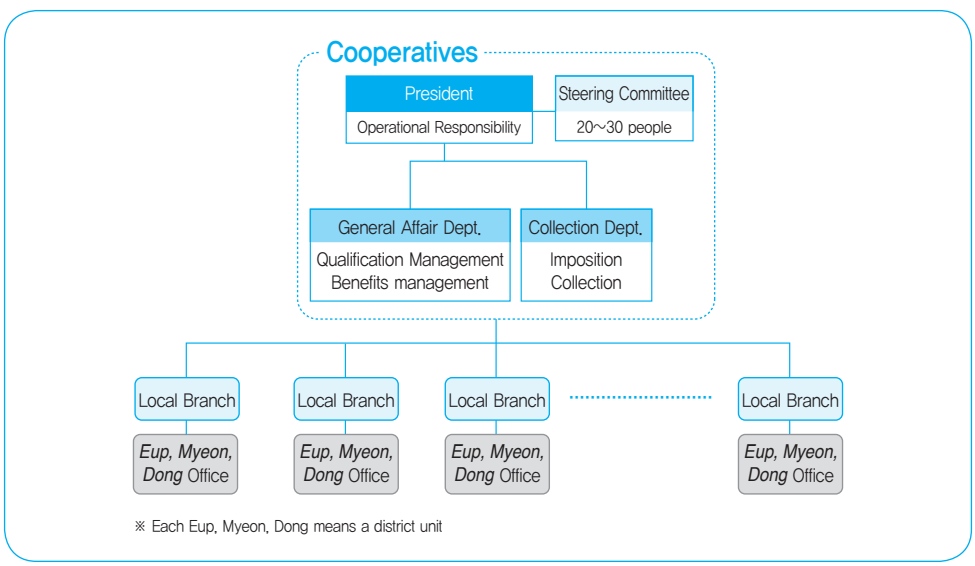
USAID and the Korean government concluded a loan agreement to provide five million dollars on September 1975. Subsequently, the government implemented the primary local medical insurance demonstration projects (hereinafter the primary demonstration projects)

15. Districts are clustered with workplace units as affiliated workplaces transfer to interrelated joint cooperatives. This is different from the administration district.

in 3 local areas apart in July 1981. The three regions were the places where community health and medical business had been implemented by 'Korea Health Development Research Center' in 1976. They reflected geographical features such as mountain areas (*Hongcheon* county), coastal plains (*Okgu*-county), and inland plains (*Gunwi* county). These areas were selected because health and medical networks were in place and it was thought that medical insurance businesses could be adopted.

Local demonstration projects included public officials of MHSA, the medical insurance council and Korea Population Health Development Research Center,[16] composing a cooperative called 'Local guiding group' by sending 6 people respectively. The members of the cooperative resided in the local areas of responsibility. Local medical insurance demonstration projects progressed by cooperation of local governments. Local governments gave an active support beyond the budget allocation. This support was necessary for cooperative establishment, for reporting acquisition of eligibility, for distributing promotion materials, as well as for developing promotional and educational videos like 「Our village medical insurance」.

Figure 1-4 | Organization Chart of Local Demonstration Medical Insurance Cooperative



Source: Medical Insurance Association, the history trajectory of medical insurance, summing-up (1997).

16. Korea Population Health Development Research Center was an organization that reformed Korea Population Health Research Center. Currently, it becomes Korea Institute for Health and Social Affairs, a national research center under the Prime Minister's office.

A representative director elected from the steering committee took charge of cooperative management. The steering committee was organized by the governor of the county, along with the recommendations of local community groups like *Saemaul*-Movement Council, Health Care Center Operation Council, *Eup*, *Myeon* advisory committees and community doctor's association. This allowed improved participation of residents in the operation of cooperatives and both directly and indirectly stabilized the business at an early stage by forming positive public opinion. In cooperatives, there were two departments: one was in charge of eligibility management and reimbursement tasks and the other took responsibility of imposition and collection of insurance contributions. In addition, cooperative branches were established in *Eup and Myeon* offices to convenience residents so that employees of cooperatives could take charge of the forefront tasks.

An initial concern for implementation of demonstration projects was the participation of residents in the introduction of system, and the collection rate for insurance contributions, which was a key point in the settlement of compulsory medical insurance system. While 3 grade methods of capitation system was used for contribution levy system, it was same as flat rate capitation system, classified into 2 tiers mostly. However, in the first month of implementation, the average collection rate of contribution that had been paid voluntarily by residents was only 52.3%. As an improvement measure, lowering the insurance contribution, adding a check box for confirmation of insurance contribution payment on the medical insurance card, limiting benefits of defaulters, and strengthening public relations by forming tri-cooperative system between the cooperative and local governments were presented. In midst of these situations, the secondary demonstration projects proceeded. Target areas for the secondary demonstration projects were a fishing village in the island (*Ganghwa-gun*), a farming village in plains (*Boeun-gun*), as well as small and medium-sized cities (*Mokpo-si*). The second phase had the advantage of better and more detailed experience and preparation than the primary demonstration projects and it was implemented in July 1982. The secondary demonstration projects solved many of the problems of the contribution levy system in the primary demonstration. The insurance contribution was imposed on a household unit by calculating the scaled insurance contribution according to household basic contribution, basic contribution per insured and level of income and property. During the early phase of the demonstration project implementation, there was collective resistance in all 6 local areas due to the payment of insurance contribution by compulsory entry system. However, after 1 to 2 years of demonstration project implementation, the situation was stabilized and presented a green light for expanding eligibility to all citizens, achieving a level of 90% in collection rates, with the exception of *Mokpo-Si*.

The government facilitated the establishment of medical insurance cooperatives for self-employed organizations for insureds working in same occupation with the fourth amendment Act of 1981. Strict criteria were established and Comprehensive Voluntary Entry Method[17] proposed voluntary criteria that were similar to the compulsory terms.

Here are some of the details:

- First of all, it should be a self-employment organization for the same type of occupation countrywide.
- Second, the self-employed of about 10,000 people should be secured to do risk pooling and to determine the financial structure.
- Third, the cooperative should demonstrated efficiencies and effectiveness with regard to eligibility management and collection of insurance contributions.
- Forth, the average monthly income of the self-employed should reach the level of average monthly income for households of urban workers around the nation.

Accordingly, by December 1981, 15 medical insurance cooperatives based on type of occupation had been established.

However, there were problems as following:

- Adverse selection continued to be a problem within the voluntary system inasmuch as patients often entered the insurance system only when compelled by medical need.
- Since the eligibility for each self-employed organization was based on the opening and closure of business, poor financial results were achieved due to the difficulties in collection of insurance contributions in the case of the occupations with high failure rates.
- A method of charging insurance contributions for self-employed organizations that paid scaled fixed amount within 3 to 20 tiers was selected. However, the gap between income levels was widened by business scale and regional units depending on occupation type or even within the same occupation. Insurance contributions were charged based on the cooperative self-criteria due to unwillingness to disclose income.

Nevertheless, the medical insurance cooperatives based on occupation, existed for the financial stabilization to restrain unjust disbursement, and reinforcement of eligibility to prevent adverse selection, until the cooperatives were incorporated into self-employed

17. Comprehensive Voluntary Entry Method is that all members of an organization with strict membership qualification should have the eligibility of self-employed medical insurance.

medical insurance. Here is the detailed explanation of advantageous effects that the cooperative brought:

- In the aspect of expanding eligibility, it was thought that it was advantageous to achieve nationwide medical insurance sooner by making the class who had the ability to afford insurance contributions participate voluntarily in medical insurance system.
- It was concluded that imbalance in medical insurance among the general self-employed induced by the policy which applied medical insurance mainly to employees in workplaces could be solved.

2.3. Implementation of Region-based Medical Insurance and Achievement of Nationwide Medical Insurance

Individuals eligible for medical security exceeded 50% by 1985. Differentiation between one group who were eligible for medical security and another group who were not eligible for medical insurance had become a social problem. The government investigated the expansion of medical insurance and organization model based on the research report of 'Korea Population Health Research Center'. There were five suggested types of organizational models including; National Health Service (NHS), nationwide single integrated model with insurance contribution method, nationwide single integrated model funded by medical security tax, integrated model based on broader unit area, and maintaining the existing method of medical insurance. However, all the models besides the existing cooperative model presented their own challenges, and because adaptation would require considerable implementation time, a decision was made to stay with the existing cooperative model.

- The integrated model-type was examined based on the argument for unification of organizations which came to the fore as employment-based cooperatives were merged in 1980.[18] The case for integration was argued using factors such as income redistribution, financial risk-pooling based on the national unit, reduction in expenses of management and operation, solving inconvenience of users and providers, standardization of benefit level, and unification of fee review system.

18. A dispute on organizational integration in 1980 was initially triggered by a direction from the Minister of MHSA of the time, asking to examine an integration of entire organizations, rather than merger of some organizations, but it was not realized due to a strong opposition from companies and Medical Insurance Committee. In particular, they opposed because they thought an employment-based cooperative refers to an organization that could cultivate co-operation and community spirit between labor and management and thus if the government integrates the organization with KMIC, on the basis of the fact to burden contribution solely on employers, the welfare expense would sharply rise as in advanced countries, resulting negative effects on national economy.

- The NHS method and nationwide single integrated model which applied insurance contribution method required a national consensus.
- The integrated model based on broader unit area required a process of eligibility evaluation through other demonstration projects.

Accordingly, the government set policies that targeted 139 *gun* of farming and fishing villages in 1988 and extended them to include 61 urban areas in 1989. In order to reach the objective of nationwide medical insurance, the government set a goal which promoted cooperative method but accepted the strength of integration method. In addition, medical insurance act and Public and School Medical Insurance Act were amended on December 1987.

The features of each amendment act are as follows:

- 5 divisions of current organization system were changed into 3 divisions of organization system. It was not an easy task to divide the range which belonged to each organization. The current eligibility criteria, that had been mitigated to expand the eligibility for medical insurance, were strengthened. The dependents that had certain amount of income were placed into the insured group for regional medical insurance by applying strict criteria. In the same context, eligibility for regional medical insurance included pension recipients to solve Free Rider problems (See <Table 1-7>).
- Medical Insurance Association (hereinafter MIA)[19] registered KMIC as incoming members. 'insurance finance stabilization fund' was established in MIA and it was used for extending risk-pooling range and finance stabilization when cooperatives could not pay insurance benefit costs or when taking collectively the burden of high insurance benefit cost.
- For the medical insurance business, practical functions of the insurer such as requesting tax data for imposing insurance contribution and requesting transference record for eligibility management were reinforced by implementing processes that enabled them to request data from the nation, local governments and public bodies.
- In the enforcement ordinance, it was determined that a representative director and employees of regional cooperatives were able to become self-employed insurance insureds although they were employees at workplaces. This was a measure to emphasize autonomous operation and to strengthen solidarity between local residents and cooperative employees.

19. On September, 1981 the Medical Insurance Council was changed to Central Medical Insurance Cooperative Association, however, on September, 1987 starting from the 7th revision of the legislation the title changed again to Medical Insurance Association in order to make the public and school medical insurance to join as the member of the Federation.

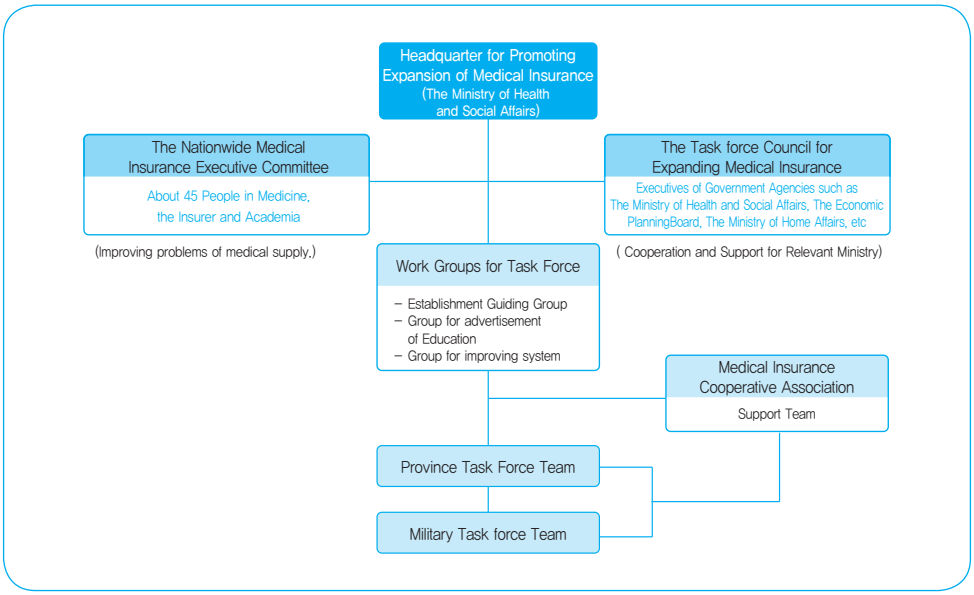
Table 1-7 | Comparision between 5 Divisions of Organization System and 3 Divisions of Organization System for Medical Insurance

5-divisions System			3-divisions System	
Administrative Operation Organization	Management Object		Administrative Operation Organization	Management Object
Employment-based cooperative	- Employees at workplaces with 5 or more workers - Their dependents		Employment-based cooperative	- Employees at workplaces with 5 or more workers - Their dependents (excluding the dependents who earned income)
KMIC	- Public officials (military personnel) and private school personnel - Pension recipient - Their dependents	⇨	KMIC	- Public officials (military personnel) and private school personnel - Their dependents (excluding the dependents who earned income)
Region-based cooperative	- The self-employed and local residents		Region-based cooperative	- The self-employed and local residents
Cooperatives based on type of occupation	- Members of the self-employed organization - Their dependents			- Members of the self-employed organization
Region-based voluntary cooperatives	- Members of previous voluntary self-employed cooperatives			- Members of previous voluntary self-employed cooperatives

Source: NHIS (2014).

Following the law amendment, the preparation of establishment was regularized as follows: MHSA organized 'Nationwide Executive Committee' in January 1987; Medical Insurance Cooperative Association established community based insurance department. 'Headquarters for promoting expansion of medical insurance' was established by the vice-minister of health and social affairs, appointed as head of headquarters, in July of the same year. The promotion organization consisted of 'Nationwide Medical Insurance Executive Committee' (composed of medicine, the insurer, academia, etc.), the 'Taskforce Council for expanding medical insurance' which were composed of executives of government agencies such as MHSA, the Economic Planning Board, the Ministry of Home Affairs, etc., a work group for taskforce, province task force team and military taskforce party as seen in [Figure 1-5].

Figure 1-5 | Preparatory Organizations for Expanding Medical Insurance



Source: Medical Insurance Association, the history trajectory of medical insurance (1997).

In May 21st, 1987, MHSA pronounced 'Detailed Promotion Plans for Expanding Medical Insurance to Agricultural and Fisheries Regions' which included overall contents of business such as procedure and schedule of cooperative establishment, investigation and determination of eligibility, insurance contribution design, computation development, public relations & education, etc. in the conference with each director of city and province. The guidelines were delivered to each conference of town managers by gun district unit, moving field by *Eup* and *Myeon* district and gun section chief as well. The following table shows the main contents of preparation process of medical insurance for agriculture and fisheries regions.

Table 1-8 | Preparation Process for Establishment of Regional Medical Insurance

Preparation Process	Contents	Expected Effectiveness
Selection of Establishment Guiding Personnel	Transferring 3 employees from MIA and each employment cooperatives (7.9% of total number of organization member) to be in charge of guiding establishment	- Use experiences of demonstration project establishment and its success - Pass down the work experiences to the new employee
Field Research	Research on social and economic index; population and movement rate, income level, the level of local economy, income and wealth of the insured, distribution status of medical institution etc.	- Secure basic data for estimating insurance finance and designing contribution levy system - Joint research with local officer in field to make cooperative atmosphere
Recruiting Cooperatives' Employee	Nationwide open-employment en bloc, followed by selection of employee based on the resident population and the area of jurisdiction - Average number of employees per cooperative was 31.3, - Number of management personnel per employee was 2,000	- Securement of outstanding workforce by open-employment - Sequential securement of workforce on the basis of cooperative establishment and task progression level
Construction of Establishment Committee	Local opinion leaders, including local residents construct an Establishment Committee and Establishment Working Party, under the responsibility of the county governor - Establishment Working Party is composed of public officer, establishment guiding agent, new recruit	- Co-operative atmosphere creation by the public officer, establishment guiding agent - Provide opportunities to learn practical know-how from the public officer - Establishment guiding agent provides trainees to acquire guidance on work
Education Training	Establishment guiding agent and new employment, as well as local public officers subject to the education for establishment	- Medical insurance system is implemented in government-wide in order to encourage public officers for an active support to the establishment of cooperatives
Public Reations	In order to form and develop public opinion on the medical insurance, raised awareness on the medical insurance 6 months prior to the implementation by releasing films, commercial films, putting up banners, and opening a contest on making slogans or symbols for the medical insurance	- Raise nationwide awareness on the medical insurance implementation - Create an atmosphere for a natural acceptance on the system by cultural expansion of the medical insurance

Preparation Process	Contents	Expected Effectiveness
Designation of Agency for the Contribution Collection	Assigned all the banks and post offices to deal with the contribution collection for the convenience of payment	- Promotion of convenience on charge - Prevention of systematic dissatisfaction that may rise from economic burden by charging no other commissions other than contribution
Designation of Medical Institution	Primary and secondary medical institutions are designated by cooperatives while the tertiary institution is designated by MIA - Primary medical institution: clinics in administration district and neighbor district - Secondary medical institution: hospitals and general hospitals in metropolitan life-zone - Tertiary medical institution : large general hospitals	- Provision of medical accessibility and use of convenience

Source: Medical Insurance Association, the history trajectory of medical insurance, summing-up (1997).

In October 1987, MHSA gave a uniform approval to the establishment of 134 medical insurance cooperatives for agricultural and fisheries regions. The following month, the Ministry legislated 'Regional Medical Insurance Operation Regulation' and standardized the cooperative operation method. According to local population and cooperative size, public offices and fixed number were determined and cooperative branches were established in each *Eup*/*Myeon* offices in a form of demonstration project. In addition, voluntary cooperatives for regional self-employed were dissolved and then incorporated into corresponding self-employed cooperatives. As seen in [Figure 1-4], the medical insurance cooperatives for agriculture and fisheries regions show almost no difference from the system of self-employed medical insurance in the demonstration project.

Although the preparation for implementing medical insurance for urban regions had been started following the medical insurance for agricultural and fisheries regions, various opinions were suggested for the operating organizational system. While the ruling party insisted on the cooperative establishment based on municipal government and the opposed party asserted the nationwide integration system, the government preferred cooperative establishment based on lower level local government, similar to the self-employed medical insurance system for agricultural and fisheries regions. The government insisted that the cooperative type coincide with the unit of local government, in order to foster a community

spirit over the co-management, joint burden and joint responsibility within the local residents (Korea Population Health Research Center, 1978). However, on March 1989, 'National Medical Insurance Act' was passed, based upon the integration method, as the opposition party insisted under an agreement between the ruling party and the opposition party. In turn, the FKI and employees of employment-based cooperatives issued a statement, which opposed integration of cooperatives, with a contention that the burden of employees at workplaces would be exacerbated if medical insurance integration was implemented under a situation where the income of the regional self-employed had not been established. As a result, the criticism of cooperative integration increased gradually. Eventually, the National Medical Insurance Act was scrapped since the president exercised the power of veto at the request of a cabinet of council.[20] Consequently, medical insurance in urban regions was established in accordance with the existing law, the same process and the same method as the self-employed medical insurance for city, agricultural and fisheries regions. There were 49 city district and 65 gu district insurance cooperatives established in urban regions, totaling 114 cooperatives. Finally, in July 1989 nationwide medical insurance had started.

Korea required only 12 years for an establishment and implementation of nationwide medical insurance system from the time when the formal medical insurance was instigated for the first time in July 1977. There are various background factors that enabled accomplishing those unprecedented achievements and they are as follows:

- First, there was strong will of government to implement medical insurance policy of low burden and low payment system. The economic level of the Korea of the time was not meeting the standard to start nationwide medical insurance. Although patients had complaints about the burden of contribution, the government decided to expand eligibility by lowering the level of financial burden in consideration of the situation at that time. <Table 1-9> shows the expansion process of medical insurance and GDP per capita.

20. To reconsider a bill that has been vetoed more than 2/3 of the members of National Assembly are needed for a quorum, however, the number of the opposition party members was not enough for a quorum which made the bill to dispose automatically.

Table 1-9 | The Expansion Process and GDP per Capita in Accordance with Policy Change

Year	Medical Insurance Policy	Contents	GDP per Capita ($)
1963 ~1977	Voluntary application	The first Legislation of Medical Insurance Act (1963)	99
1977 ~1989	Compulsory entry system and expansion of eligibility	Compulsory entry system to medical insurance for workplaces with 500 or more employees (1977)	~831
		Implementation of medical insurance for public officials and private school personnel (1979)	1,049
		First regional demonstration project (1981)	1,705
		Second regional demonstration project (1982)	1,870
		Implementation of medical insurance for the rural area(1988)	1,971
		Expand to urban area (1989) Achievement of nationwide medical insurance	4,575
2000	Development and stabilization of medical insurance	Establishment of NHIS(NHIS) by integration	5,567

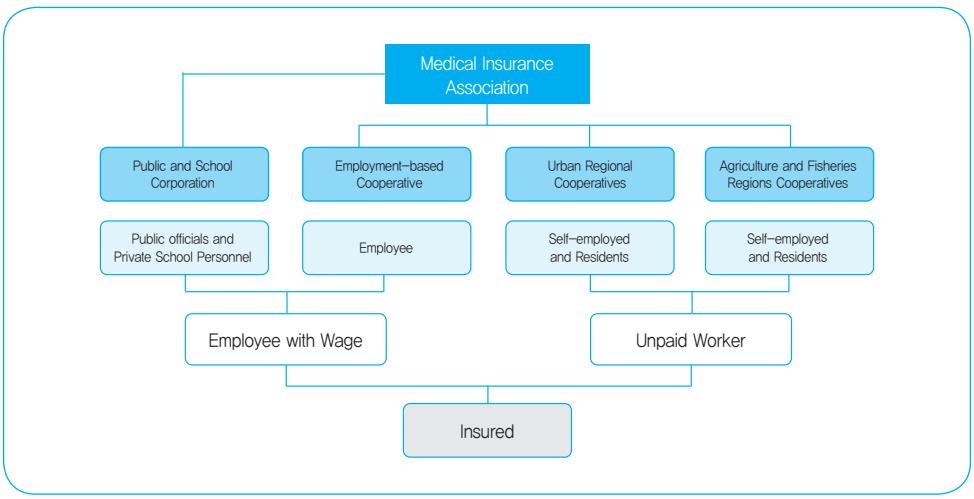
Source: NHIS, Korea Statistics: National Statistics Portal (2014).

- Second, government applied a compulsory entry system and people accepted it. There was some severe backlash, however, most of people and providers complied with the government policy.
- Third, gradual but broad medical insurance expansion policy was a key. In parallel with the gradual expansion of employment-based medical insurance, policies such as demonstrational implementation of self-employed medical insurance, introduction of medical insurance based on occupational type, and eligibility expansion for dependents showed an effect of eligibility expansion in a short period of time.
- Forth, the resident registration number (ID) was essential in managing the insured. The gradual extension of cooperatives method was possible since Korean Medical insurance system managed the eligibility by individual registration number and medical insurance card. If personal identification was not available, cooperative operation could lead to confusion in case of changing affiliation for instance employment, retirement, removal and etc.

• Indirectly, although cooperatives were established nationwide in a short period of time, the trial and error, and confusion could be minimized by allocating the existing employees with practical experience who were transferred to the newly established cooperatives, thereby maintaining continuity of administration.

As seen in [Figure 1-6], the operational management system had changed as below after the implementation of the nationwide medical insurance system.

Figure 1-6 | Organization Chart of Medical Insurance System Management in 1989



Source: NHIS (2014).

2.4. Development of Medical Insurance System and Establishment of NHIS

Implementation of nationwide medical insurance showed remarkable results by fulfilling national medical needs, increasing use of medical service, expanding medical human resources and sickbeds, However, there were growing complaints among patients and providers since the insurance system was not yet efficient. In this respect government developed various measurements to improve management and seek balanced development of employment-based and self-employed insurance. In 1994 the 'Medical Security Reform Committee', an advisory body for Minister of MHSA, organized three subcommittees; finance and operation of healthcare management, insurance benefits and fees, medical service provision and management systems. It focused on the discussion of current status

and suggestions and submitted reports entitled 'Direction of Health Policy and Medicare Reforms'. The report provides general plans of health system in terms of efficiency of medical resource, expansion of insurance benefits and reduction of burden, rational reform of insurance fee, fostering and supporting medical industry. <Table 1-10> shows the efforts to improve operating medical insurance system and balanced development.

Table 1-10 | Efforts to Improve Operating System of Medical Insurance

Improvements	Contents and Impacts
Introduction of OCR and Postcard Adapter (1992)	- Transition from envelope type of bills to postcard type built-in with OCR (Optical Character Reader) - Reduction of time and human resource due to office automation. 30% of mailing cost reduction
Arrangement of dual Eligibility (1992)	- When the change in eligibility[21] occurs between the employment-based, or the self-employed, or even from the employment-based to the self-employed, a complexity arose in administrative tasks, which include the contribution collection and calculation of insurance benefits costs between the insurers, as the medical insurance system was managed by multi-insurers. However, ever since the MIA annually set the date for eligibility management and organizes the data en bloc, the simplification of management task has been achieved
Stabilizing the Finance of Healthcare (1992)	- Generating finance transfer effectiveness with raising Stabilizing Fund for Healthcare Finance in the way that MIA allocated fund to the cooperatives according to the share of high benefits cost and the healthcare cost for the elderly
Interchange of Personnel between Cooperatives (1992)	- Implement interchange of personnel between cooperatives to solve manpower problems and quota
connection of Resident Registration Office Work (1994)	- In the early phase of the self-employed medical insurance implementation, a self-report was required in case the eligibility of an individual changes. However, an autonomic eligibility change system has been established by interlocking the personal medical insurance information regarding to eligibility with the information on resident registration of the administrative agency

21. A change of eligibility within the cooperative system is caused by a number of factors. The eligibility for employment-based occurs on employment, retirement, and turnover, while the eligibility for self-employed occurs on moving to another administrative district. The change of eligibility in both cases follows by a change of insurer.

Improvements	Contents and Impacts
Foundation of Direct Control Hospital (1995)	- Insurer-Direct Operating Medical institution was started as one of the comprehensive policy for the expansion of medical service supply, provided by the public and school corporation but it now plays a role in the contribution fee evaluation, material expense analysis, hospital management analysis, development of exemplary model of hospital
Evaluation of Cooperatives Management (1995)	- To comprehend management of cooperatives and to encourage competition incentive system was adopted to superior cooperatives and restrict consecutive term to serve as a representative director - Evaluation category is divided to 5 dimensions according to the size of the cooperatives; stability of finance, operating management, imposition and collection of contribution, management of benefits, improvements of management
Implementing Electronic Transfer of Contribution (1996)	- Seeking payment convenience to electronic transfer from visiting banks

Source: Medical Insurance Association, the history trajectory of medical insurance, summing-up (1997).

However, programs such as promotion of private medical insurance, improvement of the designated care system[22], or installation of medical development fund[23] could not be realized because of the conditions at the time. Meanwhile, programs such as medical insurance general network construction and computerization request of treatment cost and review were pushed ahead gradually as a long-term plan.

In 1997, South Korea was suffering from sovereign default caused by shortage of foreign exchange. Meanwhile, a presidential election was held and a discussion on the operational management of medical insurance had begun in earnest. In this atmosphere the ruling party and the opposition party agreed to pass the 'National Medical Insurance Act' which contains the integration of self-employed insurance and public and school medical

22. It refers to a system that in case a patient receives treatment by designation of a doctor in large medical institutions including hospitals, the patient covers all extra expenses occurred, apart from the costs covered by the insurance benefits. This system was introduced in 1963 with a name of Doctor Designation System, for a purpose of providing a selection for high quality medical services, under the prerequisite of self-payment. Henceforward, the name changed to Designation Treatment System in 1991. In turn, the system has been called Selective Treatment System since 2000 to present. However, there is an intense criticism on the system as it increases a burden on patients because of non-benefits costs.

23. Development fund was suggested for the joint financing to develop medical institutions and research and to improve the facilities for the welfare of the insured. However, installation of the fund was foundered as social groups raised question about the legitimacy of the fund.

insurance. Moreover, as a presidential nominee who promised the integration of medical insurance won in the election, the integration issue became a fait accompli, in spite of stiff opposition[24] from the Korea Employers' Federation, the Federation of Korea Trade Unions, Employee Union of Employment-based Insurance. According to the'National Medical Insurance Act', NMIMC, the forerunner of the NHIS, was established on October 1, 1998 with an integration of self-employed insurance, and medical insurance for public officials and school personnel. On February 8, 1999 'National Health Insurance Act' was enacted, thus resolving the impasse over the integration issue.

The reason for the operating organization of medical insurance in Korea being a source of exceptionally strong dispute unlike the medical insurance in other countries with self-sustainability and long operational history is that the medical insurance in Korea had started under the lead of government, resulting a lack of convergence process from the public and all levels of society. However, in spite of the short operational history, the system of today could have been settled due to the fact that the dispute of the time between the stakeholders and scholars was not only confined to the organization of management but progressed to the general discussion on operation of entire system.

The points from the consenting party of organizational integration can be summarized as below:[25]

- The purpose of social medical insurance is to strengthen community spirit and it leads the social integration.
- The principles of operating medical insurance are put on the obtaining social solidarity such as equity of contribution, compulsory of joining medical insurance, the legal right of benefits, redistribution function by reduction of disease risk and medical expenditure.
- The organizational integration leads social fairness, and contributes to balanced distribution of medical resource (clinics, doctors, nurses, pharmacists etc.), and moreover makes it possible to obtain efficiency of operating cost and also can establish

24. There are two national unions for labor cooperatives in Korea; Korean Confederation of Trade Unions, and Federation of Korean Trade Unions. The self-employed health insurance cooperatives agreed on the integration of medical insurance as a part of Korean Confederation of Trade Unions while the employment-based health insurance cooperatives opposed to the integration as a part of Federation of Korean Trade Unions. The Korea Employers Federations, company representatives, and employees were apprehensive of contribution increase after the integration with the self-employed medical insurance that had weak financial stability.

25. It has been brought and edited from a policy recommendation written by research members of Korean Society for Social Welfare Association (Young Mo, Kim, Jung-Ang University of the time; Seock Jo, Won, Won-Gwang University; Gwang Chan, Lee, Won-Gwang University; and Heung Bong, Cha, Han-Lim University) on July 1998.

connection of other social security system (pension, occupational health and safety insurance, medical aid etc.).

- Criticizing the cooperative-based method for weak and segregated solidarity, limited redistribution of income, inefficiency of management, and unfairness of insurance contribution.

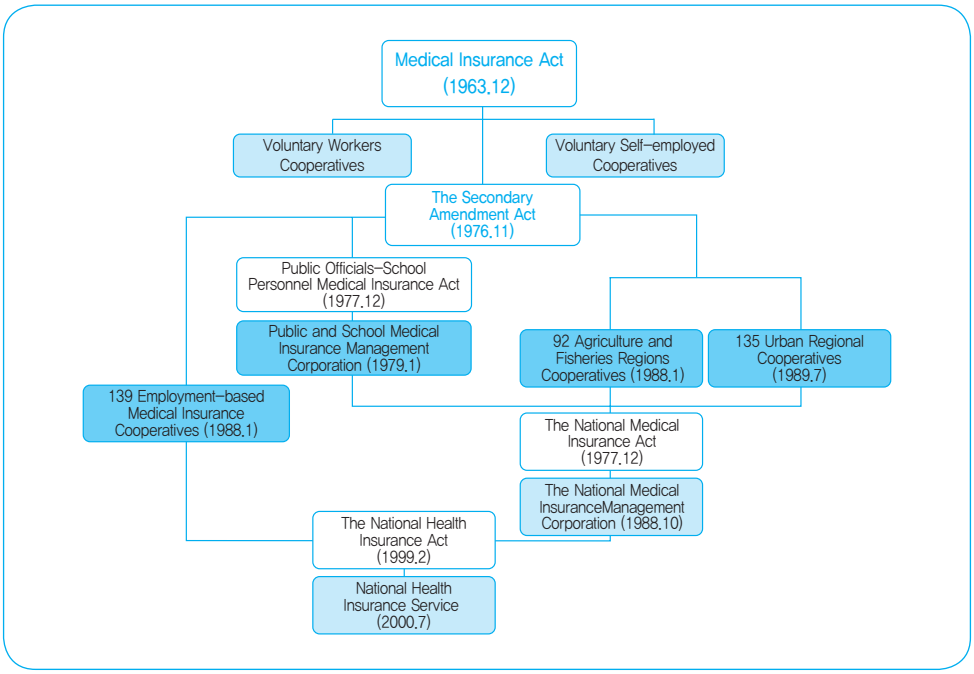
Regarding this, the point from the consenting party of cooperative-based method is as below:[26]

- Cooperative-based method allows nationwide medical insurance to maintain stable finance due to the efficient management and democratic control by resident participation.
- Cooperative-based method can maximize consumer sovereignty and it is also a global trend.
- Considering the condition of Korea at the time, insurance method is more suitable than that of tax-based for financing medical security. Insurance method can only be dualistic system of employment-based insurance and self-employed insurance.
- Medical insurance organization needs to be developed through coordination with medical service providers so the role of local municipal organization is important.
- It is necessary to find the way for the medical insurance to be implemented incrementally rather than systemically, utilizing an empirical approach rather than an normative approach.

On July 1, 2000 NHIS was established, after many complications under the systematic integration of NMIMC with employment-based cooperatives. NHIS of today was formed in July 2003, with a complete integration of the self-employed insurance and employment-based insurance finance. [Figure 1-7] shows the transition progress of the operating organization.

26. It has been brought and edited from a recommendation of Ok Ryun, Moon (Seoul National University) and Kyu Sik, Lee (Yeonsei University), insisting cooperative-based method on August 1988.

Figure 1-7 | Transition Process of Operating Organization of Medical Insurance



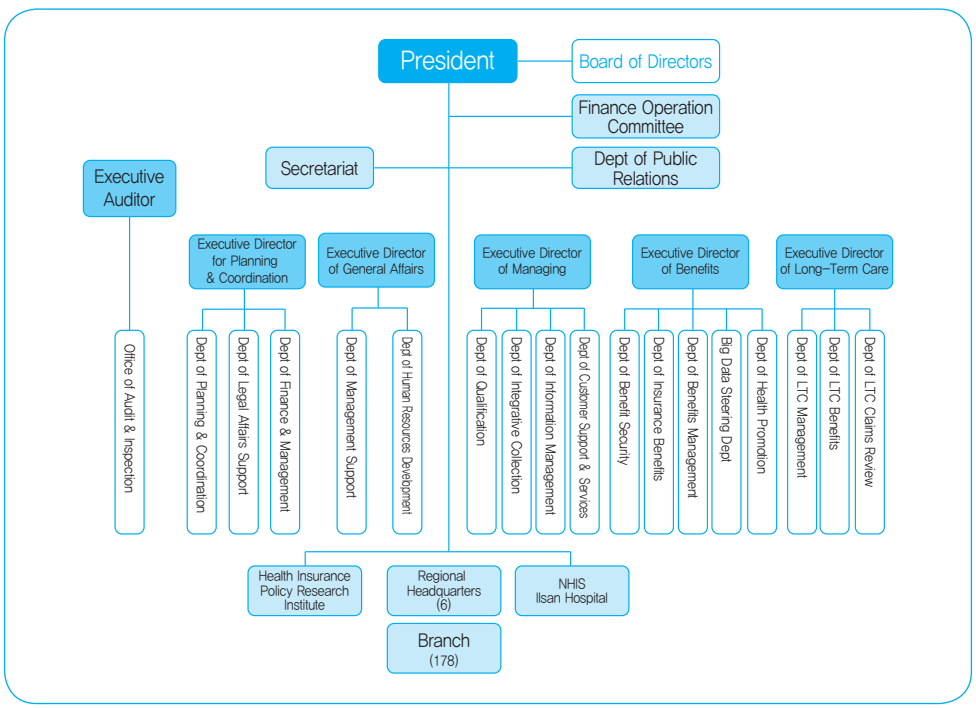
Source: NHIS (2014).

National Health Insurance Act defines the functions of NHIS as below and [Figure 1-8] shows present organization chart. Apart from the medical insurance, NHIS also operates the long-term care insurance system for elderly, as well as the contribution collection of 4 major social insurances. The organizational structure of NHIS is as follows: the headquarters, 6 regional headquarters, 178 branch offices, and 227 long-term care centers for elderly, Ilsan Hospital, which is an insurer hospital. The organizational structure of members is as follows: 7 members of executives including the president, executive director and executive auditor, 9,674 members of the staff who are in charge of medical insurance work, and 2,996 members of the staff who are in charge of the long-term care insurance work; making up 12,677 in total. The primary tasks of NHIS, which are stipulated by National Health Insurance Act, are as follows:

- Management of the eligibility of the insured and their dependents
- Imposition and collection of insurance contribution and other fees provided under National Health Insurance Act
- Administration of insurance benefits

- Preventive programs necessary for maintenance and improvement of health of the insured and their dependents
- Payment of insurance benefit costs
- Programs for managing, employing and increasing its assets
- Operation of medical facilities
- Educational training and publicity on medical insurance
- Investigative research and international cooperation on medical insurance
- Operation of collection delegated under the National Pension Act, Employment Insurance and Industrial Accident Compensation Insurance and etc.
- Other operations delegated under National Health Insurance Act or other subordinate statutes; Health Promotion and Prevention or Medical Aid
- Other operations determined by the Minister of Health and Welfare as being necessary in connection with medical insurance

Figure 1-8 | Organization Chart of NHIS



Source: NHIS (2014).

Implication

In 1977, actual implementation of medical insurance system in Korea was initiated for companies with 500 or more employees, and Universal Health Coverage (UHC) was achieved in July 1989. The major factor of UHC achieved only in 12 years of time was the successful introduction of region-based medical insurance for informal sectors. Since it operated democratically and autonomically by cooperatives (region-based insurers) with expertise gained from the demonstration project, the backlash from the residents over compulsory entry could be minimized.

After UHC, medical insurance system of Korea has made progress and has been stabilized despite social conflicts and hardships such as organization integration to NHIS, single insurer, on July 2000 and a financial crisis in 2002. The achievement is due to appropriate policy makings against problems and the compliance of the entire nation.

Chapter 2

Eligibility and Contribution

Eligibility and Contribution

1. Eligibility

1.1. Eligibility Management

Eligible persons of the medical insurance refer to those entitled to apply for medical insurance benefits. The medical insurance system in Korea takes universalism as the basis, stating that the system provides coverage to all citizens residing in Korea as well as Korean-nationals living abroad but are due protection under the Constitution. In addition, foreigners residing within the country can acquire medical insurance as long as they meet the necessary conditions; such provision is to protect them against medical risk. As an exception, a law separate from the National Health Insurance Act provides an equal level of health protection to the low-income group without the ability to afford medical insurance and those that are subject to direct protection by the country, such as Persons of Distinguished Services to Country.

The Korean medical insurance system is comprised of two major schemes: employment-based (dependents inclusive) and self-employed. An exception is made to those that are temporarily unemployed under the Voluntary Continuance Insured Program, which was legislated in January 1988 to prevent one from being without insurance during job transitions. The Nationwide Medical Insurance has been maintained to reduce administrative complexities caused by requiring one to transit from the employment-based insurance to self-employed insurance during the short period of unemployment and back to the employment-based insurance after acquiring a new job. Eligibility status remains for up to

two years under the Voluntary Continuance Insured Program, after which the beneficiary is automatically transited to the self-employed Insurance if he or she remains unemployed.[27]

There exist some differences between the two insurance types regarding eligibility criteria–mainly the acquirement and loss of insurance eligibility. Eligibility for the employment-based insurance is acquired on the day one becomes registered under his/her workplace and lost the day after (registration is cancelled). Eligibility for the self-employed Insurance, on the other hand, is acquired right upon one's loss of the employment-based insurance. Eligibilities for both are automatically acquired on one's day of birth and lost on one's day of demise, or when one gains pensionable rights under medical protection, thereby losing entitlement to insurance payment. Eligibility management is performed with medical insurance card number and resident registration number. The medical insurance card number, a basic management unit for the medical insurance, is designated according to employees that are eligible for the employment-based insurance while the number is designated to the self-employed insured, on the basis of each registered household.[28] The resident registration number is co-utilized with the medical insurance card number when the management is required on each individual separately.

Reporting obligations for the gain or loss of medical insurance eligibility also differ on the basis of eligibility type. In principle, the employment-based insurance mandates employers to report their employee eligibility status to the insurer, while the eligibility status report for the self-employed insured has to be made to the householder. However, in practice, for the employment-based insured, the personnel manager of a place of business takes charge of medical insurance tasks and reports the gain or loss of eligibility. Meanwhile, the self-employed insurance is mechanically acquired when one becomes unemployed and loses its eligibility for the employment-based insurance, vice versa. The eligibility management operation has become automated, not requiring any manual procedures to report eligibility. This procedural automation has become feasible with the introduction of data processing methods that automatically reflect changes occurred on the resident registration. However, such a system has been attained only after the achievement of the Universal Medical Insurance and establishment of the electronic system, before which, eligibility management was an uneasy task.

27. Benefits of the Continuance Policyholders Program were offered for 6 months when it was first introduced in January 1988, then extended for a year beginning in June 1988, and was later abolished in July 2000. The system was resurrected in January 2007 with 6 months of qualification period, which extended to a year in April 2009, then to 2 years since May 2003 and stands today.

28. Registered household is an administrative term used to describe people residing together, and is different from the concept of a family that lives together to make a living. In the Republic of Korea, residents are required to notify to their administrative office of any changes in their place of residency.

When there only existed employment-based cooperatives, eligibility management remained simple, as it solely depended on one's entry to and exit from jobs, and the insured was only required to receive a stamp of confirmation on their medical insurance card regularly (every 3 months). However, the eligibility management procedure had become increasingly complex after the initiation of Local Medical Insurance Act in 1987 under the former Multiple-Insurer System, because of changing eligibility type of individuals. This led to a change of the main structure for contribution levy and collection, and of those that provided benefits cost to medical institutions. Additionally, eligibility management generated a huge portion of work problems that incurred from resulting changes in eligibility listed below in <Table 2-1>.

Table 2-1 | Problems Occurred in the Process of Eligibility Changes Caused by Implementation of Nationwide Medical Insurance

Organization	Incidents	Problems and Case Studies
Cooperatives	Eligibility transition from employee cooperative to self-employed cooperative	- Although whole citizens should have the eligibility for either the employee insured or the self-employed insured, an omission from the eligibility for the self-employed insurance was often occurred when an employee insured retried or quitted her/his job - The regional cooperative did not know that an employee lost her/his eligibility for the employee insurance until she/he signed up the eligibility for the self-employed insurance for using medical insurance. It caused complaints of the citizen
	Eligibility transition from self-employed insured to employee insured	- An individual could be dual-eligibility for both the employee insured and the self-employed insured due to a failure to report its updated employment status - The dual-eligibility was not arranged until individuals received bills from the regional cooperative for long period
	Changes in residency of all or some members of the household	- It caused inconveniences that householder had to report to the regional cooperative about the moving in the same jurisdiction as well as the different jurisdiction - In case, the move to the different jurisdiction, insurance contribution could be changed by differentiation of contribution assessment

Organization	Incidents	Problems and Case Studies
		- If whole members of the family made a living at the same income but some members of family resided other places, separate medical insurance card numbers were given according to the residences due to the medical insurance eligibility management follows on the basis of resident registration. In this case, the total contribution rose comparing to the case for all members with one household because of basic contribution per household - In the beginning, if an individual who is not a member of the family, lives in the same residence, the individual had been added on the same medical insurance card so that the householder had to pay the contribution of the individual (this issue was solved after an individual was designated with a separate medical insurance card number)
Healthcare Institutions	Claims on medical expenses	- A problem incurred on balancing treatment costs between cooperatives that had paid benefits costs to medical institutions because most medical institutions could not verify which cooperative the patients belonged to after the change of eligibility

Source: NHIS (2014).

Regarding the issue of eligibility management, the self-employed cooperatives had set up branches in every *Dong, Eup, Myeon* district, and dispatched public officiasl in order to confirm the entry to medical insurance and the identity of insurer among residents who reported a move-in or move-out of resident registration. However, this issue had been resolved as the development of electronic systems for medical insurance enabled a more systematic management. This was further solidified after the management system became standardized nationally along with the integration of medical insurance in July 2000.

Korea's medical insurance also provides the same medical insurance benefits to dependents of the insured; dependents referring to those that do not make any remuneration or income. This implies that this system is only applicable to the employee insured, under which, the dependents are qualified for the equal level of benefits with no charge of contribution as they are unable to make an independent living. To qualify for insurance benefits, the dependent must not have any independent source of income (the 'income requirement') and depend on the insured for a living (the 'support requirement'). However, the criteria for determining eligibility for the program have transformed in accordance with changes in social environment and of medical insurance policy. Although the National Health Insurance Act of 1963 did not specifically provide for the dependent system, it

indirectly enabled dependents to receive benefits by prescribing the definition of eligible dependents. After the third amendment act in 1976, eligibility criteria were solidified to include spouses, lineal ascendants and descendants, and siblings of the employee insured. Furthermore, its enforcement regulations specified rules regarding reporting obligations of the dependents, and at the same time made clear that the dependents become eligible for medical insurance.

Eligibility requirements for dependents had proved to be malleable. The scope of eligible dependents expanded and shrank depending on political factors, financial factors, and what is called the 'principle of insurance'. Principle of insurance is applied to prevent the problem of "free-riders" by requiring the recipients with a source of income to pay contributions. Since the integration of the medical insurance system, however, policies regarding dependents have evolved to become oriented to meet the principles of insurance.

Political issues were considered in the following cases:

- First, the dependent system was utilized as a means to restrain population growth. The 6th statute initiated in 1984 expanded the scope of eligible dependents to include parent-in-laws. This was an attempt to contain population growth by allowing women to keep their parents insured under the husband's name, thus reflecting a cultural aspect of Korea - that is Korean's preference for sons over daughters.
- Second, the system expanded its coverage of dependents in order to achieve universal coverage through an incremental process within the original framework and budget. Subsequently, the dependents, previously unqualified under the formerly established rule 82~456 (82.10.26) of MHSA' 5th statute in 1982, were able to attain eligibility by securing insurer's verification of the actual insured-dependent relationship and the Minister's approval. In addition, 1987's 7th statute expanded the scope of eligibility of dependents to include the siblings of the insured and spouses of their direct descendants that are unable to make an independent living.
- Third, the dependent eligibility criteria were adjusted to better represent women. The 4th statute in 1981 provided that female insured's in-laws may be qualified for benefits under her name. This policy was an attempt to encourage more women into the workforce as well as to increase their role within the household.

Listed below are determination of eligibility criteria made in consideration of financial issues and principles of insurance.

- First, the self-employed insured that are without sufficient capacity to afford medical insurance, and is in truth supported by a family member that is employee-insured, may be qualified as a dependent of the insured. This enables the protection of the finances of the regional cooperative. In so doing, the finances of the employment-based cooperative is spent on benefits for the dependent-including step parents, step children, birth parents, birth children, maternal grandparents, grand children of one's daughter, and other collateral blood relatives- of the employee insured.
- Second, dependents with ability to earn income were excluded from the dependent system and transitioned to the self-employed insurance. This was to improve the financial stability of employment based cooperatives and improve equity of the system so that the recipients pay in accordance with their ability to pay.
- Third, by principles of insurance, insurance contribution amount is decided proportionally to one's income, and as Korea's medical insurance became integrated in July 1st, 2000, MOHW announced to drastically toughen the requirements for dependent eligibility. As an effort to strictly enforce income requirements, collateral blood relatives and university students with a source of income were no longer eligible as dependents and thus were transitioned to the self-employed insurance. The scope of eligible dependents was further downsized by lowering the age requirement from 'under 20' to 'under 19' on June 1st, 2002.

1.2. Expansion of Eligible Population

As we briefly saw in Chapter 1, Korea's medical insurance system, like that of other countries, began with simply employment-based insurance and incrementally expanded its coverage. Before medical insurance became compulsory, merely 0.19% of the population was covered by twelve voluntary cooperatives that were authorized by the government. After the compulsory entry requirement was applied, the number rose to encompass 8.8% of the population, approximately 3.2 million persons. Thus, the population coverage of medical security reach 14.5% of total population if including the 2.1million people (5.7%) that were protected by medical aid.

Table 2-2 | Population Coverage of Medical Security in 1977

(Unit: thousand, %)

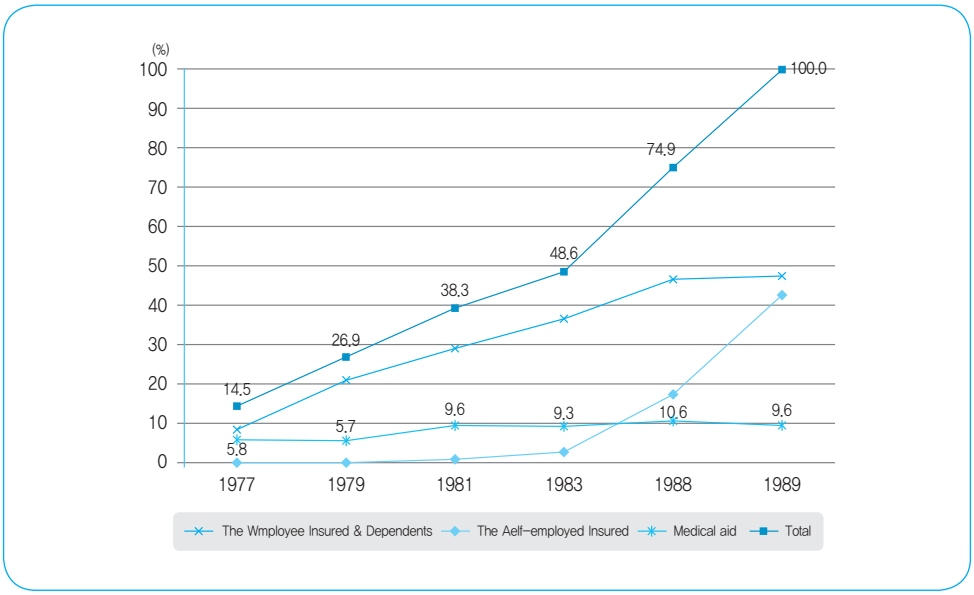
Total	Medical Insurance					Medical Aid
	Total	Employment-based Cooperative			Voluntary Regional Cooperative	
		Total	The Insured	Dependent	The Inured	
5,295	3,200	3,140	1,185	1,955	60	2,095
(14.5)	(8.8)	(8.6)	(3.3)	(5.4)	(0.2)	(5.7)

Note: ( ) is the percentage of eligible population of 36,412 thousand persons in the year of 1977.
Source: Medical insurance association (1977), "The trace of medical insurance".

In 1979, medical insurance was further expanded to include public officials, military personnel, private-school employees, and companies with more than 300 employees, under which 4.8 million or 13% of the whole population was insured. Medical insurance was applied to greater number of workplaces and further expanded since the revision in 1981 that approved both voluntary professional insurance as well and the self-employed persons with the same profession by implementing demonstration project (see Chapter 1. 2).

[Figure 2-1] illustrates a gradual rise in percentage of the covered population with the passage of acts that expanded applicable workplaces. In 1981, the coverage for employment-based insurance had initially expanded to apply in workplaces with more than 100 employees. This coverage showed further expansion to include workplaces with more than 16 employees in 1983. Over this period, individuals that are applied to the self-employed insured and occupation type-based medical insurance were included in this self-employed medical insurance demonstration project, encompassing about 39.3% and 48.6% of the population respectively. In 1988, a further extended applicability was implemented to agricultural and fisheries communities, resulting in 64% of the population to be covered under the medical insurance. In 1989, it was further extended to workplaces of 5 or more employees and simultaneously initiated medical insurance for urban regions, eventually achieving its goal of offering universal health coverage. By then, 42.9% of the people were employee insured, 42.9% self-employed insured, and 9.7% were protected under medical aid.

Figure 2-1 | Annual Proportion by each Type of Coverage



Source: NHIS (2014).

A policy designed to expand the scope of eligibility for employee insured was more than just an effort to increase the number of applicable eligible persons.

- When businesses gained legal responsibilty to provide employees with the employment-based insurance, employees, at the same time, also become eligible for other social insurances such as the unemployment insurance, Industrial Accident Compensation Insurance, and pension insurance. Such policies enhanced employees' welfare conditions, and thus could be seen as a meaningful welfare policy.
- The expansion of the employment-based insurance also helped enhance equity among employees in regards to insurance contributions, as previously employees had different payment obligations depending on the size of the workplace, regardless of which occupation they hold. Previously, employees of workplaces with less than five employees were covered under the self-employed insurance, consequently bearing the full burden of insurance contribution. As the employment-based insurance expanded, their contributions were reduced due to 50% of insurance contribution paid by the employer. Until then, businesses with less than 5 employees did not have the capacity to manage medical insurance for they ran the risk of shutting down and losing their employees.

The proportion of those protected under the employment-based insurance, self-employed insurance and medical insurance after 1989 is described below in <Table 2-3>. We can see that the number of employee insured have been continually increasing while that of the self-employed insured has been dropping since. But if we compare the numbers in 1995 from 1989, we see almost no changes in the proportion of those that are employee insured, but see a drop in percentage of those covered under the medical insurance from 9.7% to 6.6% and those self-employed insured increase by that much. Such drop in number of those covered by medical insurance can be interpreted as the government's plan to strictly regulate medical insurance that has been troubled by the problem of moral hazard, but also to relieve financial burden of the government.

Table 2-3 | Annual Ratio of each Type in Medical Security

(Unit: %)

Type \ Year	1989	1995	2000	2005	2010	2014
The Employee Insured	47.4	47.5	47.2	55.4	64.0	69.2
Self-employed Insured	42.9	49.4	49.5	41.0	32.7	28.9
Medical Aid	9.7	3.1	3.3	3.6	3.3	2.9

Source: Statistics calculated by NHIS (June 2014).

2. Contribution Calculation

The main source of medical insurance is insurance contribution paid by the insured, following the principles of social insurance. Contribution amount is calculated via different methods for the employee insured and the self-employed insured. Calculation differs as it is hard to tell the income level of the self-employed insured, a group that excludes employee insured and their dependents, for it consists both of those with and without a source of income; for example, business owners with income and retirees without. For the employee insured, the method remained largely unchanged, with the insurance contribution determined by multiplying the insured's wage amount with the insurance contribution rate. For the self-employed insured, however, the method has developed along with the result gained (see Chapter 1) through undergoing multiple demonstration projects, and thereby much different from what we observe in other countries.

The Medical Insurance Act of 1963 provides that contribution rate for the employment-based insurance is to be determined by the Minister of Welfare and Social Affairs, within

the range of 3% to 8% of monthly wage amounts. In 1977, prior to the first integration trial, employment-based cooperatives had applied insurance premium rates of between 3~8% of the standard monthly wage according to the regulations and articles established within medical cooperatives. Standard monthly wage is a method of grading the level of monthly wages on the basis of a number of wage range interval division system, and giving each level a standard wage, which is to be multiplied with the insurance contribution rate. For instance, if a range of monthly wage between 1 million KRW to 3 million KRW belongs to Grade 3, the standard monthly wage is 2 million KRW and here the contribution is calculated by multiplication of 2 million KRW with contribution rates. The main reason for the introduction of standard monthly wage was to simplify the tasks related to contribution calculations under the situation in which the wage of employees varies and frequently fluctuates, and the data processing is not introduced.

In 1994, the government legislated 8th Medical Insurance Amendment and revised enforcement decrees to change the range of contribution rates from 3~8% to 2~8% so that a lower rate could be applied to cooperatives depending on their conditions and also eliminated the ceiling on contribution grades of employee cooperatives. In other words, individuals that received the highest grade did not implement the standard monthly wage but their actual income was used for contribution calculation. This was a means to relieve burdens for the poor and transfer them to the wealthy, on the basis of the principle of social insurance. Prior to medical integration that took place in July 2000, contribution rates were determined independently by cooperatives, causing the rates to vary[29] among cooperatives and even for the insured with the same occupation earning equal wages. Thus, the financial gap between the large and small cooperatives widened; while the large-sized cooperatives were able to impose low contribution rates as they could operate a stable insurance budget, small-sized cooperatives had to impose high rates on their employees.

With the integration of cooperatives in July 2000, the system was consolidated to impose the rule of 'equal insurance contribution for equal income'. The integration improved equity of insurance contributions by resetting the standardized monthly wage amount to include all money and valuables offered by employers, except for those that are compensatory in nature. Although the contribution calculation method based on standard monthly wage resulted in an implementation of grading system for employment-based insurance contribution, the method also served the purpose of financial security. As <Table 2-4> illustrates, the

29. The standard monthly wage of cooperatives varied by 60~90% of the total wage, as bonuses and allowances were at times not subject to the imposition of income performance when determining the range of wages that become subject to imposition.

contribution grading system for employment-based insurance initially began with 30 grades in 1977, but expanded to 41 in 1980 and 53 in 1986. In July 2000, the number of grades was reduced to 50 to match that of the self-employed insurance, but then increased to 100 grades from January 2002 and remained till 2006.

The expansion of levels give the following advantages to the levy system of the employment-based insurance contribution.

- The insured were less resistant to the increase in number of grades of standardized monthly wages than to increased contribution rates, and thus helped secure financial stability.
- Each grade was further divided as a result of the rise in the income level of the insured, enabling insurance contribution to be set close to the actual level of income of employees.

Table 2-4 | Changes of Contribution Grades of the Employee Insured

Year	1977	1979	1980	1986	2000	2002
Number of Grades	30	33	41	53	50	100

Source: NHIS (2014).

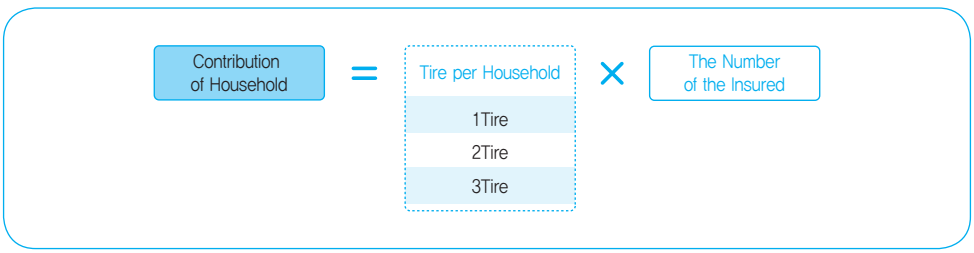
The next meaningful change regarding employee contribution rates occurred in January 2007. Article 68 of the National Health Insurance Act allowed one to set upper and lower limits on monthly wages of the employee insured. In other words, this indicates that the contribution for employment-based insurance is not calculated by standard monthly wage but by the actual wage that employee insured receives, and only the upper and lower limits are determined within contribution calculation. The main factor for this change is computerized operation systems that negated the utility of the standard monthly wage method. Additionally, this newly-introduced method showed more procedural simplicity and had a fit better to the contribution criteria on income.

With technological advances in management, no longer was the standardized monthly wage method required. Contribution amount could be determined by one's actual monthly wage.

The self employed contribution collection system was consolidated through various trials. As <Table 1-9> illustrates, Korea's GDP per capita was as low as 1,870 dollars during the first demonstration project of the self employed insurance in 1981. Contribution

amounts were determined by the capitation system, in which households were divided into three tiers by income, and each tier's respective contribution amount was multiplied by the number of the insured as <Table 2-2> shows. This system was applied to the trial cooperative regions of *Hongcheon-gun*, *Okgu-gun* and *Gunwi-gun*. Contribution amount for each region was determined by taking into account their relative living standards. Overall, the grades were subdivided into the top 10%, lowest 10% and the middle 80%. Households were designated tiers independently by the local government, depending on their living standards, tax burdens and cultivation scale, and thus did not meet much resistance. With the rise of healthcare expenses, however, the three-tiered collection system was financially insufficient.

Figure 2-2 | Contribution Levy System under the First Demonstration Project



Note: *Hongcheon-gun* and *Gunwi-gun* subdivided the collection system to 7 tiers and *Okgu-gun* to 5 in 1985.
Source: NHIS (2014).

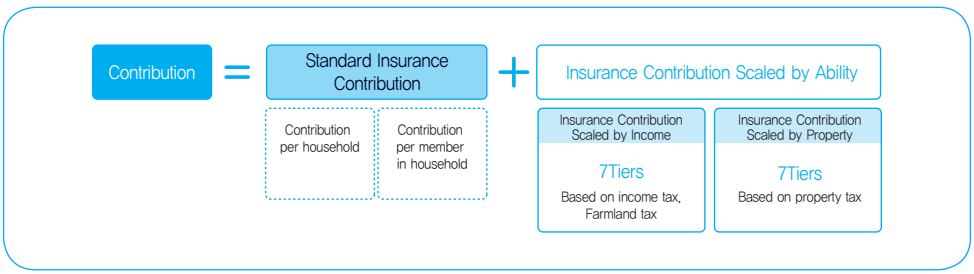
Although it was an inevitable choice to enroll residents to medical insurance system, the tiered-based capitation system had the following problems:

- Contribution amount were imposed indiscriminately to the wealthy small families and poor large families, as the system depended on the number of people in a household.
- It is inappropriate to apply to cities, which are occupied by various members.
- There are discrepancies in living standards within the same tier, and there is no definite criterion for differentiating living standards.
- The contribution amount among tiers was not sufficient,[30] thus putting the low-income group at a disadvantage.

30. Households of the 1st tier in *Hongcheon-gun* were imposed contribution of 3,800KRW, only 2.68 times of the amount imposed on households of the 7th tier, which paid 10,200KRW.

During the second trial of 1982, a new collection system was designed to take into account the basic insurance contribution and policyholder's ability (hereafter this is called contribution scaled by ability). The basic contribution is composed of each household's fixed contribution and each policyholder's contribution; contribution scaled by ability was determined by the insured's income level and property. Income and property data were provided by tax offices.

Figure 2-3 | Contribution Levy system under the Second Demonstration Project



Source: NHIS (2014).

The large discrepancies in contribution amounts among households led to the need for further categorization of tiers; the revised enforcement ordinance of 1985 subdivided the former 7 tiers into 15 tiers. The town and rural area of *Ganghwa-gun* and *Boeun-gun*, although both were of agricultural or fisheries communities, had different income levels, and thus the town areas were imposed contribution of one higher tier, while the rural areas were imposed contribution of one lower tier. Such changes reflected various attempts to design a collection system that could accommodate differences in living standards.

Although the second trial showed various attempts to design a better rating system than the first trial, it failed to consider the realistic situation of the times. The three trial districts only held 6.8% of the total households that could be levied contribution proportionate on income, and thus contribution increases were tilted towards basic contribution amount, raising the issue of equity and retrogression on contribution burden. <Table 2-5> lays out the composition of insurance contribution sources under the second demonstration project. The contribution per household, which has no difference from standard contribution, and contribution per member of household account for 68.6%. The table also indicates that among the contribution proportionate on income takes only 13.4% of the sources of

contribution within the three trial regions. In addition, although there was a problem[31] raised on a time lag between when one receives income and has to pay contribution, as this does not reflect the reality, the second trial signified a meaningful change by establishing an objective levy system and suggesting the direction for the calculating system.

Table 2-5 | Component Ratio of Average Sources of Contribution of the Three Regions Where Secondary Demonstration Project had been Implemented (1983)

Year	Contribution per Household	Contribution per Member in Household	Contribution Proportionate on Income	Contribution Proportionate on Property
Composition Ratio of Finance (%)	17.7	50.9	13.4	18.0

Source: MHSA and MIA, A Report on the Two Types of Medical Insurance Demonstration Projects, August 1984.

In January 1988, the collection system of self-employed insurance in agricultural and fisheries regions was designed based on the four factors used during the second trial as well as the proportion of each contribution source, accuracy of data collection, and rationality of tier classifications.[32] The following list describes the advances that took place from the second trial:

- Contribution amount is decided through budgetary projections of insurance contributions. The goal amount was set as [(Insurance benefits– contribution paid by the national subsidy)/ collection rate]. In turn, the percentage of distribution between basic contribution and contribution proportional to ability was determined by the ratio of households with available taxation data in each regional cooperative. In other words, a guideline for an adequate distribution of contribution burden between households with taxation data and the ones without the data was suggested. For instance, if the 50% or less of households among the cooperative policyholders has taxation data, it signifies that the percentage proportion of contribution proportional to ability is 30% while the

31. Yearly income tax rate is decided in July based on annual income of the previous year. In the case of health insurance, it needs to first attain income information from the National Tax Service, then assess insurance contribution amount based on income from October to next year's September. From the policyholders' point of view, they are imposed contribution amount based on what they received 2 years ago. Unlike the employee cooperatives, NHIS is unable to impose contribution on the date that the policyholder receives income. Thus, the system became institutionalized after inducing citizens' agreement.

32. The collection system for agricultural and fisheries regions could not be adopted in urban areas because of big difference on income and properties between social classes.

other type accounts for 70% of total contribution within the finance component ratio of the cooperative.

Table 2-6 | Average Distribution Ratio of Contribution by Component Ratio of Households with Taxation Data

Ratio of Household with Taxation Data		Below 50%	Below 60%	Below 70%	Below 80%	Below 90%	Above 95%
Distribution Percentage (%)	Contribution Proportional to Ability	30	35	40	47	55	60
	Basic Contribution	70	65	60	53	45	40

Source: Medical Insurance Association (1997).

<Table 2-7> shows 6 determining factors of the collection system, derived from further dividing the 4 factors used during the second demonstration project. Income was classified into farmland income and aggregate income, and of aggregate income, earned income was separately categorized so that weights can be applied proportional to income. Whereas farmland income, business income and earned income are evaluated equally in income amounts in determining tax rates, they were considered separately for assessing contribution amount because actual income could differ depending on the type of income.[33]

Table 2-7 | Components to Levy on Self-employed Insurance of Agricultural and Fisheries Communities

Imposition Elements		Standard of Imposition
Contribution Proportional to Ability	Contribution proportional to farmland income/revenue	Income amount based on farmland tax law
	Contribution proportional to business income	General income excluding earned income according to income tax law
	Contribution proportional to earned income*	Earned income of employees according to income tax law
	Contribution proportional to property	Property value of land, buildings and vessels according to the local tax law

33. General income of taxation system consists of business income, interest income, dividend income, earned income, income from rental real estate, and income from property. Business income is taxed after business expenses are reduced from taxable income, while earned income is taxed without a reduction process, resulting in a difference between the two types' taxable income from their actual income.

Imposition Elements		Standard of Imposition
Basic Contribution	Contribution per policyholder	Contribution set amount per policyholder of a household
	Contribution per administrative household unit	Contribution set amount per household

Note: * Worker's income that is not covered under the employee medical insurance.
Source: NHIS (2014).

Insurance contribution scaled by ability was determined within 15 tiers, and each tier was applied a rate of increase set by the following equation:

$$\text{Rate of increase} = \sqrt[13]{\frac{\text{Amount of 15 tiers ceiling}}{\text{Amount of 1 tiers ceiling}}}$$

And although explicit guidelines were not given, each cooperative set its contribution ceiling so that it did not exceed twenty times the amount applied to its lowest tier. Additionally, insurance contribution on miscellaneous property was to be imposed within 7 tiers for those above a certain living standard, although not specifically given.

The implementation of insurance system for agricultural and fisheries regions in 1988 served the purpose of dividing the medical insurance system into employment-based insurance and self-employed insurance. After a year of implementation, in 1989, the contribution assessment system for urban areas had been improved along with the expansion of medical insurance in cities due to applicability limitation[34] of the system for agricultural and fisheries regions to the cities. However the adjustments made were not major departure from the original framework. Some of the major differentiated features from the insurance system for agricultural and fisheries regions are delineated:

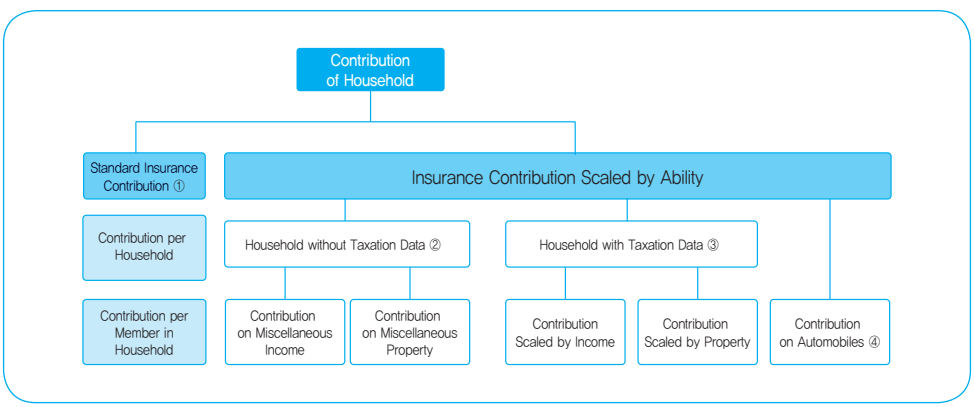
- Automobile insurance rate was included to assess contribution scaled by ability. This was to reflect Korea's economic situation, in which only the middle class or higher were able to afford automobiles, as the national GDP per capita was 5,565 dollars.
- The system was further classified into 30 tiers, and contribution scaled by ability was set higher than the rural communities. This was to reflect the fact that the income gap in urban areas was higher than that of rural areas.

34. The model for agricultural and fisheries regions could not be applied to the cities due to larger diversity of social member types and huge differences in income and properties between classes in urban areas.

• Contribution was also imposed on a separate criteria, 'miscellaneous income' and 'miscellaneous property'. Although no documentation exists regarding 'miscellaneous income' it was estimated by considering the number of people in a household, profession and occupation type, and ownership of automobiles. 'Miscellaneous property' refers to property other than taxable property such as security deposit on *Jonsei* (Korea's lease system) or monthly rents. Standardized contribution amount could be easily overestimated as the city's possession rate of taxable income amounted to approximately 30% and that of taxable property was around 50%. Increasing contribution amount scaled on ability in order to reduce the weight on standard contribution, however, could subsequently cause the concentration of burdens on households with data related to taxation data. In addition, there was a need to differentiate contribution for those with and without official taxation data due to the discrepancy in their living standards. Consequently as a method to raise a proportion of contribution scaled by ability, decrease one of basic contribution and impose differentiated contribution, the new levy system started to apply new components of imposition such as 'miscellaneous income' and 'miscellaneous property' through decision making by the operational committee.

The levy system of the self-employed insurance was developed on the criteria mentioned above as [Figure 2-4] illustrates below. The system remained unchanged until the integration of all regional cooperatives in 1998. Contribution imposed on households with data pertaining to taxation was determined by ① + ③ + ④ and those without were determined by ① + ② + ④.

Figure 2-4 | Contribution Levy System for the Self-Employed Insurance



Source: NHIS (2014).

In the situation where income data of citizens in urban area was difficult to gather, the utilization of houses, land, and vehicles as assessment factors, based on the Korean sentiment that property is regarded as symbol of wealth, came out to be effective on suppressing complaints that arose in relation to contribution burden between the insured in urban areas. However the fundamental problems and limitations stated below were not overcome.

- Selection of estimated income, figured out from properties and number of households, as calculation factor for contribution has weak logical basis and the contribution assessment procedure may progress into administratively convenient way. When the income from other incomes and taxation data is compared to the contribution proportion within the urban cooperative of the time, the percentage proportion of other incomes on contribution was 22% whereas that of taxation data was 15%; the contribution proportion of other incomes was shown to be higher than that of taxation data by 7%p.
- The utilization of policyholder's property in contribution calculation was useful for achieving financial stability of cooperatives and improving equity among policyholders, but led to a permanent separation between the employment-based insurance and self-employed insurance.
- Complaints arose by the fact that contribution imposed on self-employed insurance was higher than that of the employment-based insurance; some even pretended to be employed to avoid paying self-employed insurance contribution. Hence, a problem of equity arose between the employee insured and self-employed insured.

Apart from those issues mentioned above, equity problems and widening of financial gaps sprang from problems pertaining to the operation system of cooperatives. Citizens did not comprehend why contribution amount differed among cooperatives. Integration of cooperatives was thus seen as the only solution to this problem (see <Table 2-8>).

Table 2-8 | Difference in Contribution of Self-Employed Insured with Same Income and Property between Cooperatives

(Unit: KRW)

	Seoul Gangnam-gu Cooperative (major city)		*Seoul Gangseo-gu* Cooperative (major city)		*Seongnam Jungwon-gu* Cooperative (small city)		*Gunsan-si* Cooperative (integration of *si* and *gun*)	
	Grade	Contribution	Grade	Contribution	Grade	Contribution	Grade	Contribution
Basic Contribution per Household	-	2,500	-	3,000	-	1,500	-	2,300
Basic Contribution per Member in Household	-	1,800	-	2,500	-	1,500	-	2,000
Contribution on Income[1]	9	5,900	12	10,900	14	9,700	14	14,200
Contribution on Property[2]	18	12,400	22	24,300	25	20,800	22	20,200
Contribution on Automobile[3]	3	4,000	3	4,000	3	4,000	3	4,000
Total Contribution per Household		32,000		52,200		42,000		48,700

Note: 1) Suppose that total income is 2,010,000 KRW.

2) Suppose that property contribution is the standard of building of 12.99 million KRW and standard of land of 30.80 million KRW.

3) Standard of an engine displacement of 2,000 cubic centimeters.

Source: Cha et al., "The Collection System of Integrated Contribution in Self-employed Insurance (1998)".

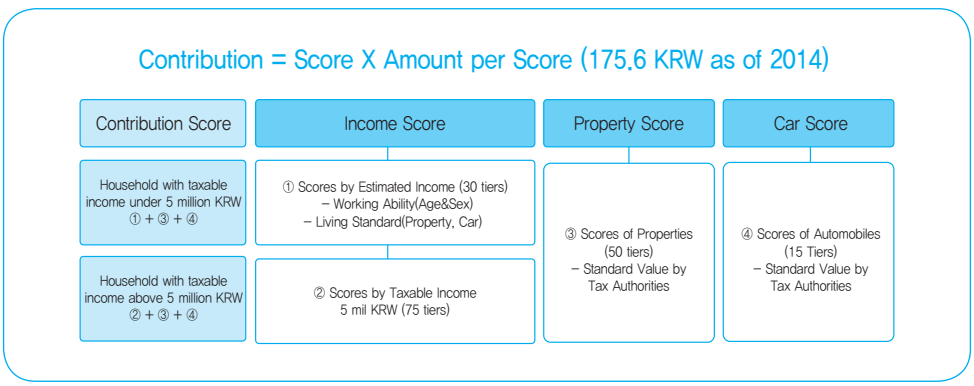
As all region-based cooperatives were integrated to NHIS in October 1998, the levy criteria for self-employed insurance contribution had become unified and elaborated (see [Figure 2-5]). Although minor changes were made since then, as the overall structure has still remained, the currently adjusted calculation criteria are as below:

- Criteria for imposing contribution are based on 105 tiers for income, 50 tiers for property, 15 tiers for automobiles, each systemized into a score. Contribution amount is decided by adding scores of each category and then multiplying that score with an amount per score that is decided on an annual basis.
- Calculation methods for contribution proportional to income are performed differently for those with income level above 5 million KRW[35] and those below.
- The group of policyholders with income above 5 million KRW is categorized into 75 tiers, and the contribution is calculated on the basis of the taxable income, property and vehicle levels, as seen in [Figure 2-5].

35. At the exchange rate of 1100KRWto the 1USD as of November 2014.

- Those below that amount were categorized into 30 tiers based on income evaluation (estimated income) taking into account their gender, age, property value, automobiles, disabilities. The highest tier score was set lower than the lowest tier of the group with income above 5 million KRW. The system was thus composed of 105 tiers in total. Estimated income became a newly established term, replacing the basic insurance contribution, a term that had been used since the self-employed insurance trial that took place in 1981. This further consolidated the terms of the former basic insurance contribution and other incomes. Their contribution is calculated on the basis of estimated income, property, and vehicle levels.
- Property refers to taxable properties and other miscellaneous properties (property that is not taxable, unlike deposit for lease or monthly rent) and the original contents remained unchanged.
- Tax amount and years used were considered in determining automobile contribution amounts. Higher tax amount was followed with higher contribution and more years meant lower insurance rate.

Figure 2-5 | Contribution Calculation for the Self-Employed Insured under Integrated Levy System



Source: NHIS (2014).

The integration of self-employed insurance unified the contribution collection system, which previously had differed among the multiple cooperatives, thus improving equity among the self-employed insured. However, the following problems became the source of civil complaints:

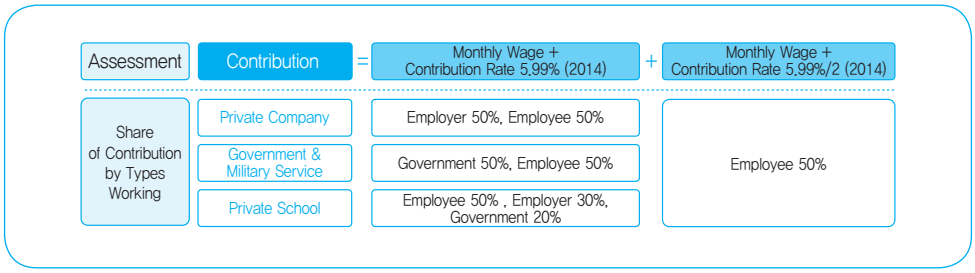
- In spite of the single-insurer system, in contrast to the situation that employment-based insured pay the contribution solely based on their income, the self-employed insured pay the contribution based on their income as well as properties, and thereby causing an equity issue on contribution burden. The grasp rate for the self-employed insured was higher than the contribution calculation of those groups that were solely based on income solely based on income.
- Different contribution calculation criteria is used when dividing taxable income and estimated income for those earning above and below 5 million Korean won, a standard set, even between identical self-employed insured with no theoretical basis.[36]
- Calculation based on policyholder's sex, age is far from assessing the actual income level and lacks theoretical basis. Self employed insured cannot calculate their insurance contribution by themselves due to the highly complex collection system, thus giving a rise to the number of civil complaints.
- Other problems have been raised due to different assessment methods for the two types of insurance. For example, there may be cases where property owners are charged higher level of insurance premiums after retirement despite their loss of income.

The government and NHIS continually review ways to improve the collection system by imposing contribution to all policyholders based on the same criteria or by simplifying the system itself. Such efforts led to some noteworthy results. Since September 2012, the employee insured with composite income greater than 72 million KRW (70,000 USD), in isolation of wage from company, has been imposed additional contribution named as 'composite income contribution'.

The [Figure 2-6] shown below shows the current equation for calculating policyholder's insurance contribution.

36. One possible explanation is that income data does not exist or cannot be used because when the integrated collection system was first designed, income less than 5 million Korean won was excluded from taxable income.

Figure 2-6 | Estimation Method and Share of the Employee Insured's Contribution



Source: NHIS (2014).

There are ceilings and floors (upper and lower boundaries) of contribution amount for both the employee insured and the self-employed insured. Even if the employee insured's monthly wage is under 280,000 KRW, contribution is assessed based on the wage of 280,000 KRW, and in the same manner, although the monthly wage is over 78.1 million KRW, the standard wage for calculating contribution is 78.1 million KRW, as its ceiling. As for the self-employed insured, the lowest score for their living standards and economic activity participation rate is 20, while the highest score is set not to exceed 12,680. When a self-employed insured scored 20 in the assessment, its monthly contribution is 3,510 KRW (20×175.6KRW) while that for highest scorer pays 2,226,600 KRW of contribution monthly.

Implication

The insured of Korean medical insurance comprises of two types: the employee insured (dependents inclusive) and the self-employed insured, and their contributions are calculated via different methods from each other. the contributions of the employee insured are computed by multiplying the insured's wage with the insurance contribution rate, while the contributions of the self-employed insured are determined by the standard of living, as a proxy variable, depending on income, properties and car etc., since it is hard to grasp the income level of the self-employed insured who consist of various members such as the self-employed, retirees, the unemployed and so on.

The calculation method of for the self-employed initially led to stabilization of medical insurance system as well as achievement in UHC, but it has brought discontent among insured because of equity problems between the employee insured and self-employed insured. The single calculation method should have been fully deliberated at that time when NHIS launched in 2000. It is now under examination to assess the contribution solely with the income.

Chapter 3

Insurance Finance

Insurance Finance

1. Finance Management

Since 1977, when the medical insurance system was introduced for the first time in Korea, the expenditure of benefit cost in the medical insurance has shown an exponential increase from 51 billion won to 40 trillion won in late 2013. Along with this increase in the expenditure, the medical insurance system has also become a key component in the social security system. Additionally, while experiencing the financial crisis as other countries, the size of the medical insurance system in Korea has become 20 times larger since expenditures of 2000 billion KRW in 1990 when nationwide medical insurance effectively began. Despite many points of view existing in analyzing the post-1990 progression of the insurance finance, it is most helpful to divide the period into three sections that reflect the major events that triggered changes in trends of the system: 1) the integration of the system (1990~2000), 2) the financial crisis in 2001 due to the separation of prescription drugs in 2000 (2000~2001), 3) and the normalization of the finance and the system since then (2001~present).

A closer look at the financial trends of medical insurance shows that the government expenditure on medical insurance had increased by 17.5% in average every year between 1990 and 2000, higher than the average rate of GDP increase, 12.9%, over the same period by 1.35 times. This shows that the portion of the national economy represented by medical insurance has steadily increased along with the economic burden to the nation.

Meanwhile, the government has given consistent financial support by governmental subsidy in order to stabilize the medical insurance system.

In 2001, although the management and the operation expenses reduced by 9.6% compared to the previous year, as well as the integration of the medical insurance organization that resulted the cutting down of the personnel costs, the benefit cost and the financial expenditure increased by 42.1% and 31.3% respectively. This financial crisis was caused by a combination of conflicts among interested parties before and after the integration of the medical insurance system, and populist political decision-making soothing those conflicts. The financial crisis in 2001 was dramatically resolved by enactment of the Special Act on Fiscal Soundness of Health Insurance which was to increase the governmental financial support by 70% as emergency measure.

According to the data from Statistics Korea, the average annual increase of the financial expenditure on medical insurance, between 2002 and 2013, is shown to be 9.2%, which is 1.46 times faster than the annual percentage growth rate of GDP, 6.3%, and higher than that of OECD, 3.9%. The steep growth rate of the expenditure on the medical insurance may be presumed to be due to the expanded coverage for MRI, meals for inpatient, severe diseases such as cancer, inpatient cost for the children under 6 years of age, by the enactment and the implementation of the 5-year roadmap for the Health Insurance Coverage Expansion (2004~2008). Other factors include the fact that Fee-for-Service cannot be easily controlled. (as mentioned in chapter 1.1.2, NHIS hardly plays a role to control financial incomes and expenditures)

Table 3-1 | Average Annual Growth Rate of Medical Insurance Finance

(Unit: %)

Period	Expenditure	Benefit Cost	Governmental Subsidy	Management and Operation Expenses	GDP (nominal)
1990~2013 (whole period)	13.8	14.7	13.9	6.1	9.4
1990~2000	17.5	17.9	16.7	14.6	12.9
2001	31.3	42.1	69.1	△9.6	8.3
2002~2013	9.2	9.7	7.0	0.2	6.3

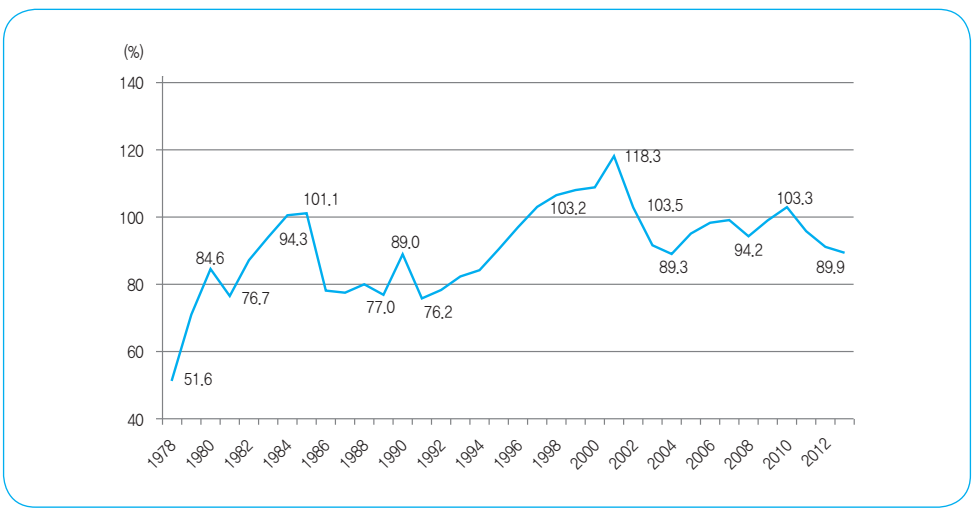
Source: NHIS and Statistics Korea (2014).

Considering only management and operational expenses, between 1990 and 2000, when the national medical insurance system was managed in a form of cooperatives, the average annual percentage growth rate of the expense was 14.6%, which was faster than the

percentage growth rate of GDP, 12.9%, over the same period. However, after the integration of the system, the annual increase rate of the expense decreased to 9.6% in 2001 and this dropped further down to 4.9% in 2002. The reduction in management and operational expense was mainly achieved through a cut down of the personnel costs, which includes the reduction of the number of the employees from 15,000 to 10,000, and the integration of individual cooperatives to the branches of NHIS. However, in terms of the net expenditure reduction on the management and the operation expense, savings were not as large as expected. This was due in part to large expenditures made for the computerization of the system and the relocation of offices. From 2002 to 2013, the annual increase in expenses for the management and operation was 0.2%, indicating that the rate virtually stayed frozen. Expenditures for operations and management have shown a consistent decrease since 2000; 6.5% in 2000, 4.5% in 2001, and 1.6% in 2013. The reason for the decrease in budget for the management and operations (3~4%) may be thought due to an expansion of the budget on medical insurance, but, in consideration of the fact that the expenses for the management and operation have almost been frozen since 2002, it is more valid to say that the medical insurance system is managed with higher cost-effectiveness.

The financial soundness can be noted by analyzing the earning to expenditure ratio. [Figure 3-1] states the earning to expenditure ratio from the early stage of medical insurance to 2013.

Figure 3-1 | The earning to Expenditure Ratio in Medical Insurance Finance (1977~2013)



Source: NHIS (2014).

From 1977, when medical insurance was implemented, budget balance had become worse and recorded a deficit in 1984. In 1985, the ratio of earning to expense had reached 101.1. Although there was a partial deficit in some cooperatives after 1989 when national medical insurance started, the total budget balance was stabilized. However the budget balance had become worse rapidly from 1995, exceeding 100 for the earning to expense ratio in 1997, and recording 118 for the ratio in 2001 during the financial crisis, which showed the worst financial states over the period of medical insurance. However the financial state was normalized promptly by substantial support of the government and rise of insurance contribution. The amount of government subsidy in 2002 was increased by 94% in comparison with that of 2000 and the earnings from the insurance contribution also increased by 51% over the same period. As a result, the earning to expense ratio improved and recorded 89 in 2004. Since then, there have been small fluctuations in the figure due to the expansion of benefits coverage that dropped the ratio back to 98.6 in 2006, and made it exceed 100 in 2010. NHIS recorded current surplus of 4.5 trillion KRW in 2013 via constant efforts by NHIS for finance stabilization. (See Appendix 1 and 2).

Effective financial management approaches to the medical insurance system in Korea began with the first implementation of the medical insurance in agriculture and fisheries regions in January 1988. This was because that the previous employment-based cooperatives had run their own finance in a form of autonomic management with responsibility which prohibited government intervention. An integration of the policies for financial management of the cooperatives since 1987 has been studied. This project was called the Collective Financial Management Business.[37] A brief background of the case for integration is as follows:

- Under the state where the financial disparity between the cooperatives deteriorates continuously, particularly on the rate of contribution and the rate of earnings and expenses, a government-wide control of this disparity was necessary.
- Differences on the level of contribution burden on the individual policyholder between urban and rural, or employment-based and self-employed cooperatives were predicted to show financial disparity.

37. National Health Insurance Act, Article 27, Clause 2 refers to Insurance Finance Stabilization Business, and the allowance on business operation by Medical Insurance Association. The contents and types of the business that National Health Insurance Act stipulates are as follows: co-funding for high-priced insurance benefits costs, co-funding for medical costs of elderly, support of policyholders in susceptible financial state due to natural disaster, loan business for the payment of insurance benefits costs, operation of health prevention programs for the promotion of national health and reduction of medical expense, and other businesses for the insurance finance stabilization.

• Unfairness and indirect allocation of medical costs on the medical service used by medical institutions were examined to have an effect on the financial disparity.

As predicted, the self-employed cooperatives showed financial instability from the beginning. Subsequently, the cooperatives raised the contribution and made improvements in collection methods in order to increase the revenue. Additionally, they endeavored to achieve optimization of operational management systems to suppress rising operational management expenses. The Medical Insurance Association initiated Collective Financial Management for a collective reaction to the financial instability of the self-employed medical insurance.

The Collective Financial Management Business by Medical Insurance Association was implemented on medical insurance claims over a million KRW per claim statement from 1991, based on the case studies in Japan and "Co-funding Act of Insurance Benefits on high-priced treatment costs" of MHSA. The Co-funding of the Medical Costs of the Elderly scheme was additionally implanted in 1995 in order to deal with demographic ageing phenomenon and urbanization that weaken the financial stability of medical insurance in agriculture and fisheries region. <Table 3-2> shows the effect of the Co-funding of the Medical Costs of the Elderly scheme on the promotion of financial condition of regional cooperatives.

Table 3-2 | Financial Statement of Co-Funding for the Employment-based and Regional Cooperatives between 1991 and 1998

(Unit: 100 million KRW, %)

		1991	1992	1993	1994	1995	1996	1997	1998
employment-based Cooperatives	Revenue	452	677	853	1,063	2,341	3,038	5,034	5,337
	Expenditure	640	892	1,185	1,432	3,456	4,524	7,671	7,577
	Revenue – Expenditure	-188	-215	-332	-369	-1,115	-1,486	-2,637	-2,240
Regional Cooperatives	Revenue	458	697	931	1,187	2,348	3,036	5,082	5,435
	Expenditure	270	454	606	768	1,209	1,519	2,600	3,029
	Revenue – Expenditure	188	243	325	419	1,138	1,517	2,482	2,406
Effects of Support on Regional Finance[1]		1.6	1.7	2.0	2.2	4.8	5.0	6.9	5.8

Note: 1) (Revenue – Expenditure) ÷ (Expenditure of Regional Cooperatives) × 100.

Source: Gong et al., "Financial Stabilization Method After Abolishing Special Act on Fiscal Soundness of Health Insurance", p. 70, Nation Health Insurance Service, 2005.

The principles of financial management before and after the integration of medical insurance system can be distinguished from each other by the fact that the financial autonomy among cooperatives was possible as a method of financial risk management before the integration. Whereas after the integration of the system, because any financial risk to the single insurer may threaten the existence of the whole medical insurance system. According to one analysis, it has been suggested that the financial crisis that NHIS faced in 2001 was caused by a combination of multiple factors such as conflicts between interested parties before and after the integration of the medical insurance organizations, and the impractical policies implemented for resolving those conflicts. In general, the factors that make the medical insurance finance unstable are as follows: populist political decision-making on medical fee schedules, expansion of insurance benefits; opinion gaps between interested parties like policyholders and medical service providers; annually-managed short-term finance (by the year); and unpredicted events like epidemics that raise the expenditure on insurance benefit costs.

However the outbreak of financial crisis in 2001 was because of the following direct and indirect causes that resulted in aggravation of the financial condition:

Direct causes:

- A successive raise of insurance fee schedule in 2000 (April, July, September) and in 2001 (January) as a form of compensation to doctors who experienced income reduction over the separation of dispensary practices from medical practices
- Indiscriminate prescription of high-priced medications by doctors for their own benefits as it became no longer required to specify drug ingredients but rather the product name of the drugs on the prescription
- Co-payment ratio control to ease the burden of medical costs of patients

Indirect causes:

- In order to cover the budget deficit in advance of the integration of the system, the employment-based and regional cooperatives encroached the reserve fund rather than raising the insurance contribution, and this, as a result, disabled the handling of an increase in insurance benefit costs

- The representatives of self-employed insurance policyholders from the Finance Operation Committee,[38] which decides the insurance contribution of the self-employed insurance policyholders, agitated for government subsidies while refusing to raise the insurance contribution, and this made it more difficult to deal with the financial crisis on time

In general, the financial stabilization is separated into two parts: revenue and expenditure. In terms of revenue, the examples include: fair levy of insurance contribution and its collection, and securement of external funds other than the insurance contribution. Meanwhile, in terms of the expenditure, a high level of the financial stabilization is achieved via provision of insurance benefits that match to the financial state, and control and redemption of wrongfully paid insurance benefit costs. The financial crisis in 2001 was overcome by implementing various forms of short-term but cost-effective policies to the full extent.[39] The measures for the financial stabilization can largely be divided into three:

- The cooperatives have been putting in efforts to maximize earnings. The government temporarily enacted a Special Act on Fiscal Soundness of Health Insurance in order for expanded investment of government subsidies (made up of the government subsidy and levy on cigarettes) on the finance of national medical insurance, while NHIS implemented a number of policies for the promotion of financial soundness, thereby implementing a business model based on selected tasks for the expansion of earnings (See <Table 3-3>). The model has been evaluated as successful based on the fact that on average extra 206.5 billion KRW is being secured every year after implementation of the policies. 206.5 billion won accounts for 0.7% of the average insurance benefit costs from 2007 to 2011.

- An actual reduction of the medical insurance cost was achieved through re-evaluation of the fee schedule assessment system, which may be regarded as an indirect control, rather than a direct cut down of the fee schedule. The previous fee schedule assessment system was equally adopted for all medical institutions, whereas the re-evaluated system

38. According to National Health Insurance Act at the time of complete integration of organizations, the Finance Committee, comprised of each 10 people from representatives of the employee insured, the self-employed insured and public, deliberate and decide main issues such as adjustment of contribution and other issues related to insurance finance. After financial crisis, decision of contribution is conducted by Health Insurance Policy Deliberative Committee under the Ministry of Health and Welfare.

39. On May 31 2001, the government announced comprehensive countermeasures for the financial stabilization of NHIS and the settlement of the separation of dispensary practices from medical practices. In following, on June 5 of the same year, the government launched 'Bureau of Financial Stabilization Comprehensive Measurements' (Director: Minister of Health and Welfare) to control the financial crisis.

adopted a number of assessment mechanisms on different types of medical institutions and this was shown to be effective on cutting down the actual fee schedule (8.7%), thereby controlling the insurance benefit costs. The reduction rate for the insurance benefit costs came out to be 18% in clinics and 27% in hospitals from July 2001 and beyond.

- All types of measures of the action were taken to reduce the insurance benefit costs directly at the same time. Examples are as follows: matching up the claimed benefit costs with the medical records of the person who received service; enforcement of the reviews on medical and pharmaceutical expenses; and prevention of false or wrongful claim insurance benefit costs with a campaign that raised awareness on the importance of medical receipts.

Table 3-3 | Effects of Financial Stability Improvement for Revenue Increase

Business	Contents	Outcome
Enforcement of the Contribution Collection	Setting up of a focused-collection rate and the assessment for long-term delinquent insured	The collection rate has been 98.7% (averaged over the five-year period 2009~2013)
Enforcement of Eligibility Requirement for Dependents	Disentitlement of dependent if the individual is examined to be eligible to pay the contribution → From December 2010, dependents with siblings who have more than 0.3 billion KRW of properties or with parents who have more than 0.9 billion KRW of properties have been disentitled to dependent	Extra 3.3 billion KRW of contribution has been charged and collected (averaged over the four-year period 2008~2011)
Trace of Omitted Income for a Complete Charge of Contribution	Trace of omitted income for a complete charge of contribution had not been possible for NHIS due to an omission of the information on the exposure of an undeclared income by the Tax Authority during the regular data-linkage between NHIS and the Tax Authority → Now this has been enabled	Extra 1.9 billion KRW of contribution has been charged and collected (averaged over the four-year period 2008~2011)

Business	Contents	Outcome
On-site Evaluation of Properties of Self-Employed Insured	This is the case if self-employed policyholders do not or under-report their unregistered property (a monthly rent or a lease) which is a type of assessment item → Perform an on-site evaluation and charge the contribution	Extra 9.5 billion KRW of contribution has been charged and collected (averaged over the four-year period 2008~2011)
Management of Employment-Based Contribution Settlement	This is the case if employment-based policyholders do not or under-report their monthly wage (they under-report the monthly wage to NHIS for a contribution cut while over-report to tax office for a tax exemption); disguised remuneration → Evaluate the actual wage via comparison with taxation materials and charge the contribution	Extra 144.6 trillion KRW of contribution has been charged and collected (averaged over the five-year period 2007~2011)
On-site Inspection of Workplace	The following two cases: 1) if an employer does not report the employment-based policyholders to avoid burdening contribution of the employees 2) If a wealthy individual registers himself as an employment-based policyholder (reporting low monthly wage) to avoid high self-employed insurance contribution → Charge the contribution after an on-site inspection	Extra 17.9 billion KRW of contribution has been charged and collected (averaged over the five-year period 2007~2011)
Management of Interest Earnings	Fund management of NHIS finance → Production of profits with short-term effective management of finance between the period of contribution collection and treatment benefits costs payment	27.3 billion KRW of profits interest has been produced (averaged over the five-year period 2007~2011)

Source: NHIS (2014).

2. Government Subsidy and Levy on Cigarettes

In case the social insurance contribution does not cover the expenses required for the operation of the medical insurance system, it becomes inevitable to inject external funds. In most countries, the lack of public finance is supplemented by provision of government subsidies or additional injection of public funds under the responsibility of the government, as a main entity of social insurance operation.

Financial support by Korea government to the medical insurance business was begun from the time that the medical insurance system was run by the voluntary cooperatives. In 1969, the government stipulated that MHSA cover 10% of the expenses arising for the administrative office work of the medical insurance program and for the insurance benefits costs, but the actual insurance benefits costs were provided as a fixed amount per policyholder. After an establishment of compulsory-entry form of medical insurance in 1977, until 1979, the government subsidies had been provided to the voluntary cooperatives for financial support of a designated value per policyholder but the size of the budget allocated only accounted for 1% of the total medical insurance finance. From 1980, partial amount of personnel expenses was supported instead while the size of the budget remained the same. From 1985, the government even stopped the whole financial support on medical insurance business. The financial support of the government to the voluntary cooperatives with government subsidies was a pure form of financial support. Provision of government subsidies to compulsory cooperatives was significant due to the importance that the government places on the social insurance system. In addition, although allocation of government subsidies was meaningless for the employment based cooperative due to the fact that their company covers 50% of the finance of single cooperatives, the government continued the financial support as a mere formality in order to justify its directing and monitoring of companies. The government changed the form of financial support from provision of governmental subsidies to covering partial amount of personnel expenses.

The provision of government subsidies to regional cooperatives started in 1981 when the demonstration projects were firstly implemented. The established principle was to support the entire management and operation expenses from the government subsidy and to supplement the entire insurance benefits costs with the insurance contribution of local residents. However, the results of the demonstration projects illustrated that the cooperatives continued to incur deficits in the first 6 months. In response to this, the government urgently legislated “Regulation on Governmental Loans to Support” and gave out 2-year redemption period loans with no interest. In case where the cooperatives were judged to have no ability

to repay the loan, the debt was written off under the permission of MHSA. The loan was virtually nominal and it was no different from the government subsidies. The average percentage support over the 7 years of the demonstration projects accounted for 36% of the total expenditure and this included the management and the operation expenses.

During the implementation of medical insurance for agricultural and fisheries regions, there was no objection to the provision of government subsidies for the management and the operation expenses but there was a clash of opinions about support of medical insurance benefits costs.

A brief summary of the dominant arguments is as follows:

- To be fair, the self-employed insurance policyholders should also get benefits from the government subsidies just as the employment-based holders whose 50% of contributions are shared with their employer. The background logic was that the contributions that the employer pays should not be regarded as expenditure from its net profit but as a part of the wage. Moreover, it is also claimed that the price of a product that self-employed insurance policyholders purchased as a consumer is included within the profit that companies make.[40]
- In the case of the self-employed insurance, most of the contribution is appropriated from socially vulnerable groups as they outnumber the other social groups and this, as a result, may trigger destabilization of the insurance finance. In this context, a financial support to the regional medical insurance has to be attained on the basis of social security promotion (Moo, 1992; Rho, 1991; Kim, et al., 1992).

After a policy on a scaled-contribution aid with government subsidies was made, the government tried to support 50% of the contribution to the lowest income bracket that makes up 20% of the population, while support 25% of the contribution to the secondary poor that makes up 30% of the population. However, people from all walks of life were negative on this policy and the reasons were as follows:

- The Economic Planning Board agreed on the reduction of contribution burden for the lowest income bracket but had added more of weight to the difficulties on the investigation and fair selection of applicable individuals.

40. According to Precedent of Supreme Court 92Da30801, July 29, 1994, it was established that the contributions that an employer pays is not a part of the wage that it got paid for one's labor.

- A decrease in contribution collection was expected due to a disagreement on the investigation and selection of applicable individuals. Besides, the policy had a flaw; a regional ability gap to pay contributions could not be solved.

MHSA agreed on a concurrent support plan of a fixed amount per policyholder and a fixed amount per household. The support rate was fixed at 35% of the medical insurance finance for agricultural and fisheries regions. The basis of support was initially linked to the fact that the governmental loan support program was accounting for 35% during the project demonstration period. However, as the actual collection of insurance contributions was performed, the government had to face angry backlash from people over the insurance contribution and therefore the government had to raise the government fund rates to 50% in the first year of implementation. On the other hand, the government was still aiming to cover the entire insurance benefits costs with insurance contribution of local residents while maintaining a policy to provide a certain amount of government subsidy. Consequently, the government funding rate dropped to 42.1% and 36.7% in 1989 and 1990, respectively, thus introducing once again the specter of deficit. Regional cooperatives in fishing and farming areas were especially hard hit, resulting in delays in paying benefits. In response to this, not only the senior staffs from MHSA but also the senior executives and the president of regional cooperatives visited congressmen to explain the necessity of financial support, thereby making up the revised supplementary budget bill.

However, after overcoming the crisis, the government funding rates dropped again, causing 113 cooperatives to incur financial deficits in late 1995. Government subsidies had dropped because of the difficulty of predicting benefit cost in the budget process. The budget set for the government fund was calculated from the estimate of the insurance benefits cost for the current year, and the management and operation expenses. 50% of the sum of estimated insurance benefits cost and the management and operation expenses was then to be subsidized by funds secured from the general accounting budget. Since the insurance benefits costs were calculated by multiplying the estimate of the insurance benefits cost per capita to the eligible population groups, an increase of the insurance benefits cost became much higher than an increase rate of government subsidy, thus creating funding gaps. The determination procedure on the government subsidies had changed in 1994, in order to narrow down those gaps. However, even though that procedure changed in a way to reflect the rate of fee schedule increase and the rate of consultation rate increase to the actual amount of government subsidy per capita, followed by multiplication by the eligible population groups, the gaps had become wider as the actual benefits costs exceeded the increase rate of fee schedule. Therefore it was proposed by the medical insurance experts

to enact legislation setting government funding at 50%.[41] The <Table 3-4> shows the government fund rate supporting the regional medical insurance finance from 1992 to 2000 when the medical insurance system was integrated.

Table 3-4 | Government Subsidy Ratio Comprising the Regional Medical Insurance Finance

(Unit: %)

Year	1998	1990	1992	1994	1996	1997	1998	1999	2000
Government Fund Rate	54.5	36.1	44.5	38.1	30.1	29.7	28.2	26.4	32.0

Source: NHIS (2014).

In this situation, the government policy of distributing subsidies as a fixed amount per household was flawed inasmuch as rural household contained more people compared to urban households. This cause a serious in subsidies per capita between rural and urban areas. Therefore, in 1992, the government removed the mechanism based on household. This actually resulted in very limited success at narrowing the funding gaps among respective cooperatives. It became clear that the government had underestimated the socio-economics differences between regions. For example, a cooperative which consists of a high proportion of elders would have a low financial ability while showing a high demand on medical services, leading to continuous financial loss. Thus, from 1992, a scaled government subsidy was implemented on the basis of the size of the general income tax standard and the proportion of elderly population and, in 1995, this was expanded up to 10%, enforcing the financial support to the vulnerable cooperatives.

An integration of KMIC and regional cooperatives in October 1998, followed by 2nd integration with employment-based cooperatives in July 2000 made the scaled government subsidy method useless. Enactment of National Health Insurance Act (Article 92) in July 2000 regulated that the government may contribute to the management of medical insurance business within the range of the national budget but the size and detailed method of the contribution were not suggested and so the controversy continued. At the same time, the separation of medicine prescription and dispensement was implemented and, in turn, a sharp rise in fee schedule was required to assuage the medical community. As a result,

41. On expenses borne by the National Treasury, National Health Insurance Act, Article 48 and an enforcement decree from the same Act, Article 80 referred to a non-mandatory provision, stating that the National Treasury may be used for medical insurance business expenses, medical insurance benefits costs, and financial resource development.

the integrated system faced a financial crisis in 2001. Therefore, the government had to temporarily enact Special Act on Fiscal Soundness of Health Insurance in order for expanded investment of government subsidies (made up of the general accounts by government and the health promotion fund from levy on cigarettes) to the corporation. Special Act on Fiscal Soundness of Health Insurance clearly stipulated the size of financial support; 50% of the funding for regional insurance, within which 35% was allocated to general accounts and 15% was categorized as support through the health promotion fund. The proportion of the government fund that accounts for the total earnings of NHIS increased up to 22% in 2001.

By the time when the Special Act on Fiscal Soundness of Health Insurance terminated in 2006, the controversy on the size and method of governmental financial support arose up again. A scaled support of insurance contribution to the self-employed policyholders on the basis of the income levels and a support of the insurance contribution even to the employment-based policyholders with low income levels were suggested (Lee, et al., 2001). The Department of Finance also agreed on the scaled distribution of insurance contribution for the self-employed policyholders on the basis of higher efficiency of governmental funding management whereas the medical insurance community was opposed to use of government subsidy on the support of contribution.

The main reasons for opposing are as follows:

- The provision of governmental subsidies in the early phase of medical insurance system was to support vulnerable population groups, thereby stabilizing the finance of cooperatives. However, since some major changes were made on the contribution assessment system after the integration of organizations, the contribution burden for low income households and vulnerable groups had been lowered and relieved.
- In the situation where the insurance benefit coverage is low, it would be more efficient if the government subsidy supported benefits for severe illnesses that require high treatment cost, in order to prevent abandonment of medical service use due to high cost. This could be most effectively done by lowering co-payment rates.

<Table 3-5> shows a summary of various opinions on the schemes of governmental support. As a result, the Nation Health Insurance Act had been reformed in 2006 on the basis of the Special Act on Fiscal Soundness of Health Insurance, stating that the government had to contribute 20% of the estimated insurance revenue to NHIS, where the 20% consists of 14% from governmental subsidies, and 6% from the Health Promotion Funds (the

collection on cigarettes).[42] Moreover, the conversion of the previous Act, stipulating that the government contributes 50% of the regional insurance finance with government subsidies, was made to interlock with the insurance contribution in order to put emphasis on the responsibility of the policyholders for their insurance finance.

Table 3-5 | Advantages and Disadvantages of Governmental Subsidy Support Method on Medical Insurance Finance

Method of Support	Argument	Advantage	Disadvantage
Uniform-support of Government Subsidy on the Medical Insurance Finance (insurance benefits costs)	- Expansion of coverage - Enforcement of accessibility to medical services for low income group	- Can reduce co-payment to the low income class - Therefore it brings an effect of coverage expansion for the low income class along with the expansion of policy on the contribution reduction	- Due to the uniform-support on the medical insurance finance, there is a misconception that the high income class also receive the benefits
Scaled-support of Government Subsidy on the Insurance Benefits Costs (depending on the disease/ income classes)	- Enhancement of fairness by income classes, in accord with the social insurance principles	- Keep the advantages of uniform-support of government subsidy to the insurance finance - Securement of the social safety net by reducing uncertainties and family risks derived from catastrophic illnesses - Possible to stand against the private medical insurance	- Conflicts arise throughout the procedure of selecting disease groups and eligible persons - Difficulties on making a prediction of costs for the support on selected disease group
Scaled-support of Government Subsidy on the Contribution of Employment- based and Self-employed Policyholders by Income Classes	- Support the whole socially vulnerable classes - Interlocking-support of contribution for matched households	- Enable the prediction and pre-management - Reduction of delinquent insured due to a direct support on the contribution	- No effects if the co-payment is high so the securement of benefits is necessary - The alleviation system overlap and the negation of the argument on charging system - Vague division of the income classes

42. The amount of money that the Health Promotion Fund supports to NHIS finance is restricted not to exceed 65% of the revenue predicted.

Method of Support	Argument	Advantage	Disadvantage
Uniform-support of Government Subsidy on the Contribution of Self-employed Policyholders	- Support to the regional insurance finance, under the relatively more inferior condition, in terms of finance	- Enable the prediction and pre-management - Government-wide enhancement of fairness by supporting 50% of the regional contribution, in comparison to employment-based insurance that the employer contributes 50%	- Due to a lack of income data possessed for the self-employed policyholders, there is a conflict that the high income class also receive the benefits on their contribution - Fairness conflict between the employment-based and self-employed policyholders - Since the size of government subsidy interlocks with the contribution, the expansion of coverage may lead to a rise in contribution for low income class
Scaled-support of Government Subsidy on the Contribution of Self-employed Policyholders	- Support to the self-employed policyholders with low ability to pay the contribution	- Same as uniform-support of government subsidy to the contribution of self-employed policyholders - Reduction of delinquent insured due to a direct support on the contribution	- Disadvantages of scaled-supporting method - Since the size of government subsidy interlocks with the contribution, the expansion of benefit coverage may lead to a rise in contribution for low income class - Polarization of medical use and causation of excessive rise in contribution

Source: Kyoung-Youl Gong, et al. (2005), Financial Stabilization Method after Abolishing Special Act on Fiscal Soundness of Health Insurance, NHIS.

The Health Promotion Fund that contributes to the medical insurance finance is created by the National Health Promotion Act. The source of revenue for the Health Promotion Fund is the surcharge on cigarettes and the fund is stipulated to be spent on initiatives addressing health promotion. Examples are as follows: health education, health consultation, nutritive control, oral health management, health screening program for the early detection

of illnesses, research and study on the health issues in local community, and running health education programs. The Health Promotion Fund used to contribute to NHIS health promotion business expenses from 1998 to 2001. However, since 2002, after the financial crisis of the medical insurance system, the fund has been stipulated as a temporal special fund for the financial support of the medical insurance. In spite of a claim that the fund should be spent only on its own purpose, it is examined that the current policy on the use of the fund has to be maintained unless an alternate financial source is found for the medical insurance.

3. Management of Collecting Contribution

Medical insurance in Korea has been developed through active management of contributions collection. There is a difference in collection systems between the employee insured and the self-employed insured. In case of the employment-based insurance policyholders, the employer reports the income of employees to NHIS for the contribution assessment, and the collection is achieved by income withholding deductions every month. On the other hand, in case of the contribution of the self-employed, it has to be paid at allocated payment points (like banks) and the invoice has to be shown for the completion of payment. In other words, the insurer has to deal with the policyholders directly from the payment to the confirmation of the contribution and this procedural complexity brings difficulties on the management of collection of the contribution for the self-employee insurance.

The collection problem of the regional insurance contribution surfaced from the beginning of the system implementation because of structural problems on the management of invoice issuance. In fact, the systematic procedure of insurance contribution collection was not efficient at all. For example, since the self-employed policyholders had to give monthly notification per household, time consuming handworks were required such as; printing out the invoices from 5000 (rural-based cooperatives) to hundreds thousands (urban-based cooperatives) of households for 2~5 days, and putting them into the envelopes and sorting them by post code for 7 days. Frequent movement of resident registration place caused wholesale returns of invoices and this, in turn, produced extra administrative work. Moreover, all the receipts of insurance contribution paid by policyholders had to be collected from the bank for one by one verification.

In this situation, the majority of the self-employed insured were rather passive on the insurance contribution payment as they regarded the medical insurance as one of the benefits

that the government provides. Due to this mindset about medical insurance, the ratio of voluntary insurance contribution payment within the due date stayed around 60~65% for the cooperatives of agricultural and fisheries in the first 6 months of the implementation.[43] In addition to this, systematic unsettlement of interlocking assessment materials for imposition of contribution, provision of inaccurate taxation data and frequent rise of insurance contribution triggered a resistance among the farmers. this dissatisfaction turned into a boycott, led by Catholic Farmer Association, other farmer groups in agricultural and fisheries region, and some local farmers. Other organized forms of protest that farmers employed included as follows: rejection of insurance contribution invoice receipt, return of medical insurance card, and production and distribution of leaflets that demanded the expansion of government subsidies and the change of insurance contribution assessment method. This movement of farmers has been sustained for a time on a national scale.[44]

Each regional cooperative endeavored to promote the rate of insurance contribution collection under unfavorable conditions. First of all, in the early phases of regional cooperatives, each *Eup*, *Myeon*, *Dong* administration office arranged 2 employees at each branch; one for the management of public resentment such as eligibility management, adjustment of insurance contribution,; while the other was in charge of the promotion of insurance contribution collection. In the case of agricultural and fisheries regions, various forms of promotion were implemented to encourage the insurance contribution collection. Examples are as follows: site visits to the crop field for encouraging payment, announcements with car audio for the promotion of voluntary payment before the due date, attendance at neighborhood meetings for promotion, provision of alternative payment methods like home visit for the farmers who found it difficult to make a visit to bank or other collecting agency. In addition, there was concentrated management on delinquent taxpayers with periodical home visits and persuasion.

From an administrative perspective, the collection of the arrears of contribution was implemented via demand and coercive collection. Demand letters with the arrears[45] were sent to the policyholders who did not complete the payment of insurance contribution by the

43. However, in the first month of medical insurance implementation (January 1988), the collection rate was much lower, recording 27.9% only, according to the report of Jung-Ang Daily News at the time (Medical Insurance Association, 1997).

44. A boycott on the payment of insurance contribution has also been used for another reason. An advocacy group used it as means of demanding reforms of the integrated health insurance system, highlighting the problems of contradictory cooperatives-based system.

45. National Health Insurance Act, Article 80 stipulates that the arrears that make up 3% of the tax are added to the tax when the tax is still unpaid until the due date, and the size of arrears increase by 1% of the tax every month with a ceiling of 9%.

initial due date.[46] If the payment is not made until the newly-set due date, under the approval of MHSA, the insurance contribution was withheld in accordance with dispositions on national taxes in arrears. The regulation of the arrears management system followed by coercive collection with the self-enforcement of an insurer has been maintained since 1979, when the 4th revision was made to the law, for purposes of coordinating collections. A delinquent taxpayer in urban area could be subject to repossession of their estate and car, but the repossession of assets in rural area was limited to small kitchen appliance such as a refrigerator or to livestock since people in rual areas had few assets.

Although the management of collection of insurance contributions for the self-employed insured has been a challenge, the development of data processing enabled reductions in workload and simplification of administrative procedures. As a representative example, e-Government enabled people to make a payments online, without any invoice and regardless of time and place. Below is a brief introduction of the collection methods of insurance contribution that NHIS has been using since the integration.

- The simplification of the verification procedure of payment was established using the financial information system. When a policyholder makes a payment of contribution via standard OCR invoice, the receiving agency verifies and informs Korea Financial Telecommunications and Clearings Institute (KFTCI) about the payment while NHIS receives the payment information from KFTCI, carrying out receiving process of the receipt. After the simplification, in case an error has been made during the procedure, NHIS requests a correction from KFTCI, and in turn KFTCI sends out updated information to NHIS after reconfirming the payment information from the branches of KFTCI or receiving banks. This change is significant as this batch-process of KFTCI simplified a complex relationship between policyholder, insurer, and receiving agency.
- The payment of contributions by cash or credit card at NHIS branch offices has been enabled. Moreover, any form of commission fee is reduced if the payment is made at receiving agency. It can be said that this is much more efficient compared to the previous system that made the policyholders who lost or damaged the invoice visit a branch first for reissuance of invoice and then to make a payment at receiving agency.
- To offer convenience of payment and to reduce arrears, it provides for an automatic withdrawal to make a payment of contributions. NHIS offers a discount for auto payments.

46. A due date for payment was the last day of every month before 2013 but the date had changed to 10th of every month since 2013.

- Online-banking collection system was employed in consideration of increasing the number of internet users. High technology was immediately added to the collection system and as a result, invoice details can be checked online.
- Last is a payment method using a virtual payment account.[47] NHIS has provided virtual payment accounts to policyholders at an individual's request, and enables immediate verification of the payment as soon as it is made.

The collection management of contribution requires a technological and functional approach more than institutional approach. With a concerted effort to cope with the change of the social environment, the collection rate of contributions could be maintained higher than any other government organizations or private insurance agencies, contributing to stability of public finance. <Table 3-6> states the collection rate in 1990, 1999 to 2006 and 2013. As a result of steady efforts towards financial stabilization, the collection rate on self-employed policyholders has been over 90% since 2001.

Table 3-6 | Annual Collection Rate of Insurance Contribution

(Unit: %)

Year	1990	2000	2001	2002	2003	2004	2005	2006	2013
The Self-employed Insured	90.8	89.6	98.5	99.8	94.4	91.1	91.7	92.2	96.9
The Employee Insured		99.7	99.5	99.8	99.4	99.2	99.4	99.3	99.4

Source: NHIS (2014).

47. Virtual payment account is the confirmation number of a deposit that is individually assigned to a customer. Companies with many customers use the account to make deposits and withdrawals of money easy without going through banks.

Implication

The average annual increase in medical insurance expenditures is shown to be 9.2%, which is 1.46 times higher than the annual percentage growth rate of GDP, 6.3%, and higher than that of OECD, 3.9% in the last decades (2002~2013). The main factors of increase in medical insurance expenditure are increases in medical expenses and expansion of medical insurance coverage.

Korean medical insurance system has experienced financial difficulties because it began with the insufficiently low insurance contribution for the stability of the system, depending on funding by government subsidy, and has still held the same stance.

In addition, it is expected to be more difficult with the decrease of working-age population to pay the contribution due to the entry to an aged society and super low birth rate. Thus, continuous efforts are required to raise insurance contribution by persuading the insured and to stabilize the medical insurance finance by injecting external funds.

2014 Modularization of Korea's Development Experience
The Empirical Review of National Health Insurance in Korea

Chapter 4

Insurance Benefits and Management of Benefit Costs

Insurance Benefits and Management of Benefit Costs

1. Benefits Management

1.1. Types of Benefits

Just as any other system, insurance benefit system has undergone systematic changes according to the societal and economic situation. As the legislative name of 'Medical Insurance Act' has changed to 'National Health Insurance Act', the basic concept of medical insurance benefits in Korea also showed a change of paradigm. From the period from the initial law to the integration of cooperatives, the types of benefits mostly concerned diagnosis, provision of medicine or treatment materials, treatment, and use of medical institutions. However, with the integration of medical insurance in July 2000, the coverage scope of insurance benefit was expanded from disease treatment to disease prevention, health enhancement as well as protection against excessive medical fees. Such expansion resulted in the addition of prevention and rehabilitation as benefits in kind in order to facilitate a paradigm shift.

Korean government has stipulated the types of benefit in kind in law and has notified the details of specified contents or provision methods through separate decrees. Generally, insurance benefit is distinguished by benefit in kind and benefit in cash, with benefit in kind as the principle method and benefit in cash in exceptional cases. As shown in <Table 4-1>, National Health Insurance Act of 1963 classified insurance benefit as benefits in kind and

benefits in cash, which is further classified as funeral expenses and childbirth expenses.[48] Under the amendment act, which was in effect from 1977 until June 2000, benefit in kind was further categorized as treatment benefit and childbirth benefit, while benefit in cash was classified as treatment expenses and childbirth expenses. The reclassification of childbirth expenses under benefits in cash was reflective of the rising social trend of giving birth in medical institutions and institution, and childbirth expenses were provided to those who gave birth independently.

Until 1982, childbirth benefits were provided regardless of the number of children in a family, but came to be provided only to families with less than two children after the enactment of the Population Suppression Act in 1983. However, with the repeal of Population Suppression Act in July 1996, medical insurance was also provided to families with more than 3 children. Starting in July 2000, childbirth benefit was no longer classified separately, and was instead included as treatment benefit.

Table 4-1 | Types of Insurance Benefits before the Integration of Cooperatives

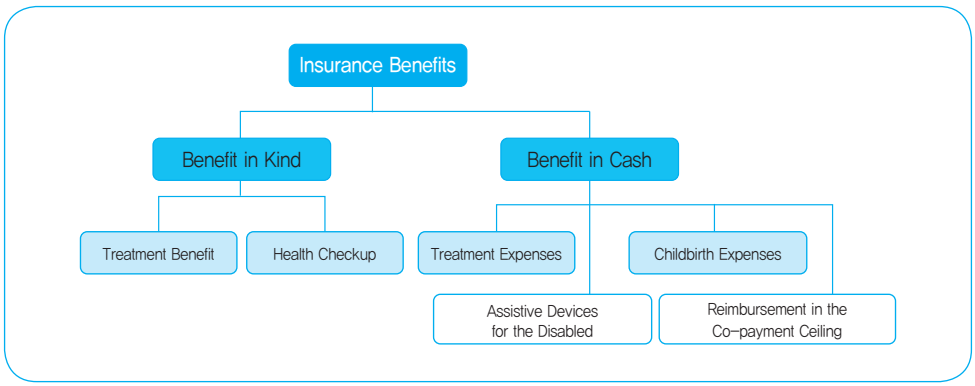
Classification		NHIS Act of 1963	1977~June 2000
Coverage		Focus on treatment for disease	Focus on treatment for disease
Eligible Persons		Employees and their dependents	Nationals (Policyholders)
Types of Benefit	Benefit in Kind	Treatment benefit	Treatment benefit
			Childbirth benefit
	Benefit in Cash	Funeral expenses	Treatment expenses
		Childbirth expenses	Childbirth expenses

Source: NHIS (2014).

48. Funeral benefit is given to those who conducted funeral when the insured and dependent died, and childbirth benefit is a cash benefit that is given when the insured or the spouse gives birth. Since 1977, 200,000 KRW has been given as funeral expense and 100,000 KRW to the dependent depending on the cooperatives. After integration of 2000, 250,000 KRW was given regardless of criteria. In 2008, however, funeral expense was considered to be negligible in supporting the actual funeral cost, and thus aborted, given as funeral expense and 100,000 KRW to the dependent depending on the cooperatives. After integration of 2000, 250,000 KRW was given regardless of eligibility criteria.

As depicted in [Figure 4-1], starting in July 2000, the National Health Insurance Act implements such types of insurance benefits.

Figure 4-1 | Current Types of Insurance Benefit



Source: NHIS (2014).

Benefit in kind can be classified into treatment benefit and health checkups. Treatment benefit is, by principle, a comprehensive benefit. This means services covered by medical insurance such as diagnose · screening, provision of medicine or treatment materials, treatment · surgery · other treatment, prevention · rehabilitation, hospitalization and nursing, transferring, for disease, injury and childbirth of the insured and dependents. At the time of medical insurance implementation in 1977, there were only 763 items eligible for medical practice, but due to the acquisition of new medical technology and the expansion of benefit coverage, there are now 7,487[49] items eligible for benefit as of 2013 (Refer to 4.2.1 Decision of Insurance Benefit Expenses).

However, it is not applicable to items that are stipulated as non-benefit items due to inapplicability to the insurance benefit principle and items whose eligibility for benefit is legally problematic. The list of non-benefit items due to inapplicability to the insurance benefit principle includes:

- Normal symptoms that do not hinder daily tasks and job performance, such as simple fatigue, warts, pimples, snoring, and hair loss;

49. This is the sum of 6,091 items of standard activity benefit items and healthcare institutions' 1,396 benefit item as of October, 2013.

- Medical activities not essential to health enhancement, such as eyelid surgery, nose job, breast surgery;
- Preventive measures such as prevention shots, dental alignment, nausea prevention that are not for the direct prevention of disease or injuries;
- Medical activity or usage of medication that is difficult to be considered as eligible due to the medical insurance situation.

Cases which eligibility for benefit is legally problematic,

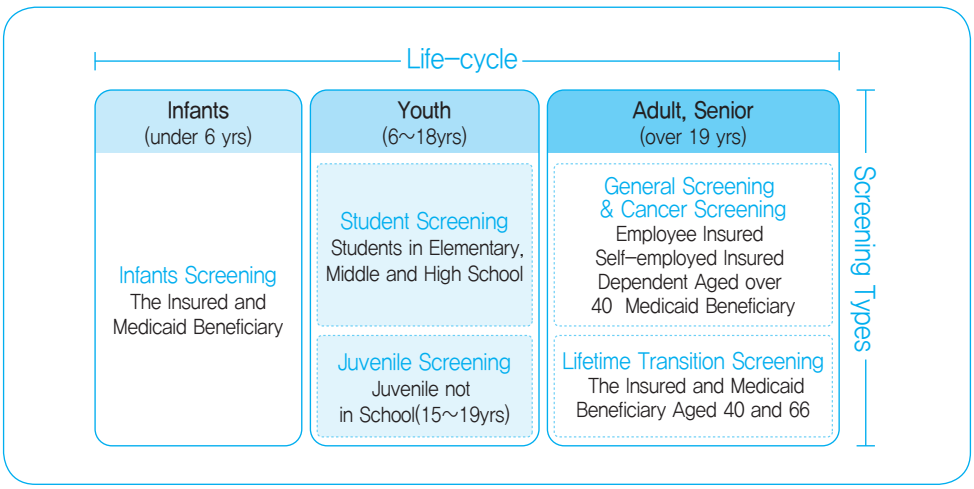
- No insurance benefit shall be provided to the extent that other law ensures or provides necessary benefits.
- No insurance benefit shall be provided to the extent that a third party has invoked and provided compensation.
- No insurance benefit shall be provided to intentional accidents or serious criminal activities.
- No insurance benefit shall be provided to those who fail to fulfill the responsibility of paying insurance contribution, and shall be provided when he or she pays the remainder amount. However, considering that there may be various reasons and situations that hamper policyholders from paying the required contribution, there are some leniency measures such as the provision of sufficient time and means to pay the rest of insurance contribution instead of immediately invoking the benefit cut-off measure.

Prior to the integration of medical insurance, health checkups were to be voluntarily conducted by cooperatives at their discretion, but became mandatory by law for the entire nation as a result of the integration. In 1980, health checkups were first conducted to government officials and employees in private schools, and expanded nationwide in 1995. In 2000, all citizens were to be examined for cancer (lung, breast, intestines, liver, cervical cancer) and in 2007, lifetime transition screening (ages of 40 and 66) and infant screening (below 6) were implemented. In 2008, 『Medical Check Basic Law』 was legislated, laying a legal foundation[50] for preventing faulty screening, which was one of the major problems of screening conducted at the national level, and in managing the quality of medical screening. [Figure 4-2] below depicts the ongoing national health screening system by life time phases.

50. Treatment agency reporting system was transformed to designation system, and National Health Examination Board (inter-agencies, demanders, suppliers, and subject matter experts) was created to draft comprehensive health examination plan, to select those eligible for examination, type and period of examination, to designate the examination institution.

Screening for infants · youth and adult · senior is conducted at the expense of the national medical insurance, but medical check for students and teenagers out of school is conducted at the expense of Ministry of Education and the local government.

Figure 4-2 | Health Screening by Lifecycle



Source: NHIS (2014).

As seen in [Figure 4-1], benefits in cash may be classified into treatment expenses, assistive devices for the disabled, pregnancy · childbirth treatment expenses, and reimbursement in the co-payment ceiling.

Treatment expenses refer to cash benefits proportional to the expense incurred by the insured who 1) received service for disease, injury, and childbirth at an institution similar to healthcare institutions designated by the decree from MOHW, or 2) gave birth at a place other than an institution, for urgent and unavoidable reasons.

Cash is provided to the disabled for the purchase of assistive devices prescribed by the doctor in order to ensure them of healthy lifestyles. This system of providing assistive devices began in 1997 with items such as cane for the physically disabled and hearing aids, and has been expanded through October 2013 to 78 items including posture aid tools for the persons with brain lesions, the spine and pelvis, motorized wheelchair, and electric scooter. The duration period and price of each item is notified and is only provided once for 1 person within the confine of the duration period listed for that specific item. If an item was purchased at a higher price than listed by assistive devices, then 80% of the price listed by

assistive devices will be provided, and if an item was purchased at a lower price than price listed by assistive devices, then 80% of purchasing price will be provided. However, there are 67 items such as artificial legs and orthopedic surgery clinic type shoes that must be purchased at the insurer registered aid equipment store. It is also provided that the insured purchases insurer-registered motorized wheelchairs, electronic scooters and posture aid tools.

Pregnancy · childbirth treatment benefit is a type of cash benefit that compensates for partial expenses paid by an individual after and before childbirth in a form of service voucher, or *Go Woon Mom* Card. The value of this benefit accounts for 500,000 KRW per pregnancy (and 700,000 KRW for multiple pregnancies).

Reimbursement in the co-payment ceiling system was created to alleviate the financial burden incurred from excessive medical expenses. This came in effect in July 2004 in order to expand insurance coverage of the patient with severe medical condition with high amount of medical expenses. Because co-payment is calculated by the fixed rate of total medical expenses, the patient's burden proportionately increases along with the much higher amount of medical expenses. Therefore, if the expense paid by an individual exceeds a certain level, the exceeding amount is to be paid by the insurer. This was introduced to strengthen insurance coverage for the insured.

Beginning in July 2004, it was provided that if the occurred expense during the first 6 months of care exceeded the ceiling price of 3 million KRW, the exceeding amount was to be paid for by the insurer. In other words, if a patient remained in the same healthcare institutions during those 6 months, and the amount exceeded 3 million KRW, then the healthcare institutions charged the patient only 3 million KRW, and the rest of the expense was covered by the insurer. Also, the insurer informed the patient that the amount of co-payment including ambulatory care exceeded 3 million KRW during 6 months, and guided her/him to be refunded from the insurer. The price ceiling was lowered to 2 million KRW in 2007, and starting in January 1st, 2009, the price ceiling was adjusted according to the level of income, thereby strengthening coverage while alleviating the financial burden on the low-income group. The ceiling price was set at 2 million KRW for the lowest 50% of the annual average contribution amount, 3 million KRW for those in between 50~80% and 4 million KRW for those above 80%. Also, the method of counting from the beginning of care to the maximum applicable days was changed to a method of having a fixed period from January 1st to December 31st of every year. This relieved difficulties in trying to figure out the recipients of benefit due to the differences in the days that the care began for each, and of confusion in figuring out exactly when the first day of expense exceeded amid constantly

changing dates. In 2014, as illustrated in <Table 4-2>, the ceiling was further specified from 3 categories to 7 categories, so that ceiling was lowered for the low income class (2 million KRW to 1.2 million KRW) and raised for the high income class (4 million KRW to 5 million KRW).

Table 4-2 | Price Ceiling of Co-Payment by Level of Contribution (as of 2014)

(Unit: million KRW)

Income Deciles		1 Decile	2~3 Decile	4~5 Decile	6~7 Decile	8 Decile	9 Decile	10 Decile
Co-payment	Before 2013	2.0			3.0		4.0	
	After 2014	1.2	1.5	2.0	2.5	3.0	4.0	5.0

Note: Co-payment includes expenses for hospitalization, ambulatory care and pharmaceuticals.
Source: NHIS (2014).

In isolation of treatment benefits through medical institutions, pharmacy medical insurance underwent different procedures. Pharmacy medical insurance was implemented in 1977, along with mandatory employment-based medical insurance. Most of the cooperatives, however, were reluctant to designate a pharmacy, resulting in meager participation. One of the reasons behind this reluctance is a deep-rooted conception in Asia of "unification of treatment and pharmacy", a concept that allowed for a doctor to prescribe and dispense medication and a pharmacist to dispense and sell medication even if not approved by doctor's prescription. Additionally, without the separation of prescribing and dispensing pharmaceuticals, most pharmacies were opposed because the implementation of pharmacy medical insurance implied a decrease in pharmacy revenue.

Furthermore, since the government was not in a position to manage conflict of interests between doctor's society and pharmacist society, the government did not think it necessary to hastily enforce pharmacy medical insurance. In 1981, as the 1st attempt to implement local medical insurance, three areas were chosen to implement the policy of voluntary separation of prescribing and dispensing pharmaceuticals, but doctors were reluctant to participate, and only 204 prescriptions were made that year. In 1982, as a 2nd attempt to implement local medical insurance, city of *Mokpo* was chosen to implement the separation, but pharmacists also went against the policy. They claimed that it will only repeat the failure of 1981, and responded by shutting down pharmacies throughout the country. In 1984, the separation of prescribing and dispensing pharmaceuticals came close to success with the coordination between doctor's society and pharmacist society taking place along with a firm

determination of the government. But due to the lack of follow-up measures, this initiative also ended up being a temporary separation.

In July 1989, along with the implementation of nationwide medical insurance, pharmacies were obligated to be included in medical insurance. This marked the beginning of pharmacy medical insurance. But in July 2000, prior to the initiation of the separation of pharmaceuticals, pharmacies continued to supply prescriptions and medications to patients, while medical institutions rarely gave prescriptions to patients and rather gave patients medication that were made in their medical institution. In October 1989, after conducting sample survey and analyzing the results of the status of pharmaceutical medical insurance in the month of November, it was found that the prescriptions in accordance with medical insurance took up about 36% of entire prescriptions given by pharmacies, and even most of these were directly made by pharmacies without doctor's prescriptions, and very small portion were based on prescription given by doctors. The percentage of care by pharmacy medical insurance was about 10% of ambulatory care of medical institutions, and 0.8% of ambulatory care cost of medical institutions. But until the initiation of the separation of prescribing and dispersing pharmaceuticals in 1999, pharmacy medical insurance coverage steadily increased and the number of benefits given was 80 times of that in 1989. Comparing ante and post the separation, 1999 and 2001 respectively, number of supplied benefits increased 3.4 times, and benefit costs increased 22.5 times (see <Table 4-3>).

Table 4-3 | Number of Benefits Supplied by Pharmacies

Year	1989	1991	1993	1995	1997	1999	2001	2013
Cases (thousand)	893	11,184	19,848	60,186	51,397	71,683	247,179	481,284
Benefit Cost (billion KRW)	0.002	9.9	25.7	104.1	147.0	204.1	4,606.9	11,874.4

Source: NHIS (2014).

1.2. Expansion of Benefits Coverage

Medical insurance coverage is affected by the principle of insurance benefit and the insurance revenue. The main factors that determine insurance coverage are the scope of insurance benefit and the cost incurred to policyholders depending on the medical service used. For the stability of Korean medical insurance system, the insurance contribution amount and scope of benefit both started out small and gradually expanded. In other

words, in the early days of initial medical insurance, the balance of budget was maintained by limiting high co-payment, benefit category and benefit days, but later coverage was expanded according to the level of budget obtained from increase in insurance contribution.

The purpose of the co-payment system is to raise cost awareness of the insured, so that they can refrain from using medical service carelessly, and to determine the coverage scope. In 1977, the early days of medical insurance, the categorization of policyholders and dependents was made by each cooperative's rules, and also allowed for the contribution amount to vary among the cooperatives for financial reasons. <Table 4-4> depicts the co-payment rating system, of which more than 90% of cooperatives determined their own rates.

Table 4-4 | Co-Payment Rates (as of 1977)

Classification	Inpatient	Outpatient
The Insured	30%	40%
Dependents	40%	50%

Source: Medical Insurance Association (1997).

The differences among cooperatives, however, were criticized for not protecting the low-income class and for creating a sense of disparity among citizens. Other inconveniences also ensued. Medical institutions had to check each and every medical insurance card in order to verify different co-payment rate according to each cooperative, and patients had to wait a long time to pay for the medical expenses. As a result, in April 1979, all cooperatives were required to charge the cost of 20% of hospitalization, and 30% of ambulatory care to both the insured and dependents for all treatment facilities. In the following year, co-payment was imposed separately depending on the type of the facility; 50% of ambulatory care expenses for hospital level and 30% for clinic level institutions. The reason for this differentiation was to take into account the difference of capital depending on the treatment facility, and to prevent patients from crowding in a hospital due to the differences in price. Criticisms exist, however, as there is no sufficient basis on co-payment assessment depending on the type of institutions is made Patient concentration at large medical institutions is practically alleviated through this price policy.

With the rise of citizen's awareness of medical insurance scheme, consultation rate and cost for benefit per case increased, and in 1983, financial instability became visible. As a result, among 146 employment-based cooperatives, 61 cooperatives held a budget deficit.

The situation exacerbated in 1984 as 72 cooperatives, which accounts for about half of the employee cooperatives, underwent a budget deficit, and the degree of deficit worsened. Consequently, in 1986, a co-payment flat rate of ambulatory care was implemented for medical institutions below clinic level in order to deter additional spending from insurance budget while making it suitable to review insurance claims. Considering the price at the time, which was 6,600 KRW for average ambulatory care cost for clinic level institution, the co-payment is 1,980 KRW with fixed rate of 30% whereas, with the application of flat rate, as shown in <table 4-5>, the co-payment rises to 2,200 KRW, indicating that the burdens for the insured increases. This measure was viewed successful in stabilizing insurance budget by reducing benefit expenses while increasing burden on the insured.

Table 4-5 | Co-Payment Rate of Ambulatory Care (1986)

<table>
<tr><th colspan="2">Type of Institution</th><th colspan="3">The Amount of Co-payment</th></tr>
<tr><td colspan="2">General Hospital</td><td colspan="3">Total consultation fee +
(Total treatment amount - Total consultation fee) × 55 / 100</td></tr>
<tr><td colspan="2">Hospital</td><td colspan="3">Total consultation fee +
(Total treatment amount - Total consultation fee) × 50 / 100</td></tr>
<tr><td rowspan="6">Clinics and Others</td><td rowspan="2">Type</td><td colspan="2">Flat rate for total treatment amount below 10,000 KRW</td><td rowspan="2">Above 10,000 KRW</td></tr>
<tr><td>1st treatment</td><td>2nd visit treatment</td></tr>
<tr><td>Clinic</td><td>2,000 KRW</td><td>1,500 KRW</td><td rowspan="4">30% of total treatment amount</td></tr>
<tr><td>Oriental Medicine Clinic</td><td>2,200 KRW</td><td>1,700 KRW</td></tr>
<tr><td>Dental</td><td>2,500 KRW</td><td>2,000 KRW</td></tr>
<tr><td>Health Center</td><td>500 KRW</td><td>400 KRW</td></tr>
<tr><td colspan="2">Pharmacy</td><td colspan="3">If it administers medicine based on prescription provided by a medical facility</td></tr>
</table>

Note: Inpatient is 20% of total treatment fee.
Source: NHIS (2014).

An argument was made, also, that the co-payment flat rate system limited the usage of medical service on some low-income families as a result of a decrease in consultation rate. Since then, the co-payment rates have not undergone major systematic changes and, as <Table 4-6> illustrates, the standing co-payment policy requires patients to pay 20% for hospitalization, 30% for pharmacy and clinic ambulatory care, 40% for hospital ambulatory care, 50% for General Hospital ambulatory care, and 60% for tertiary hospitals ambulatory

care. However, for severe diseases like cancer, the co-payment rate is 5%, and for rare and incurable conditions, the co-payment rate is 10%, protecting the insured from high medical expenses, coupled with co-payment refund system that was explained in 4.1.

Table 4-6 | Rate of Co-Payment in 2014

Service	Healthcare Institution	Disease	Co-payment Rate of Total Healthcare Cost
Inpatient care	-	General disease	20%
	-	Rare disease[1]	10%
	-	Serious disease[2]	5%
Outpatient care	Clinic	-	30%
	Hospital	-	40%
	General hospital	-	50%
	Tertiary hospital	-	60%
	Pharmacy	-	30%

Note: 1) Rare diseases: hemophilia, chronic renal failure, etc.
2) Serious conditions: cancer, cardiovascular disease, cerebrovascular disease, tuberculosis and severe burn injury.
Source: NHIS (2014).

Factors that affect Korean medical insurance coverage, along with co-payment, are list of benefits package and insurance benefit period. During the early days when insurance budget was low, insurance benefit period was limited by policy. With the implementation of mandatory medical insurance in 1977, insurance benefit period was set at 180 days starting from the first day of care regardless of the type of disease. In 1981, this was expanded to 180 days from the first day of care for the same disease. In 1985, it improved to 'within 180 days per year'. At the same time, for the chronically ill in need of constant treatment or incurring low treatment cost, they were eligible for benefit even if they exceeded the given period, as long as they stayed within the cost limit. Starting in 1994, in order to facilitate effective medical insurance as well as to ease the burden of medical expense on the citizens, treatment benefit period was gradually extended by 30 days. The recipients of treatment benefit were gradually expanded from elders above 65 in 1994 to all citizens in 1995. In 1996, limitation on benefit period was repealed for elders above 65, registered disabled and national meritorious men suffering from disabled and tuberculosis first. In 2001, this

was entirely repealed but was reinstated with the limit of 365 days[51] for benefit period per year in 2002 due to the worsening financial situation from the separation of prescribing and dispensing pharmaceuticals, but was again repealed in 2006.

Patients who received medical service for longer than the given benefit period were later required to pay back the amount that the insurer paid for the exceeding days. Prior to the integration in 2000, information on those who exceeded the benefit days was managed as a form of written document database, which included information such as name, resident registration number, date of the acquired service, days of service received, total cost, and the expense paid by policyholders. If the insured exceeded 150 days of treatment benefit, he or she was notified of the days of treatment benefit that were used so far, so that he or she could manage the remaining days of treatment benefit. Once the exceeding number of days is confirmed, the insurer sends a bill to the insured and classifies the insurer responsible fee as an invalid benefit.

<Table 4-7> below depicts the expansion of insurance benefit for the recipients since the initial days of medical insurance in comparison with GDP per capita.

Table 4-7 | Contents of Expansion of Benefits Coverage in Comparison of GDP per Capita

(Unit: USD)

Year	Benefit Package	Main Revised Contents	GDP per Capita
1977	Treatment days	Within 180 days from the starting day of treatment	1,049
1979	Co-payment (applicable partial cooperatives)	Provides for the payment that exceeds 200,000 KRW within the 30-day period	1,705
1981	Treatment days	Within 180 days from the starting day of treatment for the same disease	
1985	Treatment days	180 days per year	2,411
1994	Treatment days	210 days per year for those over 65	1,870
1995 ~2000	Treatment days	30 days of extension of benefit period every year (210 days in 1995 → 365 days in 2000)	9,755 ~11,349
1996	CT	Treatment for Cancer, cerebrovascular disease, Epilepsy, Encephalitis, encephalomyelopathy, etc.	12,582

51. The limit of 365 days per year means that if a patient receives medical services of different treatment categories (ex. cold and treatment for fracture) on the same day, the benefit period is regarded as 2 days despite same day's treatment.

Year	Benefit Package	Main Revised Contents	GDP per Capita
1997	Benefit in assistive devices for the disabled	7 Items such as Sticks, Hearing aids, Artificial larynx for excreting , etc.	11,583
1998 ~1999	Expansion of coverage of assistive devices for the disabled	crutches, wheelchair and assistive devices, etc. (total 68 items)	7,739 ~9,902
1999	Reimbursement in the co-payment system	50% of the amount exceeding 1 million KRW within the 30-day period reimbursed in the form of compensation	9,902
July 2004	Implementation of reimbursement in the co-payment ceiling system	Co-payment amount exceeding 3 million KRW during the 6 month period → exemption	15,038
2005	MRI	Treatment for Cancer, benign encephaloma, cerebrovascular disease, epilepsy, encephalitis, etc.	17,547
	Exemption in co-payment for normal delivery	Co-payment 20% → exemption	
	Reduction in co-payment for outpatients with mental disease	30~50% → 20%	
	Support premature baby	Co-payment for in-patient care of premature baby 20% → exemption	
	Cochlear implant	For patients with hearing-impaired and anacusia	
	Expansion of coverage of assistive devices for the disabled	3 more items included such including motorized wheelchair and electronic scooter (75 items → 78 items)	
	Reduction in co-payment for patients with cancer	Reduction in co-payment for inpatient and outpatient, including costly medical equipment (20% → 10%)	
	Reduction in co-payment for patients with cerebrovascular disease, cardiac disorder	Reduction in co-payment for inpatient and outpatient (20% → 10%)	

Year	Benefit Package	Main Revised Contents	GDP per Capita
2006	Co-payment for inpatients below 6 years old	co-payment of 20% → exemption (※ January, 2008: exemption → 10%)	19,622
	Coverage of spare-part surgery	Transplantation: liver, heart, lung, pancreas	
	Microtia and anotia	Benefit coverage	
	Benefit coverage for meal at hospital	Basic 20%, Specific 50% (As of 2008: Basic meal 20% → 50%)	
	PET (positron emission tomography)	Serious disease (Cancer, partial epilepsy, IHD, etc.)	
	Home oxygen therapy	When persons with respiratory disorder receives treatment using oxygen concentrator at home	
2007	Expansion of reimbursement in the co-payment ceiling system	Ceiling on co-payment rate lowered (3 million KRW over 6 months → 2 million KRW over 6 months)	21,592
	Reduction in co-payment for outpatients below 6 years old	Adult outpatient co-payment rate of 70% applied	
2009	Ceiling applied proportional to level of income in the co-payment ceiling system	2 million KRW (lowest 50%), 3 million KRW (middle 30%), 4 million KRW (highest 20%)	20,536
	Reduction in co-payment for rare and incurable disease	For disease groups of 138, inpatient, outpatient co-payment rate reduced (20% → 10%)	
	Reduction in co-payment for cancer	10% → 5%	
2010	Reduction in co-payment for cardiac disorder and cerebrovascular disease	10% → 5%	20,536
	Reduction in co-payment for tuberculosis patients	Inpatient 20%, outpatient 30~60% → 10%	
	Reduction in co-payment for massive burns	Inpatient (20%) · outpatient (30~50%) → 5%	
2011	Coverage of proton beam therapy	Benefit coverage for childhood cancer	22,393
	Support of materials for type 1 diabetes treatment	Test paper for blood glucose self-monitoring of a patient with type 1 diabetes	
	Intensity modulated radiation therapy	Benefit coverage for intensity modulated radiation therapy	
	Coverage of advanced cancer operation	4 Types including cryotherapy for lung cancer and other new types of tumors	
	Material expenses for intestinal fistula and urinary fistula	Provision of treatment costs for urinary and fecal collector bags	

Year	Benefit Package	Main Revised Contents	GDP per Capita
2012	Dentures for the elderly	Over 75 (gradual expansion from 2015)	22,582
2013	Coverage of scaling	Once a year	N/A
	Ultrasound screening	For cancer, cardiac disorder and cerebrovascular disease	
2014	Enhance co-payment ceiling system	Ceiling based on income level subdivided from 3 levels → 7 levels	N/A
	Implant	Two benefit provided for those over 75 years old (gradual expansion from 2015)	

1.3. System and Environment of Benefits

In order to execute a treatment benefit, insurers need to attain cooperation of the provider. In 1977, when medical insurance was implemented, each insurer (medical insurance cooperatives) made a contract with medical institutions on providing treatment benefit to the designated medical institutions. However, 14% of hospital level medical institutions, and 31% of clinic level medical institutions refused to participate in the system until the end of 1977. As a result, some of the cooperatives could not make a contract with any general hospitals and even if the contract was made with certain medical institutions, these institutions were too far from the living zone, causing inconveniences. In order to mitigate these problems, government, through the 3rd amendment act in 1979, changed the policy so that the organization (National Medical Insurance Committee) composed of insurers can designate medical institutions on behalf of individual cooperatives. Mandatory designation method was implemented in order to prevent providers (medical institutions or pharmacies) from refusing designation without sound reasons, and the scope of treatment areas was expanded to province and state level. The expansion of scope of treatment areas to province and state level was necessary because medical institutions were too scattered, making it impossible to account for small scale of units. Also, if policyholders were not able to receive treatment in the designated area during business trips or while travelling, they were allowed to be treated with a prior consent of cooperatives (or post consent in case of an emergency). The number of medical institutions under unilateral and mandatory designation is listed in <Table 4-8>, and the responsibility for the review and payment of benefit cost was delegated to the Central Review Board under the National Medical Insurance Committee, so that a centralized review and payment authority could be established.

Table 4-8 | Number of Designated Healthcare Institutions in 1979

Total	General Hospital	Hospital	Clinic	Dental Hospital	Dental Clinic	Maternity Nurse
6,530	68	133	6,176	3	1,624	411

Source: HIRA (2014).

Unilateral designation of medical institutions and establishment of province/state level care area created other challenges as follows:

- Under the previous system in which cooperatives individually designate medical institutions, it was relatively easy to identify wrongful claims from institutions or policyholder's fraud use of medical service using someone else's medical insurance card as the number of healthcare institutions was limited. However, with the new system of unilateral designation and centralized payment and review authority, it became more challenging to catch those frauds.
- Due to the expansion of scope of treatment areas to province/state level, general hospitals became easily accessible, creating a problem of excessive use of medical service.

Fraud and excessive use of medical services emerged as a social problem in the 1980s. These were the kind of problems that could not be solved by control and coordination, but rather problems that required more maturity and higher sense of ethics between beneficiaries and the medical society. Consequently, National Medical Insurance Committee drafted 'Examination Regulations', and publicized them across the country for establishment of ethics examinations.

Separate from the province/state level care area, the cooperative trial regions for regional medical insurance started in 1982 operated medical delivery system by designating health centers, hospitals and general hospitals, and certain general hospitals designated as 1st, 2nd, and 3rd medical institutions respectively. However, there were no sound criteria. After 1989, Nationwide Medical Insurance was achieved along with the abolition of province/state level care area and the implementation of nationwide medical delivery system. Economic development and advancements in the medical insurance system called for a more efficient employment of medical resources and appropriate means of benefit distribution, which brought about the development of the medical industry as a whole. Medical delivery system classified the country into 8 large-sized care areas, and 140 mid-sized care areas,

and with healthcare institutions divided into 1st, 2nd, and 3rd level depending on their size. The Farmers and Fishermen Association criticized this system, stating that "implementing medical delivery system with sparse distribution of medical institutions is discriminatory against farmers and fishermen (Medical insurance association, 1997)". Taking those criticisms into consideration, the system changed to 2 stages in 2005, lessening the disparity of accessibility among regions. The present medical delivery system is as follows:

- 2nd stage treatment benefits should be received after the 1st stage treatment benefit is received, and a request for treatment benefit with doctor's opinion is required in order to receive 2nd stage treatment benefits.
- 1st stage treatment benefits refer to treatment benefits (health treatment or screenings) received from healthcare institutions excluding tertiary general hospital, and 2nd stage treatment benefits refer to treatment benefits received from tertiary general hospital. However, emergency patients, childbirth, dental care, rehabilitation, care from family physician, hemophilia patients can also receive 1st stage treatment benefits from tertiary general hospital.

To establish this benefit system, medical infrastructure and environment first needed to be constructed. Advancement of the medical insurance system facilitated the growth of medical industry, and this in turn contributed to the improvement of medical insurance system conditions, creating a virtuous cycle that helped achieve nationwide medical insurance in a short time period. Importantly, official medical insurance was first implemented in the medical and health service industry, achieving a growth faster than other medical industries during the period from 1980 to 1990 when insurance coverage expanded to the entire nation. In this same period, the compound annual extra value growth rate of medical and health-related service industry was 21.82%, much higher than that of medical industry, which was 20.03%, and GDP growth rate of 15.70% (Industry Index by Korea Bank, 2000). a rise in medical demands and supplies to meet those demands resulting from the implementation of official medical insurance brought about a surge in medical personnel and institutions.

<Table 4-9> below shows the status of manpower of doctors, nurses and pharmacists in 1979, when medical insurance coverage was expanded to government officials and private school employees as well as healthcare institutions in unilateral fashion; in 1989, when nationwide medical insurance was achieved, and in 2000, when the integration of medical insurance organization was achieved, as well as the current status as of June 2014.

Table 4-9 | Status of Manpower in Healthcare Sector

(Unit: persons, times)

Year / Manpower	1979 (A)	1989 (B)	2000 (C)	June 2014 (D)	(D)/(A)
Total	178,748	300,844 (1.7)	313,568 (1.0)	266,189 (0.8)	1.5
Doctor	25,097	39,769 (1.6)	72,503 (1.8)	92,881 (1.3)	3.7
Nurse	119,810	211,524 (1.8)	160,295 (0.8)	140,614 (0.9)	1.2
Pharmacist	26,307	35,756 (1.4)	50,623 (1.4)	32,694 (0.6)	1.2

Note: ( ): t + 1/t = times.
Source: HIRA (2014).

Medical manpower currently registered in NHIS is 266,189, 1.5 times of that in 1979, but a decreasing trend appears after 2000. Looking at based on the type of manpower, the presence of doctors has increased steadily but slows down since 1979, while that of nurses has been steadily decreasing since 1989. The number of pharmacists has also been on a decrease since 2000. These trends imply that the manpower had been increasing with the rise of medical institutions during the period of achieving nationwide medical insurance, but market forces played a role in affecting the status of manpower afterwards. As of 2014, the number of doctors, nurses, and pharmacists is 1.9, 2.9, and 0.7 respectively per population of 1,000. The number of doctors is lower than that of OECD average, which is 3.1 per 1000 people.

<Table 4-10> below depicts the number of healthcare institutions designated by medical insurance with the same criteria used in <Table 4-9>. The number of total healthcare institutions has largely increased, 13.2 times of that in 1979. Compared to 1979, the total number of healthcare institutions in 1989 increased 6.4 times, the year when nationwide medical insurance was achieved. This implies that the process of expanding medical insurance has tremendously affected the number of healthcare institutions. Comparing 1989 from 1979, the increase rate of general hospitals and oriental medicine clinic is higher than that of other healthcare institutions, and especially for oriental medicine clinics, The high increase rate is largely due to the application of medical insurance. Comparing 2000 from 1989, the degree of increase in oriental medicine clinics and dentistry is greater than

that of other types of healthcare institutions. oriental medicine clinic's degree of increase is attributed to the same aforementioned reason, and dentistry's increase is considered to be attributable to the rise of dental care demand in line with economic growth. Midwifery clinics rapidly decreased due to the transformation of hospital and clinics that perform childbirth functions. All other healthcare institutions have seen their rate of increase slow since 2000.

Table 4-10 | Number of Designated Medical Institutions

(Unit: times)

Year / Institution	1979 (A)	1989	2000	June 2014 (B)	(B)/(A)
Total	6,530	41,793 (6.4)	61,776 (1.5)	86,010 (1.4)	13.2
General Hospital	68	221 (3.3)	288 (1.3)	329 (1.1)	4.8
Hospital	133	346 (2.6)	681 (2.0)	2,766 (4.1)	20.8
Clinic	4,291	10,580 (2.5)	19,688 (1.9)	28,673 (1.5)	6.7
Dentist Hospital	3	5 (1.7)	60 (12.0)	201 (3.4)	67
Dentist Clinic	1,624	4,594 (2.8)	10,592 (2.3)	15,976 (1.5)	9.8
Herbal Medicine Hospital	9	33 (3.7)	141 (4.3)	214 (1.5)	23.8
Herbal Medicine Clinic	2,344	4,261 (1.8)	7,243 (1.7)	13,338 (1.8)	5.7
Midwifery Clinic	411	447 (1.1)	126 (0.3)	37 (0.3)	0.1
Health Center	No data available	3,575	3,427 (1.0)	3,479 (1.0)	-
Pharmacy	No data available	18,825	19,530 (1.0)	20,997 (1.1)	-

Note: 1) the number of healthcare institution is the institution designated by NHIS.
2) ( ): t + 1/t = times.

Source: HIRA (2014).

2. Management of Benefit Costs

2.1. Determination of Benefit Costs (fee schedule and pharmaceutical Price)

Management of insurance benefit in terms of medical insurance can generally be classified as determination of benefit package, provision of insurance benefit, and review and payment of benefit costs. determination of benefit package is the process of deciding the type and cost of benefit that the insurer provides to the insured. Provision of insurance benefit is the delivery of medical and health related service to the insured through the provider. Review and payment of benefit costs refers to the review of the appropriateness of the cost of benefits in kind that the medical service provider claims, and to pay for the cost accordingly. The management of the review and payment procedures is one of the main functions of an insurer.

In order to pay medical service expenses that a medical institution provides to the insured, the expense calculation method has to be determined. From the onset of medical insurance implementation, a fee payment system in Korea was run based on Fee-for-Service (FFS). The FFS, however, caused difficulties in effectively controlling the number of services as well as unnecessary increases in costly diagnoses. As a supplement, Diagnosis Related Group (DRG) was implemented. The DRG was implemented as a trial demonstration in 1997 and started to be applied as compulsory to all medical institutions on 7 pathology groups since July 2013.[52] Meanwhile, the payment per diem is applied for nursing home of the aged, benefit for psychological conditions and long-term care insurance benefit. According to benefit costs paid to service providers as of the end of 2013, the ratio of each fee payment method was 93.7%, 1.7%, and 4.7% for the FFS, DRG, and payment per diem respectively. In the meantime, although the DRG is on outright implementation for the 7 pathology groups, due to a necessity of a flexible and highly demanding model, applicable to entire hospitalized patients, for a medical community that is accustomed to long-term compensation for service, as a counter-plan of the current FFS and DRG, a new DRG model (new-DRG) has been implemented for demonstration since 2009. The new-DRG is a payment system that combines basic treatments with DRG while a separate compensation is accomplished for high-cost services or medical operations by doctors, which causes differences in medical expenses. In other words, the new-DRG can be defined

52. Pathology group according to DRG includes a caesarean birth, cataract surgery, hernia surgery, appendicitis, anal surgery, tonsil surgery and uterus surgery, and has been applied since 1983.

as a combination of DRG and FFS with regard to medical expense calculation. The system was first implemented in Ilsan Hospital that NHIS operates on 20 pathology groups, and then expanded to 40 other regional public hospitals on 550 pathology groups in 2012.

During the voluntary medical insurance period, the fee schedule system was based on the customary fee system determined at the discretion of medical institutions, but in June 1997, MHSA implemented mandatory medical insurance, and set a standard treatment fee schedule via notification. There have been discussions regarding the different types of fee schedule system, including capitation system, DRG, FFS, but FFS was the preferred system of medical communities and was also the smoothest method in applying to the current fee system.

In order to create a rational fee system based on FFS, MHSA examined the fee systems of Germany and Japan, and initiated a process of identifying customary fees by surveying the income status of 11 main medical institutions. As a result, it was found that the most of medical institutions had no fixed fee for basic treatments and had different arbitrary fee standard from each other. The sources of income consisted of 47.31% of medical practice fee, 1.49% of consultation fee, 33.86% of medical shot fee, 18.34% of hospitalization fee. MHSA then synchronized all medical activities and terminologies, and conducted relative evaluation of each activity by classifying activities and giving each percentages. The relative evaluation system worked in such a way that the most difficult medical activity was given certain value, and the other medical activities was graded based on their relative difficulties to the most difficult one. 10 medical specialists were present for the grading, and the remaining points without outliers were averaged for a final grade for the activity. With the same methodology, the required time and frequency of medical activities were also examined. Certain weight was given to those activities with longer time requirements, and less frequency, and weights were deducted for the activities otherwise. In summary, the level of fee schedule was determined by taking into account the level of difficulty as the main variable and time and frequency as moderating variables.

The basic principles in determining the level of fee schedule are listed below:

- Medical insurance fee schedule is a collective contracted fee. Considering the increase of number of patients with the implementation of insurance, the fee should be set lower than the customary fee. The contracted fee between large company cooperatives and medical institutions was 80% of the customary fee, so this shall be set at 75% level.
- Medical practice fee and pharmaceutical price, and treatment fee should be separated.

- Medical provider's main source of income should be a basic consultation fee and medical practice fee, and medications and materials should be compensated at the original cost so that overdosing of medication for the purpose of generating revenue can be prevented.
- Profit from dispensing pharmaceutical under customary fee is reflected into basic consultation fee and hospitalization fee.
- As shown in <Table 4-11>, fee systems based on region and type of institution shall be proportionally applied depending on the location of medical institutions and their sizes.[53]

Table 4-11 | Additional Rate of Fee Schedule Depending on Type of Institution and Region

Type of Institution	Seoul	Large-sized Cities	Small and Medium Sized Cities	Agricultural and Fisheries Communities
General Hospital	20%	16%	12%	8%
Hospital	10%	8%	6%	4%
Clinic	4%	2%		

Note: Large cities: population above 500,000; small to medium cities: over 50,000 and below 500,000; agricultural and fisheries: below 50,000.

Source: Medical Insurance Association (1997).

The final fee schedule ended up consisting of 9 chapters, 763 categories, and was represented as the point of each medical service. Every point for service started at 10 KRW, and further assessed by factoring in the market price. But this method of fee system was never implemented due to technical reasons, and instead, an alternative system that charges fee for each treatment activity was implemented. In 1981, the system was turned into a monetary system.

At the time, the medical community ardently argued for an increased fee structure asserting that, in contrast to the government's assessment, the determined fee was not at the level of customary fee. The government at the time was reluctant to the increase of fee because they believed that the level of fee was about 75% of customary fee, and hospital bed turn-over rate had increased about 15%~20% since the medical insurance had first begun,

53. Calculating Fee for different categories depending on region was a method specific to Korea. It was an effort to overcome the difference of treatment fee, but ultimately caused a negative effect of widening wealth disparity between healthcare institutions.

and therefore, the patient occupant level could compensate for the difference between determined fee and customary fee. However, as the bed turnover rate reached 100%, there rose new demands for investment in new institutions and equipment. It also turned out that as the number of patients with medical insurance increased, financial pressure factors also increased. In December 1978, fee was increased by 20.75%, and further increased periodically with inflation taken into consideration.

Table 4-12 | Increase Rate of Fee Schedule in the Beginning of Medical Insurance

Year	December 1978	June 1979	April 1980	June 1981	May 1982	September 1983	February 1985	May 1986
Increase Rate	20.75%	11.14%	19.4%	16.6%	7.1%	4.0%	3.0%	3.0%

Source: Medical Insurance Association (1997).

Fee schedule determining method, along with medical insurance integration in 2000, became a contract-based system rather than the former notification system, and starting in 2001, FFS based on resource-based relative value Scale (RBRVS), a system that refined standing relative value system, began, thereby aborting the monetary system. Monetary system received criticism for its lack of objective evidence and the imbalance of fees between service and treatment categories.

RBRVS FFS excluded pharmaceuticals and materials for treatment, and assigned relative value scores to the type[54] of medical service that a medical worker provided, and multiplied the cost per score point and provided benefit cost.

benefit cost (fee schedule) = relative value score × exchange index

- Relative value point represents relative points of the value of types of medical services after taking into consideration of the relative value of medical practice such as required time and effort and of medical expense such as institution and equipment usage.
- Exchange index means cost per 1point of relative value point. The point then gets translated into currency.

FFS based on RBRVS was implemented in 2001, but problems such as imbalance of fee among services, and the fact that the risks of medical accidents were not reflected. A study

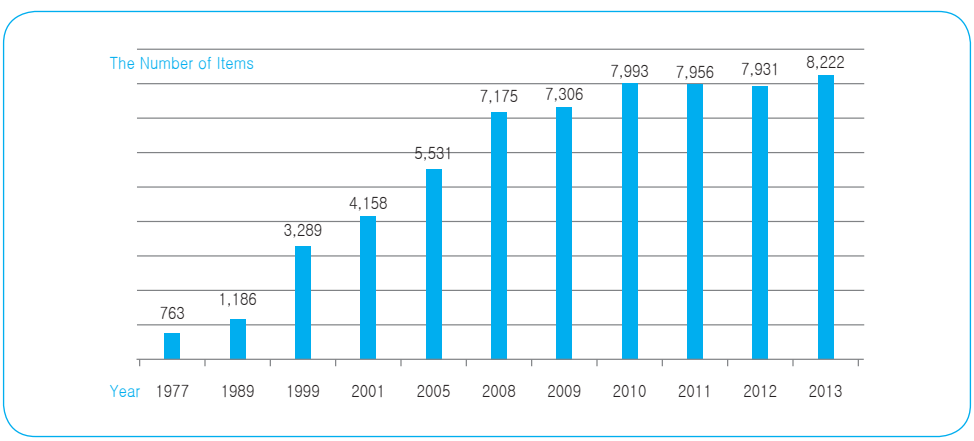
54. A study was conducted from 1994 to 1997 to newly develop 「Korean Standard Medical (Dental) Activity Category」, and reclassified 2,411 fee items to 5,510, but in 2001, relative value system reintegrated parts of these items to conclude 3,124 items.

for general improvement of the system was conducted from 2003 to 2006. The improved system does reflect the relative value point for the risk of medical activity, and was designed so that the exchange index was applied differently depending on the type of healthcare institutions (hospital, clinic, dentistry and dental clinic, herbal medicine clinic, pharmacies, health center, midwifery clinic). In 2008, the new relative value system was applied to the 20% of entire service in order to avoid confusion arising from rapid change in point system. It was then applied to the entire service in 2012.

But this new relative value system had its own problems, including imbalance of fee schedule between treatment categories, causing concentration of medical manpower and imbalanced medical service supply. Therefore, 2nd revision of relative value system is in progress and planned to be implemented in 2015. Main content of 2nd revision contains transition from relative value extraction system by treatment categories to service type system (surgery, treatment, examination) in order to overcome the difference between treatment items.

[Figure 4-3] below depicts the number of benefit and non-benefit items of entire medical activities, which are the foundations of the FFS. Only activity benefit item is given from 1977 to 1999, and activity benefit item (including non-benefit item) is given starting in 2001. In 1977, there were only 763 items, which has been multiplied more than 10 fold in October 2013, to 8,222 items (6,091 benefit items, 735 non-benefit items, 1,396 care hospital items).

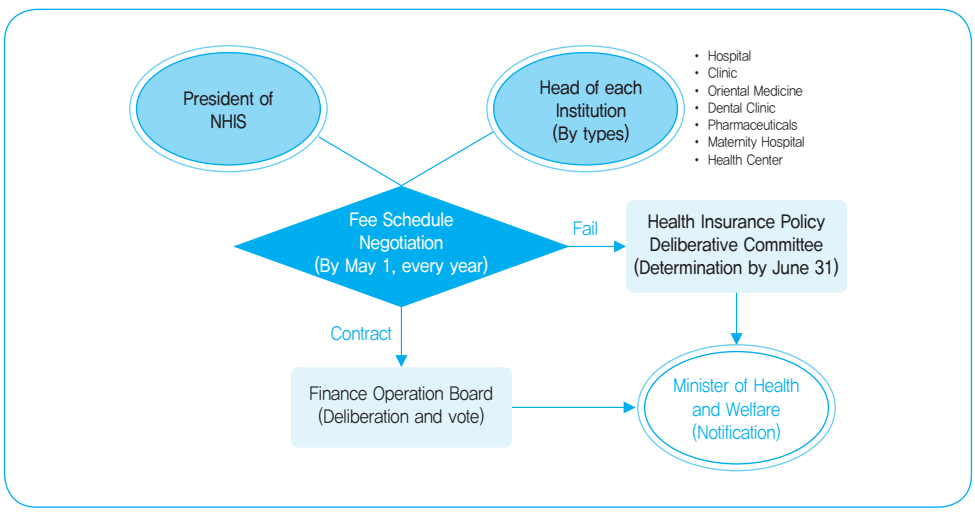
Figure 4-3 | Number of Benefits Package
(Benefits for Service and non-Benefit Items)



Note: The number of benefit for service as of October 2013.
Source: HIRA (2014).

The determination process of fee schedule is divided into determination of relative value point and determination of exchange index. The current relative value scores are reviewed by Relative Value Operation Planning Group, which is under the Health Insurance Policy Deliberative Committee (HIPDC)[55] within MOHW, and Medical Service Benefits Committee under HIRA. It then goes to the HIPDC for resolution, which then gets announced by MOHW. Exchange index, or treatment benefit cost, is determined by contract through a negotiation that takes place every year between NHIS and each representative from 6 different types of organizations. The result is then, confirmed by Finance Operation Board of NHIS through reviews and votes.

Figure 4-4 | Determination Procedure of Benefit Costs



Source: NHIS (2014).

The main 6 representatives of medical institutions are: Korean Hospital Association, Korea Medical Clinic Association, The Association of Korean Medicine, Korean Dental Association, Korean Pharmaceutical Association, and Korean Nurses Association. The negotiation of fee schedule has to reach an agreement by the 31st of May every year. In case of disagreement, the Minister of Health and Welfare becomes authorized to determine the fee through the deliberative committee by the 30th of June in the same year. The contract

55. The Health Insurance Policy Deliberative Committee, under the Ministry of Health and Welfare, is comprised of the Vice-Minister of Health and Welfare, 8 representatives of the health insurance policyholders, 8 representatives of medical society, 8 representatives of public. They deliberate and decide the criteria of benefits coverage, benefits costs, contribution rate of the employee insured and amount per score for contribution imposition of the self-employed insured.

of fee schedule has failed to meet agreement because of the conflicting interests between two parties for 5 years (2001~2005), and thus the HIPDC stepped into make the decision annually. But starting in 2008, except for certain organizations, fee schedule has been determined by the fee contract system. Some of the major conflicting interests between service providers and NHIS are listed in <Table 4-13> below. In addition, the annual results for fee schedule negotiation and its increase rate, and the results for fee schedule negotiation by types of medical institutions and its increase rate have been tabulated in <Table 4-14> and <Table 4-15>, respectively.

Table 4-13 | Major Conflicting Interests between Parties in Contracting Fee Schedule

Main Issue	Provider	Insurer
Opinions on the Current Level of Fee Schedule	It is difficult to receive compensation for the actual price of medical service with the current fee price level. This leads the provider to focus on non-insured treatment, thereby distorting the medical system	Non-benefit items must also be disclosed before discussion regarding the appropriateness of profit can take place
Fee Payment System and Revenue Source of Treatment	Securing revenue source with a mean of an increase in contribution and other is necessary for the provision of fair compensation for medical services	Rising medical expenses are threatening the financial status of medical insurance. New payment system (like Global budget) must be discussed for the achievement of financial stability and sustainability of insurance scheme.

Source: NHIS (2014).

Table 4-14 | Annual Results for Fee Schedule Negotiation and Increase Rate

(Unit: %)

Year	Exchange Index	Increase Rate	Result
2001	55.4	7.08	Disagreement (determination by the HIPDC)
2002	53.8	-2.90	Disagreement (determination by the HIPDC)
2003	55.4	2.97	Disagreement (determination by the HIPDC)
2004	56.9	2.65	Disagreement (determination by the HIPDC)
2005	58.6	2.99	Disagreement (determination by the HIPDC)
2006	60.7	3.58	Contract signed
2007	62.1	2.30	Disagreement (determination by the HIPDC)

Source: NHIS (2014).

Table 4-15 | Annual Results for Fee Schedule Negotiation and Increase Rate based on Types of Medical Institutions

(Unit: %)

Types of Medical Institution		Hospital	Clinic	Dentistry	Oriental Medicine Clinic	Pharmacy	Health Center	Midwifery Clinic
Year	Average							
2008	1.94	1.5 Disagreement	2.3 Disagreement	2.9 Agreement	2.9 Agreement	1.7 Agreement	2.3 Agreement	30 Agreement
2009	2.22	2.0 Agreement	2.1 Disagreement	3.5 Agreement	3.7 Agreement	2.2 Agreement	2.6 Agreement	9.3 Agreement
2010	2.05	1.4 Disagreement	3.0 Disagreement	2.9 Agreement	1.9 Agreement	1.9 Agreement	1.8 Agreement	6.0 Agreement
2011	1.64	1.0 Agreement	2.0 Disagreement	3.5 Agreement	3.0 Agreement	2.2 Agreement	2.5 Agreement	7.0 Agreement
2012	2.20	1.7 Disagreement	2.8 Agreement	2.6 Agreement	2.6 Agreement	2.6 Agreement	2.0 Agreement	4.2 Agreement
2013	2.36	2.2 Agreement	2.4 Disagreement	2.7 Disagreement	2.7 Agreement	2.9 Agreement	2.1 Agreement	2.6 Agreement
2014	2.36	1.9 Agreement	3.0 Agreement	2.7 Agreement	2.6 Agreement	2.8 Agreement	2.7 Agreement	2.9 Agreement
2015	2.20	1.7 Agreement	3.0 Agreement	2.2 Disagreement	2.1 Disagreement	3.1 Agreement	2.9 Agreement	3.2 Agreement

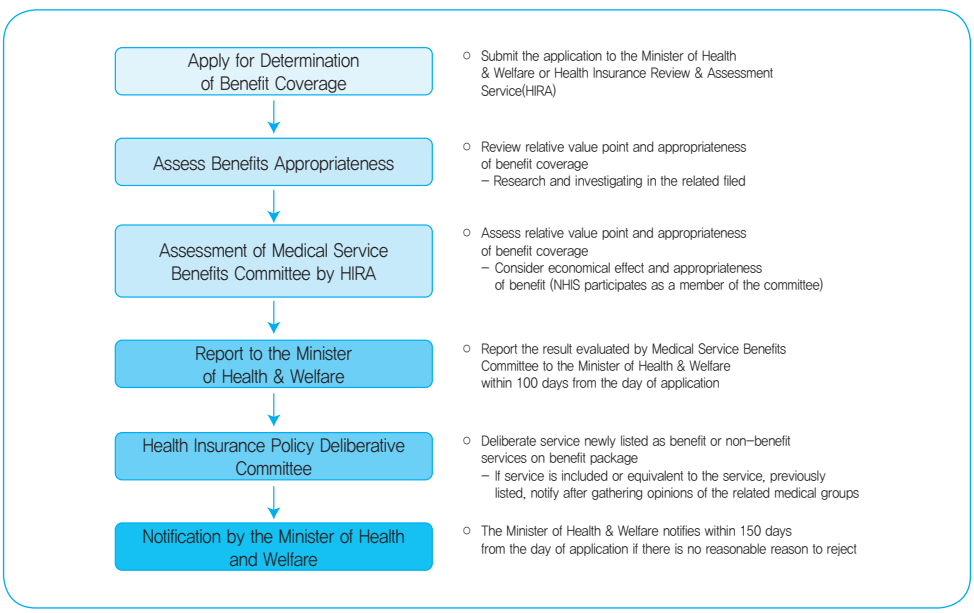
Source: NHIS (2014).

Determination of insurance applicability on new medical practice is another determinant procedure for scope of benefits coverage. The procedure is whether to put uncategorized medical practice (as benefits or non-benefits) on the list of benefit package, and to determine of relative value point. Therefore, this is a very crucial decision-making process for the insurer since the size of finance expenditure of NHIS is affected depending on scope of benefits coverage. In 2001, before the integration, Medical Insurance Association, an organization for insurers, performed the function but as of 2001, when the medical insurance was integrated and HIRA had been set up independently, procedural changes were made. The organizations for medical institutions and medicine or pharmaceuticals apply for the determination of benefit coverage on new medical practices, to the minister of Health and Welfare, after approval for safety and effectiveness through the new medical practice evaluation by 'Center for New Health Technology Assessment (nHTA)' under MOHW. Henceforth, the president of HIRA reports the results of applicability to the minister by

undergoing the reviews from the 'Medical Service Benefits Committee' under HIRA. Apart from medical practice, there are 5 more such expert committees for human anatomy, materials for medical treatment, oriental medicine practice, and pathology group DRG, and 'Pharmaceutical Benefits Committee' that facilitates decision-making on pharmaceutical benefits including determination of whether to give benefits for pharmaceuticals, and price of pharmaceuticals (excluding new medicine), set up within HIRA.

Since the government expenditure for medical insurance is largely determined by benefit coverage and fee schedule, the determination and management of coverage have to be regarded as important for efficient management of finance. However, NHIS determines the exchange index, unit cost per 1 point of relative value for service decided to be included on benefits package, through a direct negotiation with providers. In case of the relative value point, it is managed in a system that is determined by separate organizations. As a result, there has been pressure from the public to streamline and consolidate decision making authority on benefit determination.

Figure 4-5 | The Determination Procedure of Benefit Package on Medical Practice



Source: NHIS (2014).

The system for determining pharmaceutical prices was also under consideration separate from fee schedule system. The provision method of medicine benefit changed in 2007 from the negative list system (all medicines are covered by insurance, unless listed as excluded) to the positive list system (only medicine with high cost-effectiveness can be listed on benefits package). Pharmaceutical prices had been determined through the Refunding of Notified Price System for 22 years from July 1977 to 1999, and since 1999, Refunding of Actual Sales Price System has been utilized.

Refunding of Notified Price System is a system in which official price including margin to the original manufacturing price is notified, and hospitals and pharmacies get paid on the official prices, regardless of actual purchasing price, thereby taking advantage of the difference between actual purchasing price and official price. Therefore, it is important to check the manufacturing original price in Notified Price System. In the early stages of this method, government exercised authority in checking the price from the medicine manufacturer. Starting in 1981, the reported price by manufacturer was published.

In 1976, government conducted price checks for 271 production units in order to apply medical insurance to pharmaceuticals. Price checks for 50 companies that make up 90% of annual GDP was conducted directly based on their financial and sales report, while for 221 smaller companies, it was conducted based on relevant data and evidentiary documents that they were obligated to submit. Price checks were conducted by dividing the net sales count over net sales amount. Medicine sales by pharmacies at the time were made up of wholesale and retail, each making up half of the sales. 7 wholesale companies were surveyed as samples, and as a result, pharmaceutical cost margin rate was set at 12% considering profit rate of 4.4%. Pharmaceutical costs were classified into 7 categories based on medicine type, and official price was listed depending on the dosage unit (capsule, ample, g, and ml). Items applicable for listing were 2,961 items from 132 companies. Imported pharmaceuticals that were not registered in the pharmacy cost standard chart were determined using imported price to healthcare institutions.

Pharmaceutical price notification at the authority of government was not the best method to flexibly adapt to the constantly varying factors such as the development of new medicines and their price changes. A market price survey through financial report took a long time, and was impossible to do precisely. It was hard to modify because it was conducted under direct authority. Therefore, pharmacy society expressed complaints on the way the pharmaceutical price was set by government authority. They demanded the implementation of a Pharmaceutical Price Reporting System, which takes market activity into consideration. Government accepted their claim, and the policy of determining pharmaceutical price was

changed to the notification system by manufacturers' reporting in April 1981. Pharmaceutical Price Reporting System is a system in which medicine manufacturing companies report to Korea Pharmaceutical Manufacturers Association (KPMA) of the original bill, sales record by partners, certificate for manufacture and sales of medical supplies, etc. The Medical Insurance Pharmaceutical Price Review Board under KPMA assesses and determines the market price. Then, MOHW reviews and confirms the price, and adds a small amount of distribution trading differences to the final listed price.

Pharmaceutical price = reporting price + (reporting price × distribution trading difference)

In 1982, MHSA, to facilitate establishment of reporting system, surveyed the actual distribution cost, and implemented price drops of about 5%~20% for 372 items. This shocked the pharmaceutical community because this was the first government intervention after implementation of the reporting system, and this helped to facilitate the stabilization of the pharmaceutical price reporting system. Moreover, MHSA strengthened administrative penalties to those shops that violated reporting price, and further amended the management method by including medicine wholesalers into the list of the Ex Post Facto Management System. Starting in 1989, in parallel with the system of surveying market prices from manufacturers, a system that surveyed purchasing price by medical institutions was implemented in order to conduct more comprehensive survey, also known as insurance pharmaceutical cost Ex Post Facto Management System. With this system, prices for total of 3,946 items were adjusted down 11.2% from 1989 to 1991, and this had an effect of saving insurance budget 90 billion KRW.

As a result, government began Actual Price Refund System by Items starting in 1999. Actual Price Refund System by Items is a system in which the minister of health and welfare determines and lists the ceiling price of medicines, and hospital and pharmacies charge to the insurer the actual purchasing price within the ceiling so that they can be paid the difference. Actual Price Refund System laid the foundation for advancing pharmaceutical policies by eliminating pharmaceutical price differences between hospitals and pharmacies (Sang-eun Choi, 2013).

Pharmaceutical Price Notification System based on reporting that began in 1981 came to a transformative phase in 2007 with a positive list system of medical supplies and implementation of pharmaceutical price negotiation system. Pharmaceutical price

negotiation system[56] was a system in which the price of new medicine was determined through a direct negotiation with a pharmaceutical company. The scope of negotiation was later modified to further include existing medical supplies, if they face over 30% increased usage from the previous year, as an effort to price down these medicines for the following year. The negotiated prices were identified as the ceiling price by the minister of health and welfare.

Actual Price Refund System by Items was not effective at bringing down pharmaceutical prices because there was low incentive in purchasing generic drugs. So in October, 2010, Market Based Actual Price Refund System was implemented to supplement the shortfall. This was a system in which 70% of the difference between ceiling price and purchasing price is refunded as incentive to hospitals and pharmacies that purchase medical supplies below price ceiling. For example, in condition of expense paid: 70%by the insurer, 30% by the patient and the medical insurance price ceiling of a medicine is 1,000 KRW, if a pharmacy purchases a medicine at 900 KRW (the actual price) and provided it with patients, and then it follows the example below. Medical institutions can be encouraged low price purchase as such, and the insurer can save insurance budget by decreasing pharmaceutical price the following year by checking the actual purchasing price annually based on the reported actual purchasing price.

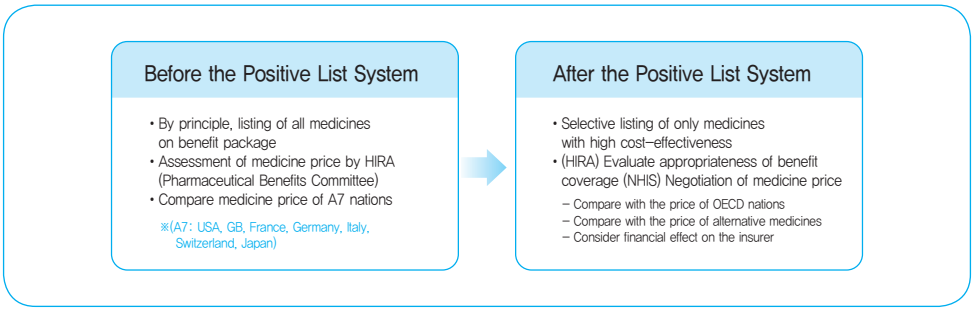
Total Medical Cost	=	Co-Payment by an Insurer	+	Incentive of Pharmacies (Additional profit)	+	Co-Payment by a Patient
970 KRW		630 KRW = 900 KRW × 70%		70 KRW = 100 KRW × 70%		270 KRW = 900 KRW × 30%

However, Market Based Actual Price Refund System is on hold due to opposition from the pharmaceutical industries.

The functional management authority for the price determination of pharmaceuticals has been shared by NHIS and HIRA. For the price determination of new medicines, along with the introduction of the Positive List System for Pharmaceuticals in December 2006, the system is managed based on a system where HIRA evaluates applicability of the benefit package while NHIS negotiates the price.

56. Current pharmaceutical price determination process of new medicines was done by Pharmaceutical Professional Evaluation Committee in HIRA, to determine the insurance pharmaceutical price by relatively comparing the adjusted average price with A7 nations (USA, GB, France, Germany, Italy, Switzerland, Japan) based on the clinical utility of the pharmaceutical. After 2007, Pharmaceutical Benefits Committee in HIRA reviews the clinical utility, cost-effectiveness of the pharmaceutical and evaluates the appropriateness of the pharmaceutical as benefit, and NHIS takes the result as the basis to directly negotiate with the medicine manufacturers about the price and registration.

Figure 4-6 | Price Determinant Method before and after the Positive List System Implementation (as of December 29, 2006)



Source: NHIS (2014).

For registration of pharmaceuticals, the Pharmaceutical Benefits Committee has been established within HIRA. The committee plays a role in evaluating whether to provide benefits on new medicines, and whether to maintain the benefits for registered medicines (clinical effectiveness evaluation + economics evaluation). Meanwhile, NHIS negotiates the price of new medicines that have received approval for appropriateness of benefit by Pharmaceutical Benefits Committee.

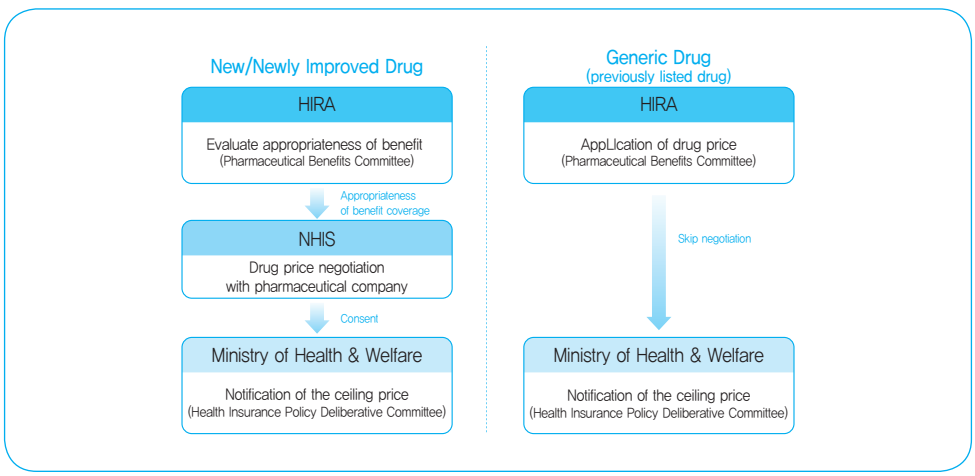
Table 4-16 | Procedure and Legal Basis for Insurance Registration of New Medicines

Procedure	Content
Insurance Registration Application (Pharmaceutical Company)	• Submission of application form for pharmaceutics evaluation to the president of HIRA
Re- or Evaluation of Eligibility for Benefits (HIRA)	• Evaluation on whether to provide benefits to pharmaceutics, and ceiling prices via deliberation of the Pharmaceutical Benefits Committee - Consideration of economics, and eligibility and standard for benefits
Pharmaceutical Price Negotiation (NHIS)	• Consideration of price of alternative pharmaceuticals, foreign price of applied item, and effects on insurance finance
Ceiling Price Notification (MOHW)	• (Pharmaceuticals that reached an agreement) Notification of ceiling price through deliberation of HIPDC • (Pharmaceutics that did not reach an agreement) Categorization of non-essential pharmaceuticals into non-benefits, and notification of ceiling price after price adjustment at Pharmaceutics Control Committee for essential pharmaceuticals

Source: Regulations on NHIS Treatment Benefits Standard.

Meanwhile, in case of generic drugs, the original drug (new medicine) with same chemical substance is already registered, and therefore HIRA directly calculates the price according to the Pharmaceutical Price Calculation Standard as the evaluation of appropriateness of benefit (clinical effectiveness and economics) is unnecessary.

Figure 4-7 | Comparison of Benefits Provision and Price Determinant Procedure on New or Generic Drug



Source: NHIS (2014).

The actual procedure of pharmaceutical price negotiation, in accordance of pharmaceutical price negotiation decree, starts with constructing a negotiation group with less than 5 people each from insurer and from a pharmaceutical company in order to negotiate prices on the applied pharmaceuticals to be covered by insurance. However, in order to facilitate a smooth progression of negotiation, action level personnel can also participate. The main purpose of this group is to sign an agreement on pharmaceutical price negotiation by determining the ceiling price of the applied item after considering its predicted usage rate and the scope of benefit coverage. If a separate agreement aside from the price ceiling is made, then a separate agreement should be signed. Contents of a separate agreement can include 1) factors regarding the pharmaceutical price change in certain nationally relevant negotiation price, 2) factors regarding currency change, 3) factors regarding linkage of price and usage rate, and 4) anything that both sides agree are necessary to be discussed. Factors that the insurer considers in negotiating price are, the assessment date from Pharmaceutical Benefit Committee, impact that the negotiating medicine has on insurance budget, price of foreign

countries of negotiating medicine, capability to supply the medicines, status of patent, domestic and foreign data on R&D investment cost, and all other factors that can affect the price negotiation. The insurer takes all these factors into consideration as reference points for price negotiation.

2.2. Assessment of Benefit Costs

The benefit costs assessment is important in making fair and objective evaluations as to whether medically valid and cost-effective benefits provisions have been performed on the basis of assessment standards that the MOHW has set, thereby suppressing excessive medical costs, preventing provision of unfair medical costs, preventing underuse or inappropriate use of medical resources, assuring appropriate treatment, realizing social responsibility for treatment benefits, and realizing the function of medical protection of citizens.

The assessment types consist of index assessment, detail assessment, supplementary material requirement assessment, face-to-face assessment, on-site assessment, and general management system assessment. The index assessment refers to a type of evaluation performed when a claim trend of a medical institution for benefit costs is favorable so that the necessity of the detail evaluation is judged to be low. In this case, HIRA skips the assessment procedure of claimed benefit cost statements over a certain period on outpatient treatment benefit cost claim statement, and instead evaluates through the management of treatment index. The detail assessment refers to a type that assesses appropriateness of treatment and suitability to assessment standard in detail via comprehensive understanding of the benefits costs statement of inpatient and outpatient, excluding the index assessment, by analyzing treatment trends of corresponding medical institutions on statements. The general management system is a new type of evaluation system that comprehensively manages claimed treatment fees from medical institutions on the basis of appropriate treatment cost. It is calculated by including medical institutional type, treatment categories and disease type.

With respect to performance evaluation, there are committees for electronic evaluation, evaluation by staffs, executive screening evaluation, and peer review.[57] The electronic evaluation is a type of assessment method that is performed electronically on the point of benefits cost claim[58] for the checking input errors in general details, automated check-up

57. The peer review is the type of review that a part-time examiner, working in the field of medical service, can improve professionalism and fairness of review through more professional and medical review by the professional area or medical service categories.

58. The type of claim: through EDI, disk or paper.

on pharmaceutical or medical unit price, and application errors for evaluation standard, before the evaluation of propriety on contents. The evaluation by staffs refers to a direct-assessment performed by a member of screening staff for the confirmation of general contents like personal details of health examinee, name of ambulance, and treatment period on benefits costs statement; the analysis of corresponding institutions' benefits costs claim trend; and the appropriateness of claim statement within the range of explicit evaluation standard. In case a decision of medical professors is required, the evaluation is performed by corresponding specialists under a request for judgment. The executive screening evaluation and peer review is a type of assessment carried out by the professionals in a case that had been judged to require professional medical decisions during the evaluation by staff. The executive screening evaluation refers to a type of assessment implemented through deliberation for the cases that require a high level of medical decisions on the basis of different fields, contents that need set-up of evaluation standard, and the cases that require decisions via other agreements.

The biggest challenge that medical insurance cooperatives faced in the early days of medical insurance was the review of medical expenses. Medical institutions charged cooperatives (574 cooperatives as of May 1978) the cost incurred from providing care, or birth benefit to the insured, and each cooperatives contracted welfare managers or medical specialists to obtain legal advice, in order to review and pay the medical expenses. However, most of those who were on the review board were medical workers themselves, and charged excessive fees for reviews. Nor were they objective. Additionally, each cooperative had designated contracts with tens and hundreds of medical institutions, causing complexity in their tasks, and the payment tasks were so overwhelming that there was not enough time to do usual work. Medical institutions had their own problems concerning management of treatment fee income, causing mutual troubles.

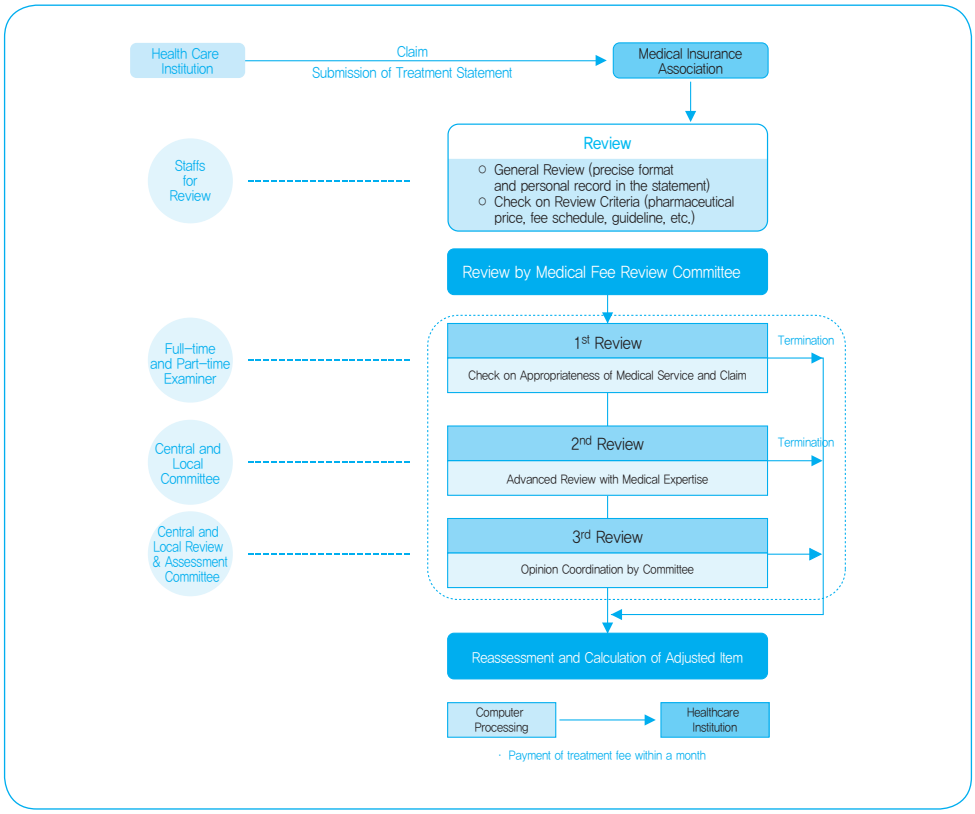
Therefore, the cooperatives requested a professional centralized review board, bringing about the establishment of the Central Review Committee under National Council of Medical Insurance in 1979, thereby centralizing the system of review and payment. After a centralized review board was established in July 1979, all benefit costs statements were closely scrutinized via the detail assessment. In order to be more effective, an index assessment was implemented in November 1985 for ambulatory claims, which underwent both index assessment and detail assessment. At the same time, in order to alleviate the complexity of the benefit cost charge review process, certain medical institutions designated as reliable in treatment fee claim status were allowed to charge without the actual content of treatment, but rather with only personal profile of the diagnosed and total amount charged if

the total treatment fee was below a certain amount. The review board also pays the treatment fee without review to the reliable healthcare institutions.

Starting in 1985, as part of an improvement of the unjust factors[59] for small amount treatment fee claiming medical institutions, in order to respond effectively to the increase in volume of claims as the medical insurance applicable population and consultation rate increased, the Medical Insurance Association, which is a review and pay organization for medical expenses, conducted tendency assessments for most of the clinic level ambulatory treatment. tendency assessment is a comparative review method that differentiates the intensity of review by medical institutions after taking into consideration the statistical data that analyzed the trend of refraining from conducting precise assessment for those medical institutions with less necessity to conduct precise assessment because of low treatment index after analyzing the relationship between treatment fee claiming tendency and trend of assessment and adjustment based on treatment data within specific set of time for review and payment. In other words, general assessment is conducted for those healthcare institutions with low treatment fee per service, in order to alleviate the increasing treatment fee assessment volume. Tendency assessment basis has been established by exempting the review process for 1,768 healthcare institutions whose ambulatory care cost is 75% level of average cost out of 6 treatment areas (internal medicine, gynecology and pediatrics, optometry and otolaryngology, skin urology, dentistry, etc.) from total 10,319 clinic level medical institutions. The implementation of tendency assessment system is a development from small amount treatment fee claim trial treatment agency system in skipping the review, but also a big transformation from the previous system in alleviating the assessment volume arising from lack of assessing personnel. In 1986, tendency assessment system has been expanded to include 21 further classification, and healthcare institutions have been classified into 9 grades, with ambulatory treatment fee per service is below 75% is graded as A, below 90% is graded as B1, below 100% is graded as B2, below 125% is graded as C, below 150% is graded is D, below 175% is graded as E, and above 175% is graded as F. Those institutions with below 90% are paid treatment fees after completing overall review procedure and those institutions that exceeded 200% and received warning at the on-site inspection were reclassified as grade Q, and managed separately since 1988. The [Figure 4-8] on the next page depicts the review process and procedure for treatment benefit cost.

59. Unjust factors are that 1) omission of certain lines is not very meaningful because fee calculation This has to be done anyway in order to calculate the net treatment fee, and 2) there are only 200 applicable agencies, and no correlation can be made between low adjustment rate and reliability of the healthcare institutions, and 3) it is possible to be designated as small amount claim institutions by avoiding insurance benefit and processing the amount as non-benefit from fear of treatment fee adjustment rate.

Figure 4-8 | Review Procedure and Method by Medical Insurance Association



Source: Medical Insurance Association (1997).

Even so, timely payment of increasing assessment volume and benefit cost, and ensuring objectivity of review were important issues. Medical Insurance Association[60] reorganized the review board in January 1st, 1988, and transferred to a regional distribution system of review system from centralized review system, facilitating treatment fee review work. The country was divided into 5 regions of *Seoul*, *Busan*, *Daegu*, *Gwangju* and *Daejeon* (*Soowon*, *Changwon* added in 1989) and new branches were established. MHSA modified the standard and method of determining treatment fee in December 30th, 1989, and made medical institutions above hospital and special institutions report to National Committee of Medical Insurance headquarters, and clinic level welfare institutions report to the local branches.

60. According to footnote 17, 'Medical Insurance Council' was changed to 'Central Medical Insurance Cooperatives Council' in 1981, and to 'Medical Insurance Union' in 1987.

With the integration of medical insurance organization, two arguments arose, one wishing to have the review function remain as sole authority of insurer, and the other claiming to have it separated and delegated to independent an agency. In the end, the National Health Insurance Act was enacted in February 8th, 1999. This legislation separated review authority and payment authority. Review authority was given to HIRA, and payment authority was given to NHIS. HIRA is an independent organization from the insurer, and they had to find new a method of reviewing in accordance to the change of environment and alleviate increased volume of pharmaceutical cost that occurred from separation of prescribing and dispensing.

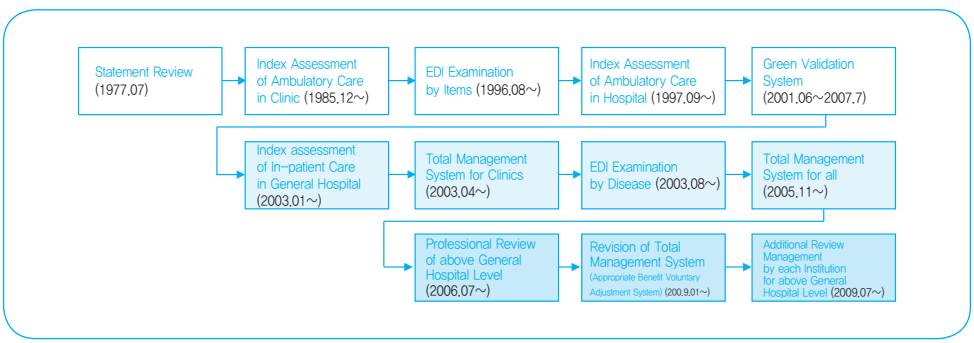
The index assessment system for oriental medicine clinics was introduced on October 1st, 2000, as new way of reviewing, and what used to be classified as index overview, precise was reclassified as index, precise, professional assessment in July 2001. Also in December 2002, index assessment was extended to above general hospital so that starting in January 2003, index assessment applicants were classified based on the Costliness Index (CI) using Korea Treatment Related Group (KDRG) for treatment statement for hospitalization and treatment fee in institutions including general hospitals and above. Starting in April 2003, appropriateness of Benefit Overall Management System was introduced to supplement the ambulatory patient classification system. In May 2003, 588 classification systems were used and starting in July 2006, newly developed Korean Out -Patient Group (KOPG) was used to classify index assessment institutions. Also in April 2009, terminologies for review classification were reorganized so that index assessment became normal assessment, and precise assessment became professional assessment.

With the financial crisis in 2001, government implemented a finance protective policy, thereby requiring systemic alternative measures to placate the pharmaceutical community. Also, the Green Validation System, a system in which early payment of benefit cost was made to those medical institutions that conducted appropriate treatment and made truthful claims, was introduced. Green Validation System began in June of 2001 for clinics, dental clinics, herbal medicine clinic, and in November of 2001 for pharmacies. However, Green Validation System was not welcomed by medical institutions, with exception for pharmacies, due to the reasons such as increasing cancelling rate of institutions, delaying of early payment of treatment fee, decrease of request by clinics, so in July 1st, 2007, the system shut down.

Also, as part of finance stabilization measures, review method based on items caused increased workloads and rise of review adjustment rate. Additionally, precision of review decreased to cause rise of appeals, further causing complaints from medical institutions.

Likewise, improvement in review method became necessary due to the limitation faced by old methods of handling assessment volumes and treatment fees after separation of prescribing and dispensing pharmaceuticals. Therefore, as the first step to alleviate the situation, 'Clinic Level Ambulatory Treatment Fee Assessment' was introduced. This was a system in which analysis and monitoring was conducted to institutions based on Costliness Index of treatment fee. Activity for guidance was conducted through on-site visits, resulting in voluntary decrease of treatment fee by medical institutions. Benefit Appropriateness Overall Management System was implemented for 50 healthcare institutions in *Changwon* and *Daejeon* region in 2002, which expanded to clinics and dental clinics starting in April 2003. Starting in August 2005, healthcare centers were included, and starting in November 2005, hospitalization, ambulatory for below hospital level institutions and hospitalization of clinic level were all included. After that, in December of 2005, herbal medicine hospitals and herbal medicine clinics were included, and in January of 2006, pharmacies were included. The [Figure 4-9] depicts the evolution of review method.

Figure 4-9 | Transitional Changes of Review Method



Source: The last 10 years history of Health Insurance Review & Assessment Service (2011).

As review systems became more efficient, a change was called for in billing methods for benefit cost. At the time of employment medical insurance in July 1977, treatment statements for claims was based on written format claim method with minimum categories necessary for cost claim. The template for treatment statement changed as medical insurance system changed such as partial co-payment, fee schedule system, payment review system and separation of prescribing and dispensing pharmaceuticals

At the time when statements were submitted in written format, every process had to be done by hand. Charging agencies had to undergo long waits to submit statements. Moreover,

with the increase of medical insurance applicants and rise of consultation rates came a surge in fee claims. Due to centralization of Medical Insurance Association of review board and implementation of nationwide medical insurance in July 1st, 1989, written review format could not match the pace and volume of review and payment work. As a remedy for this, the Medical Insurance Association began actively examining the possibility of digitalized treatment fee claiming option. Digitalized treatment fee claiming method progressed in a way to promote convenience for treatment fee claim by healthcare institutions and to respond to the increased assessment volume with focus on decreasing the workload and strengthening professionalism in review work based on digitalized support for general check items.

In December 1992, treatment fee claim digitalized the system by using floppy disk instead of the written treatment statement, and in March 1994, 15 clinic level medical institutions in *Seoul* went through a trial demonstration. The number of charging agencies using digitalized system expanded to clinic level medical institutions with the support of S/W suppliers. Along with this, in January 1994, a consideration was made to implement medical information network in support of charge and review using EDI system developed by Korea Telecom (KT)'. This project took off with Medical Insurance Association responsible for providing professional information required for analysis, and with KT responsible for paying all charges required for installing H/W and developing S/W.

Digitalized claims was expanded to medical institutions in *Gwangju* area in July 1st, 1995. In July 1996, this was expanded to entire nation except for *Busan*, and *Busan* was included in January 1997. In April 15, 1997, the digitalized claim approval requesting verification task was transferred to the branches in *Daegu*, *Gwangju*, *Gyunggi*, and *Gyungnam*. Following that, in July 15th, 1997, *Busan* branch, and in November 11th, *Seoul* branch received the verification work from head quarter, making the verification task all responsible by the regional branches. In July, 1997, 'Screen Review System' was developed to drastically reduce the inconvenience of printing out each treatment statement and the cost and time to print the paper. Disk Expert Verification system in support of digital checks according to the benefit and review standard was also developed. As a result, in 1999, 12,419 clinics and dental clinics were acknowledged as digitalized system claiming agencies, with the number increasing in 2000 to 13,596.

The treatment fee claim and assessment system with the EDI method, after 3 years of R&D and test trials, was implemented as trials for 53 hospitals and clinics in *Seoul* in December 1996. In May 13, 1997, Guidance about pharmaceutical price claim method using EDI system was notified to facilitate the expansion of EDI claim. In August 1997, as

the EDI system expanded to pharmacies and hospital level medical institutions in *Seoul*, MOHW, as of August 30th, announced the treatment fee claim method using EDI system to organize relevant procedures and promoted digitalization of review and claim. Also, in April 1998, *Gyungnam*, *Busan*, *Daegu*, *Gwangju* and *Daejeon*, EDI system was expanded 1 per branch every month to finish establishment of EDI system by end of August. As a result, participating agencies increased to 2020 to 12,910 and charging count increased from 2,590,000 to 29,140,000. System development project began in order to expand the EDI system to oriental medicine and health centers, and in December of 1998 to February 1999, trial began for oriental medicine institutions. As a result of trial, in March of 1999, all oriental medicine institutions and medical institutions with DRG claim implemented, and in July of 1999, healthcare centers implemented the EDI system to eliminate almost all paper based system except for midwifery clinics. By June of 2011, 99% of all medical institutions used digitalized charging system, which was effectively all medical institutions except for those that do not use any charging system.

In June 28, 2011, with the expiration of contract for EDI system with KT, HIRA began a new system based on Web portal for treatment fee claiming service. To use EDI service, it cost a total of 18.43 billion KRW per year, including 18.1 billion KRW for healthcare institutions and 330 million KRW for HIRA, but the Web system used Internet network, causing almost no cost for claiming treatment fee. Also, the speed of work process was 3 fold, and all processes was done in one sitting, so the convenience level of customers increased.

2.3. Management of Fraudulent and Unjust Claims

Treatment benefit cost review is a process to determine whether the benefit service was provided in accordance to the treatment benefit criteria. Verifying that the treatment fee claimed by healthcare institutions has been claimed justly is a matter that runs separately. Deterring faulty and unjust claims that have been charged not in accordance with the treatment history, or reclaiming the unjust fees by conducting on-site survey is called ex post facto management system.

Appropriate Benefit Voluntary Adjustment System is part of the post management system. This system has been conducted under Medical insurance association and Public and School corporation since January of 1986 to deter faulty and unjust claims for treatment benefit cost. They would analyze the treatment behavior of the healthcare institutions, and report the results to the institutions, thereby inducing them to self-restrain from making false and unjust claims. This was initially called ‘Healthcare Institution Voluntary Adjustment

Notification System'. Since its title changed to 'Healthcare Institution Voluntary Guidance System', HIRA has been operating it as 'Appropriate Benefit Voluntary Adjustment System'. In the early days, the system noticed the need for voluntary adjustment by the healthcare institutions that are above the average national standard that calculates point based on treatment fee per day and number of visits to hospital per treatment in accordance with classification of original claims into by quarter, by type of institution, by medical practice, by the level of frequency of diseases. After a while, however, it was considered that the healthcare institutions may not be aware of all adjustment reasons, so notification system was refrained and instead, notified to medical community, hospital community, dental community and these medical organizations notify to their members. This system is called Healthcare Institution Voluntary Guidance System. Beginning in January 1989, treatment institutions have been classified to 8 groups based on their type and sizes. Treatment and management indexes were kept as points and cumulated to enable comparison of the diseases; they designated scores for 100 frequent diseases for general hospitals, hospitals, and clinics; 30 for special clinics (by respective categories); 10 for ambulatory care of dentist hospitals and clinics. Institutions that went over the index range were notified of their respective scores. As a result, 1,000 institutions were notified in 1989, of which there was about a 70% adjustment rate, according to the results of effect analysis, making it sufficient to think that voluntary guidance was effective. However, for those whose points went beyond average even after two notifications, on-site visit parallel with a surveillance system was conducted. Also, in January of 1992, 3rd treatment institutions were classified separately and the range applied to diseases of high frequency was expanded starting in April 1994, as 500 diseases for both hospitalization and ambulatory for hospitals, 200 diseases for clinics depending on their respective categories, and 40 diseases for dentistry and dental clinics. Likewise, it is shown that the effect of treatment fee voluntary adjustment based on treatment institution voluntary guidance system appeared quite effective according to an analysis of claim tendencies.

Another method of deterring faulty and unjust claims of treatment benefit cost is to guide the insured of appropriate claims from healthcare institutions online, so that they may assess the claim content for themselves. This deters faulty and unjust claims as well as claim errors by letting the insured check if the institution has claimed for treatment not received by the insured or of different content. The system has the additional effect of nat enabling the insured to manage the family's health and medical records. The treatment notice includes name, date diagnose, name of healthcare institutions, address, total treatment fee, co-payment. Guidance of content of treatment began in January of 1979, and prior to 2001,

it was mostly cases concerning excessive co-payment. Since 2006, Data Mining Analysis method has been introduced to transmit the ones that have high correlation with faulty and unjust claims. Before July in 2001, the notices were sent via posts, incurring delivery costs, and thus limiting the number of notices to 6 million. Since 2006, however, around 100 million notices have been sent through the Internet, and the insured can verify their profile at NHIS home page and check their treatment history. But those sensitive symptoms like mental disorders that require privacy protection are not listed. A limitation of this system is that faulty claims can only be discovered through the insured's reports. As a supplementary measure, NHIS has been conducting 'specific treatment content assessment system' by which it independently analyzes and monitors the tendency of the reported claims.

Conducting on-site inspection at the healthcare institutions helps maintain the rights of health of citizens by preventing leakage of medical insurance budget and protecting the right to receive benefit by the insured, through creating healthy and just claiming and diagnosing culture. At the time of medical insurance enactment of 1963, legal foundation was made for the on-site inspection of the healthcare institutions, but the actual execution of the system began in 1981. Since 1981, MHSA was supported by Medical Insurance Association to inspect treatment fee for employee cooperatives insured, and was supported by Public and School corporation to inspect treatment fee for the insured belonging to Public and School corporation. In January 1988, MHSA distributed comprehensive guidance on treatment fee review agency to delegate the authority of treatment fee review job of Public and School corporation to Medical Insurance Association. In July 2001, Inspection has been largely conducted by HIRA due to the separation of review task, and since 2005, the results of on-site inspections[61], such as the cases and types for unjust claims depending on the categories of treatment subject, were displayed on the website every quarter.

'Database Assessment of Medical Expenses Claimed' is the process of identifying false or unjust statement claims and receiving back the payment through reviewing database documents without the need to receive confirmation from the insured. By periodically reviewing documents of the treatment facilities and comparing them with the existing data, NHIS identifies if any claims are false or unjust. There have been cases in which facilities made the same claim twice, made claims on the already deceased, on the patient that has received treatment from a different facility, or on a patient staying abroad. These cases

61. In 2007, NHIS conducted research on "on-site inspection awareness and analysis on the on-site inspection of healthcare institutions'. Results show the on-site assessment to be successful in preventing or reducing unjust claims, thereby strengthening information disclosure of on-site inspection results.

fall under false claims, allowing NHIS to receive back the insurance payment from those facilities without the need to go through a separate confirmation procedure. Since 2007, NHIS has been employing the National Health Insurance Benefits Management System (herein after NHI-BMS), which identifies false reports through a data mining method.

If a healthcare institution is found to have made unjust claim by accident, thereby imposing on NHIS, the insured or the dependent unfair treatment cost, it must give back only the exceeding amount. Treatment facilities are fined or forced to shut down as described below. <Table 4-17> describes the shutdown period based on the level of unjust amount (National Health Insurance Act, Enforcement Rule, Article 70 (1)).

Table 4-17 | Criteria of Shutdown Period

(Unit: day)

Monthly Unjust Amount		The rate of Unjust Claim				
Medical Institution, Pharmacy, Medical Center, Korea Orphan Drug Center (KRW)	Health Centers (KRW)	0.5% ~1%	1% ~2%	2% ~3%	3% ~4%	4% ~5%
150,000 ~250,000	50,000 ~80,000			10	20	30
250,000 ~400,000	80,000 ~140,000		10	20	30	40
400,000 ~800,000	140,000 ~200,000	10	20	30	40	50
800,000 ~3,200,000	200,000 ~400,000	20	30	40	50	60
3,200,000 ~14,000,000	400,000 ~700,000	30	40	50	60	70
14,000,000 ~50,000,000	700,000 ~1,000,000	40	50	60	70	80
Above 50 million KRW	Above 1 million KRW	50	60	70	80	90

Note: 1) Monthly unjust amount is the sum of unjust amount claimed to NHIS and the insured over the period of investigation.

2) The rate of unjust amount = (Total unjust amount during the investigation /Total treatment amount during the investigation) × 100.

3) If the rate of unjust amount is over 5%, the shutdown day adds 3 days for every exceeding 1 percent.

Source: Enforcement Decree of the National Health Insurance Act, Article 70 Clause 1.

If the shutdown period is 10 days, then double the net unjust amount is fined, if 10~30 days, then 3 times the net unjust amount, if 30~50 days, then 4 times the net unjust amount, and if more than 50 days, then 5 times the net unjust amount is fined. If the same institution gets penalized twice within 5 years, then both shutdown period and the fine amount become doubled.

Since July 2005, NHIS has awarded a maximum of 100 million KRW to those that report instances of institutions' unjust claims if the report turns out to be true. In order to protect the identity of those who expose the unjust claims, there are measures for identity protection to prevent their identities being exposed.

Implication

Medical insurance system made a huge contribution to improve the medical environment, and to facilitate the growth of medical industry, and these in turn led to the advancement of medical insurance system. As the result, a virtuous cycle has been created. Today, Korean medical insurance system has been evaluated as an exemplary model in the international community, in terms of high accessibility to medical use and cost-effectiveness

Korean medical insurance has consistently strengthened benefit coverage by reducing the co-payment for rare and high-cost diseases and setting up the ceiling of medical expenses, but the coverage of medical insurance is below that of OECD average.

Korean medical insurance system is vulnerable to control insurance expenditure because major functions of the insurer such as determining fee schedule and benefit package, assessment of benefits costs were performed by external agencies, and a fee payment system is implemented based on Fee-For-Service. Thus, strengthening of insurer's role is needed to ensure to operate the medical insurance system.

Chapter 5

Information Management and System Operation

Information Management and System Operation

1. Information Management and Application

The administration of medical insurance had been stabilized soon after the nationwide medical insurance system was established. The computerization in the administrative complex tasks such as eligibility management, contribution levy and benefit management, etc. has been automated and enabled to provide convenient services to the public. The work of calculating medical expenses in medical institutions also has been simplified by skipping the process of individually calculating medical expenses depending on whether she or he is covered by medical insurance or not due to the implementation of nationwide medical insurance. Moreover, the effective working environment based on ICT was constructed on the procedure of assessment and payment of benefit costs, thereby the medical insurance system could stabilize early.

The computerization in the public administration sector had started in mid 1980s with the administration computerization policy, which was pursued in government-wide, while the medical insurance sector had adopted and initiated at a cooperative level as an independent system operation. In particular, in case of the self-employed medical insurance, the administrative process based on computerization had played a huge role in reducing complaints. In addition, the ID computerization project, that was initially promoted in 1987 and finished in 1990, and the establishment of nationwide on-line connection of resident registration information in 1991 had played an indispensable role in the development of administration work regarding the efficiency of the medical insurance eligibility management. The collection of contribution in urban areas would not have been possible without the computerization. Later on, NHIS revised and amended the

regulations for further achievement of medical insurance work efficiency, and this enabled the collection and interlocking of information with external organizations, and the complete computerization, thereby constructing one of the most advanced operations management systems in the world.

Currently, as seen in [Figure 5-1], for the medical insurance work(including LTCI) NHIS has been retaining the database up to date through a regular interlock of 211 types of data from 36 external organizations including National Tax Service. The amount of the data that NHIS holds is enormous and the data is stored in so called Data Warehouse (hereinafter DW). The DW is diversely utilized to operate the administrative work of medical insurance and to compute and analyze statistics (see Appendix 3 for the types of the interlocking data). The representative examples include the following:

- For the tasks regarding the eligibility management, NHIS receives updated national resident registration data on a daily basis from the Ministry of Security and Public Administration via Public Information Sharing Network (hereinafter PISN)[62], to automatically reflect them on the acquisition or lose of eligibility, and changes in eligibility. Additionally, NHIS also receives the immigration information of the resident, and the foreigner registration information on a daily basis from the immigration office via 4 Major Social Insurance Information System[63] for a use in tasks regarding the suspension of medical insurance benefits, cancellation of the insurance, and application for an insurance policy of foreigners. Furthermore, a daily information provision of prisoners from the Ministry of Justice (hereinafter MOJ), and of the disabled from the MOHW is being used for eligibility management of the medical insurance.
- For the levy and notification of contribution, in October every year, NHIS receives about 21 million cases of data on the composite income of nationals (earned income, business income, interest income, and dividend income), from the National Tax Services via PISN. Moreover, every October, NHIS also receives the information on the property tax (land, building, ship, and aircraft) for a use as based information of contribution calculation. The calculation control and adjustment of contribution have been performed through the interlock of the data regarding farmers and fishermen from the Ministry of Agriculture, Food and Rural Affairs (hereinafter MAFRA), and the data

62. Public Information Sharing Network is the network system established in order to connect or mutually use available information that administrative organizations and public institutions respectively have. Nation as well as public institutions can use online for application and handling of civil affairs.

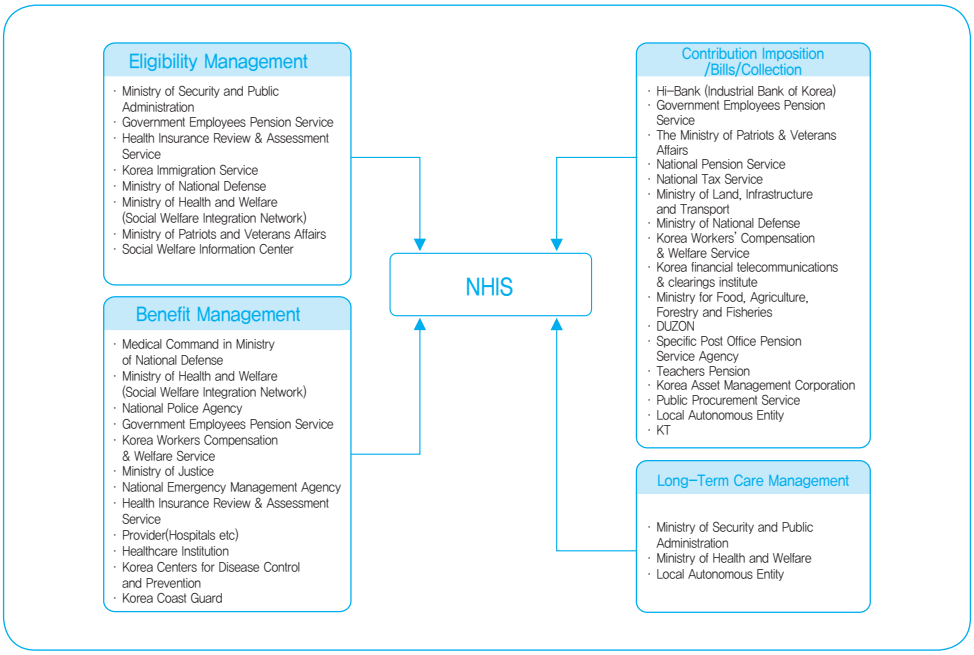
63. 4 Major Social Insurance Information System is the computerized operation management system in order to interlock and share a wide range of information between health insurance, pension insurance, industrial accident compensation insurance and employment insurance.

regarding possession, seize, and cancellation of vehicles from the Ministry of Land, Infrastructure and Transport (hereinafter MLIT).

- On a daily bases, NHIS is provided with the information for the contribution notification and collection from the Korea Financial Telecommunication & Clearings Institute (hereinafter KFTC) and it includes information on direct debit, electronic payment, and OCR payment. In addition, for the convenience of national in the medical insurance contribution payment, NHIS has constructed an exclusive line with 6 other organizations including the KFTC, Korea Federation of Banks (hereinafter KFB), and credit card companies, providing services such as contribution payment and card payment at branches. In particular, from 2011, the contribution payment had been enabled in 24-hour convenience stores via further interlock of data.
- For the management of contribution delinquents, NHIS has been performing real-time interlock of the data with electronic public auction system of Korea Asset Management Corporation (hereinafter KAMCO), making a use in public auctions.[64] In addition, in order to complete the contribution notification work for the integration of 4 major insurance collection system, NHIS has automated the systematic procedure regarding the national pension, notification of employment from the Korea Workers' Compensation & Welfare Service (hereinafter COMWEL), and information on the notification, payment, and delinquency of workers' compensation.
- For the automation of works related to the treatment benefits and ex post facto management, NHIS has built an exclusive line connected with HIRA, receiving the claims and review data for benefit costs of the medical insurance and medical aid once a week, and thereby reimbursing benefits costs to the medical institutions. Meanwhile, the information regarding benefits costs are being used as a post-payment material that inspects patient's fraud use of medical service, and false or wrongful treatments of medical institutions.

64. This is an auction that is legally disposed by the government through the coercive auction procedure of delinquent's property distrained. KAMCO does on the request of NHIS.

Figure 5-1 | Medical Insurance Tasks and Related Organizations



Source: NHIS (2014).

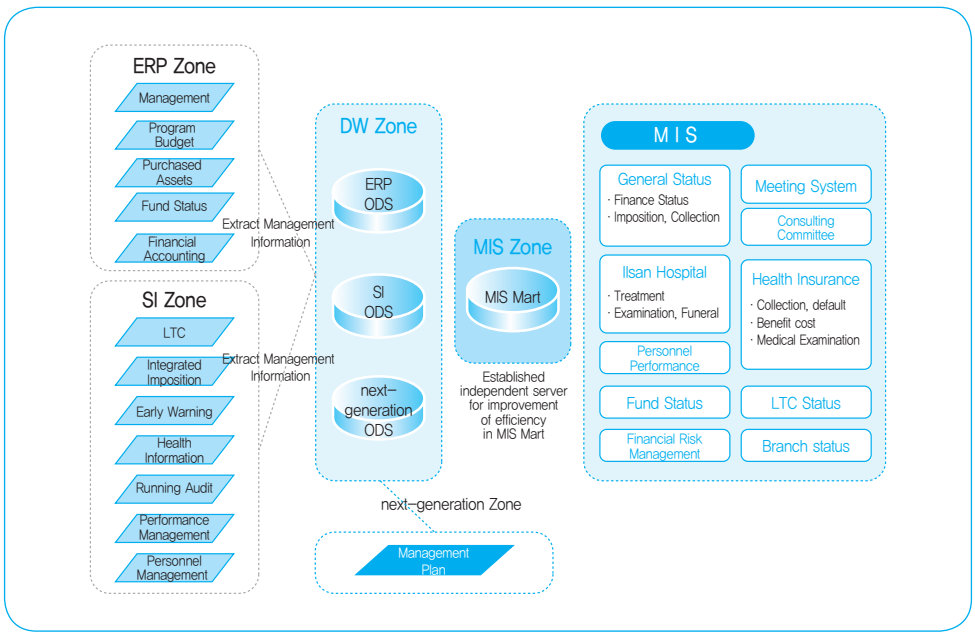
Also, NHIS is currently operating 3 types of separate management systems for policy decision-making of medical insurance and the operation of NHIS, based on affiliated resources and accumulated information. A brief explanation on the 3 systems is as follows:

- Executive Information System (hereinafter EIS) for organizational management and a policy decision-making
- Big-data Analysis System for the provision of personalized health services based on the life-cycle of individuals
- NHIS-BMS for the inspection of fraudulent or unjust claims of medical service providers including medical institutions by statistical analysis technique

The EIS is a decision-making support system that offers various and useful information that encourages executives and staff to enhance a proactive and strategic policy decision-making. As seen in [Figure 5-2], the system structure of the EIS is based on Management Information Data Mart (hereinafter MIDM) that enables indexing process of management performance in two parts: 1) Enterprise Resource Planning (hereinafter ERP), which regards to the management resource information including management plan, budget, purchase,

finance, and accounting; and 2) System Integration (hereinafter SI), which regards to the contribution collection performance, financial risk level, and performance evaluation. Additionally, the EIS has been providing the analyzed data in a form of report in order to enable the executives and staffs to inquire the analyzed data on personal computer and thereby using it for work. The report is provided on a daily, monthly and yearly basis, and NHIS executives acquires an access, according to the authority, to the 115 types of information including the state of finance, contribution levy and collection, personnel affairs and labor union for human resource management, performance results of employees and its evaluation, financial balance and budget based on business, and management in branches.

Figure 5-2 | Outline to Operational Management System



Source: NHIS (2014).

The Big-data Analysis System is a comprehensive term for the medical insurance analytic system constructed. The system covers both hardware and software aspects, assisting the realization of new paradigm on health security, which aims a comprehensive cover of the treatment as well as the prevention and promotion of health, and thereby reflecting on the medical insurance policy. In June 2012, NHIS had constructed 'National Health Information Database' based on 1.3189 trillion cases of information collected during the operation management of the national medical insurance and long-term care insurance for

the elderly, where the data regard to the eligibility and contribution, result of health check-ups, medical record and its statement, and state of medical institution. For the purpose of analysis regarding health, the database is based on the resources collected such as eligibility and contribution, medical statement, and health check-ups, from the entire population in Korea (50 million) over the period of 2002 to 2012. The information composition of 'National Health Information Database' is as shown in <Table 5-1>.

Table 5-1 | Composition of National Health Information Database

Category	Number of Files	As of December 31, 2013	
		Number of Cases (million)	Size of Data (GB)
Total	3,544	92,420.5	9,871.8
Eligibility and Contribution	12	616	191
Dead and New-borns	3	11	1
Medical Statement Detail	3,294	91,118	9,422
Health Check-ups	140	465	230
Medical Institutions	45	29	4.8
Patient Registration Information	7	1	4
Long-Term Care Insurance	43	180.5	19

Source: NHIS (2014).

Along with the 'Big-data Utilization Scheme' implementation on December 2012, the 'National Health Information Database' has been providing a number of personalized or generalized health services such as 'National Health Alert Service', 'Evaluation and Provision of the Index for Health and Illness' for region based customized health support, and 'My Healthbank Service'. Later on, it has been planning to construct a big-data platform for the medical insurance by combining the big-data with the ICT and thereby realizing the 'Cloud Family Doctor Service' that enables real-time sharing of imagery data or health record of an individual with doctor.

The 'National Health Alert Service' is a service that provides an alarm for the detection of health risk of an individual, in which the service is based on an disease prediction model constructed by combination and analysis of the disease information of the medical insurance (a fixed-type data) and private SNS social information (an unfixed-type data). For the commercialization of the service, the target diseases selection and the diseases prediction

model development had been completed in 2013, and as of May 2014, the service has been provided from 'Health-iN', a website constructed and managed by NHIS for health information provision to the public, on a number of selected diseases such as influenza, eye infection, food poisoning, and allergic dermatitis on a regional and age basis in 4 steps system (Attention, Care, Alert and Dangerous).

The Index for Health and diseases for the customized health support system on a regional basis is an index devised since 2013 with the purpose of planning medical insurance policy based on the characteristics that each regional place of business has, and thereby performs the customized health management service. Additionally, the index is used in the monitoring the outbreak models of 16 major chosen disease, and the occurrence of disease risk factors. NHIS has been providing the index for a use in local health centers and places of business since the second half of the year 2014.

The 'My Healthbank Service' is a type of service that has been provided from 'Health-iN' with the purpose of enabling individuals to open its personal medical record and to diagnose or predict its health, since March 2012. The term 'My Healthbank' refers to a personal health record (PHR) provided online. Since the 'Healthbank' integrates and keeps individual's health records which are scattered here and there, into the National Health Information database, it is so called the 'bank' with a slogan of 'Keep My Precious Health Record Safely as in Banks'. As shown in <Table 5-2>, the members of 'My Healthbank' can check the last 5 years health examination records and information on the medical examination by interview, as well as the last one year's treatment and medicine administration history. In addition, it is also possible to check the general information like efficacy, adverse effects, and co-administration prohibition lists of the currently administering medications.

Table 5-2 | Contents of the 'My Healthbank Service'

Category		Contents
Exploration of Personal Health Record	Health Check-up Information	Check the examination object, medical check-up results (for the last 5 years), and information on medical examination by interview
	Treatment and Administration Information	Health examination and administration information (for the last one year), and medication details
	Fill-in Personal Health Information	Management of personal health information based on the latest health symptoms including blood glucose level and blood pressure

Category		Contents
Prediction Programs for Personal Health Risk-Factor Management	Health-Age	Calculation of individual's health age based on the factors from the health examination interview such as the blood pressure, blood glucose level
	Prediction Program for the Stroke-Risk Evaluation	Evaluation of risk factors for the occurrence of stroke based on the stroke-related diseases, lifestyle, and family history
	Customization of the Information for the Metabolic Syndrome	Provision of personalized medical information by metabolic syndrome risk factors via interlocking with the results from medical check-up
	Programs for Obesity Management	Giving out comments and messages for the improvement of lifestyle and the diagnosis of obesity after an individual answers to a questionnaire on exercise, and eating habits

Source: NHIS (2014).

Moreover, 'My Healthbank' is loaded with functions to fill in and manage the health index-deciding factors like blood pressure and blood glucose level that an individual wants to manage , similar to a health diary. In 2103, the service has improved the way of making predictions on individual's health based on currently active risk factors, and thereby providing integrated and customized health information. In particular, through an analysis of health risk factors, a customized illness prediction model (calculation of health age, and prediction program for the risk of stroke), which enables to make a self-evaluation of individual's health state, has been provided in order to promote an ability of self-health management based on the information given.

Furthermore, in order to expand the value of medical insurance data for socio-economic puposes, and to provide a user-focused administrative service, a procedural simplification was made for the issue of driver's license as a joint use with the national health examination. In the past, for the issue and renewal of driver's license a separate medical examination was required in the driver's license test center. However, from August 2013, the medical examination may be skipped if the driver's license applicant completes an agreement form on the use of 'National Health Information Database', thereby save up the time and the cost that would take for the medical examination. Around 3 million people are following this scheme and in turn it shows 16.1 billion KRW being saved for administrative cost.

The biggest achievement of the 'Big-data Analysis System' was to analyze the direct correlation the harmful effects of tobacco on national health and to file a lawsuit against tobacco companies[65] for 53.7 billion KRW as compensation claim for healthcare costs on April 14, 2014. Through this claim, NHIS has established an opportunity for gaining credits and support from the nationals as an insurer, who takes responsibility for the insured's health, as well as the attention from the international society including the WHO. In addition, in isolation from the 'National Health Information Database', NHIS had constructed an additional 'Sample Cohort Database for Research' in January 2013. As seen in <Table 5-3>, the 'Sample Cohort Database for Research' refers to an anonymous sample cohort database for research that takes 2% of the national population (around a million) as samples by gender, age and income deciles with typicality. Under the provision of "Act on Promotion of the Provision and Use of Public Data" in July 2013, the database will be open to the public by stages with an expectation to play a pivotal role in improving research accessibility with medical insurance data, and in invigoration of research in various fields.

Table 5-3 | Contents of Sample Cohort DB

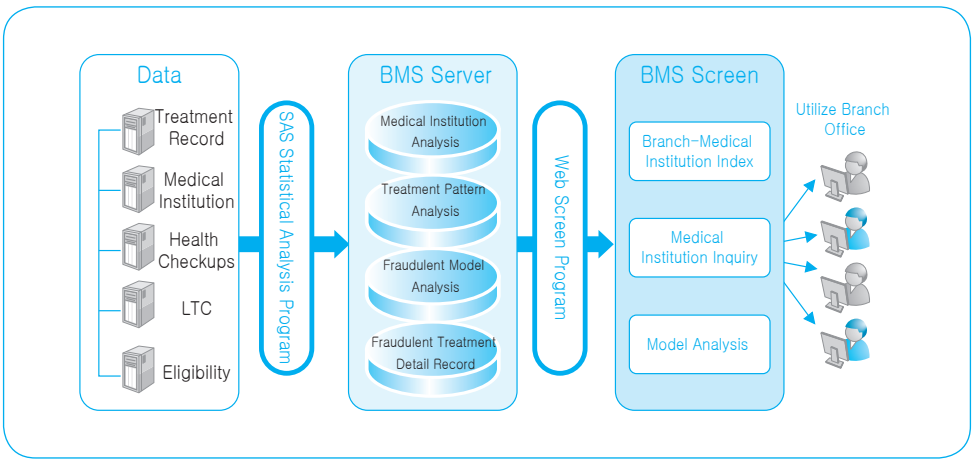
Classification by DB Type	Contents
Sample Cohort DB	- A sample database with 1 million sample size to represent the whole population (2% of the entire nation) - Cohort information on the contribution, treatment records, and eligibility that comprehends 9-year records (2002~2010) on the health, occurrence, medical service use, and death
Rare Disease DB	- A database of the rare diseases with insufficient cases for using the Sample Cohort DB - The database comprehends 9-year record (2002~2010) of those rare diseases - Selection of 3 groups of diseases: Crohn's disease, other corpulmonale diseases, and abnormalities in the skeletal system related to growth
Health Check-up DB	- Analysis of the entire database (2.4 million) regarding the examinee for healthcare check-up at least 5 times a year (2001~2010) for the evaluation of long-term effect of health check-up, and prediction of disease mortality rate

Source: NHIS (2014).

65. Tobacco companies filed a lawsuit include Korea Tobacco & Ginseng Cooperation, Korea Philip Morris International and British American Tobacco Korea.

As shown in [Figure 5-3], the NHI-BMS is a system to expose and prevent false claims from medical institutions, and to apply on the national medical insurance by adopting the Fraud Detection System (hereinafter FDS) used by private insurance companies or credit card companies.

Figure 5-3 | Structure and Utilization of the NHI-BMS System



Source: NHIS (2014).

In order to perform the treatment content notice, NHIS has changed the selection method for recipients from the randomization of statistical analysis skills like the data-mining method since 2005. For the construction of the scientific false-claim prevention system, the 32 models that had been operated as simulation since 2005 were further elaborated and then implemented as demonstration project in 2007. As of January 2010, the construction of the NHI-BMS loaded with the data-mining analysis system was promoted and completed in December of the same year. The false-claim detective model devised at the time includes 53 regulation-based models based on the work experience of employees, 7 prediction models that applied Logistic Regression, Decision Tree, and Interactive Decision Tree methods, and 4 abnormality-detection models based on the control chart and trend analysis, thereby making up 64 in total.

The NHI-BMS was developed in a form of web in order to increase accessibility to the system not only for the fraudulent-claim management department in the headquarters of NHIS, but also for other hands-on-workers in the branch office. The results gained from the regulation-based and prediction model, and the status of insurance benefits cost claim

are provided from the branch office in order for the insurance benefits cost management executives to deal with fraudulent claims from the medical institutions. The results of the NHI-BMS operation shows that 24 billion KRW, every year from 2011 to 2012, and 13 billion KRW, from 2012 to 2013, of fraudulently claimed expense had been paid back to NHIS, while the medical institutions are also refraining themselves from the fraudulent claims at the same time.

2. System Operation

The information technology system of NHIS has progressed with the medical insurance system in Korea. However, since the data processing technology and environment of today have shown considerable change compared to the past, based on the thought of that there would be no significance on evaluating the past operation experience of data processing, this chapter will be focusing on describing the recent advanced information system and its implications.

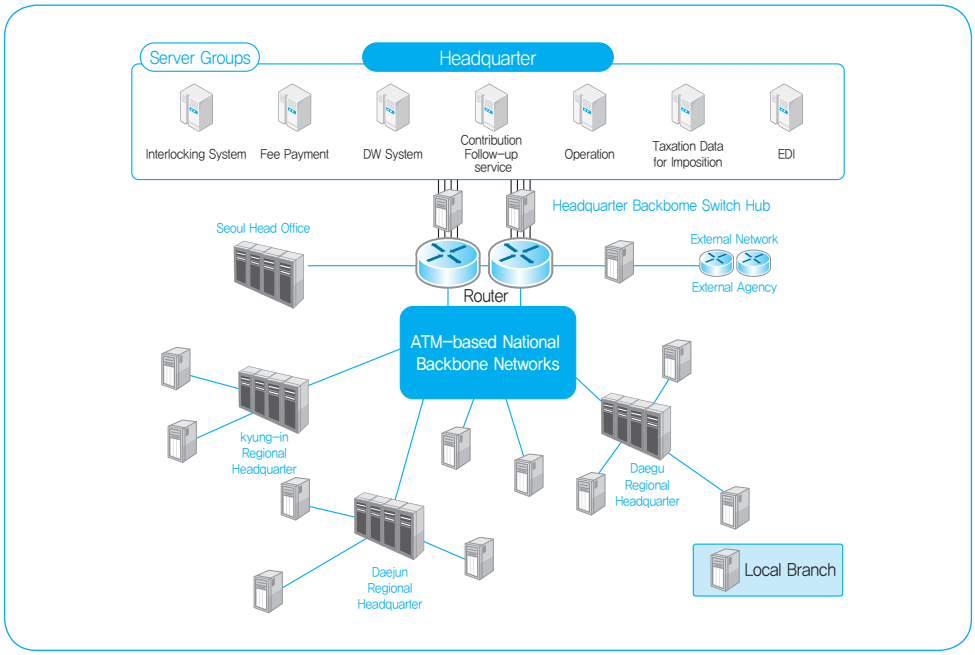
As mentioned briefly earlier, the information system was built in and operated by each cooperative before the integration of organizations. In October, 1988, when the integration of self-employed insurance cooperatives and KMIC gradually found a shape, it was necessary to construct a new information technology system. However the challenging issue was the amount of time and cost required for the new system. Moreover, although it had been recognized that there was an issue of standardizing the computerized data operated separately in 227 self-employed cooperatives, it was virtually impossible to construct a unified data processing operation system by the time of the integration of self-employed insurance cooperatives and KMIC, especially under the situation where the management standards such as eligibility and contribution differs from each other. Therefore, as a solution, the data processing system of the self-employed cooperatives recycled small servers that were used by self-employed cooperatives under each of the 6 regional headquarters by collating and connecting 20 to 30 of the servers as one unit by high-speed local area network (hereinafter LAN). Meanwhile, KMIC maintained the existing system.

A year after the establishment of National Medical Insurance Management Corporation (NMIMC), an integrated organization form of the employment-based medical insurance cooperatives, an act was revised to providing for the integration of the NMIMC with the self-employed insurance cooperatives. Along with the revision, in July 2000, the second integration of information system was promoted in accordance with the organizational integration. In the first integration of the information system, 6 regional headquarters changed

small data processing facilities to large-scale computers. While the regional headquarters had operated the system of regional base eligibility management and contribution calculation and collection in priority, the headquarters standardized the data from each sectors to manage the eligibility of nationals, benefits costs, and information technology system for the organizational operation and DW system. Additionally, an eligibility-link server (E6500) was built in the center of each regional headquarters in order to interlock the eligibility information between the regional headquarters, constructing decentralized information system on the basis of the 6 regional headquarters (see [Figure 5-4]).

The system was devised to process basic civil complaint-related tasks like eligibility checks through internet so that the insured did not need to make a visit to a branch office of NHIS for such tasks. Moreover, a construction of an information system that enabled a real-time information interlock with 4 major social insurances, had considerably increased the quality of the public service as it standardized the database and allowed the insured to process its tasks from any branch office in the country via nationwide online network. In particular, for an insured to receive the contribution bill, an extra administrative procedure like residence change notification that used to be required was omitted by daily-based automated residence registration information interlock of administration network with NHIS. This resulted greater convenience to the insured, and tasks of the employees. However, the decentralized information system on the basis of the 6 regional headquarters had caused management-wise inefficiency, in terms of information resource and data processing personnel, as well as the complexity in sustainability of facilities, and cost issues.

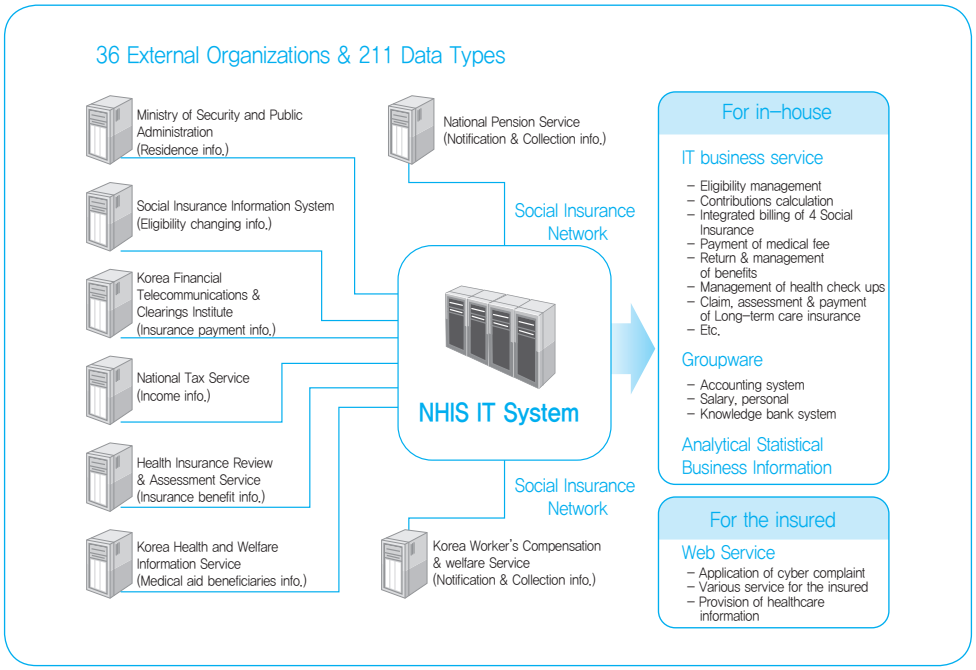
Figure 5-4 | Structure of Decentralized-type Information System



Source: NHIS (2014).

Accordingly, NHIS executed a self-diagnosis including consultations with external specialists (December 2002) to analyze the total cost and investment earning rate. Meanwhile NHIS also underwent a number of advisory and deliberation procedures from the Informatization Advisory Committee and Computerization Promotion Committee and finally, with an aim of implementation by November 2006, NHIS installed an information system for the next generation that improved the composition of information systems by using a headquarters-oriented centralized process method. By this time, Korea had already constructed a nationwide high-speed communications network and realized electronic administration services. The integration of the information system was completed in November 2006, with the decentralized information system modification to the headquarters-oriented centralized system (see [Figure 5-5]) and a construction of duplexed system for servers, networks and other principle facilities in order to be prepared for unexpected computer problems.

Figure 5-5 | Structure of Centralized-type Information System



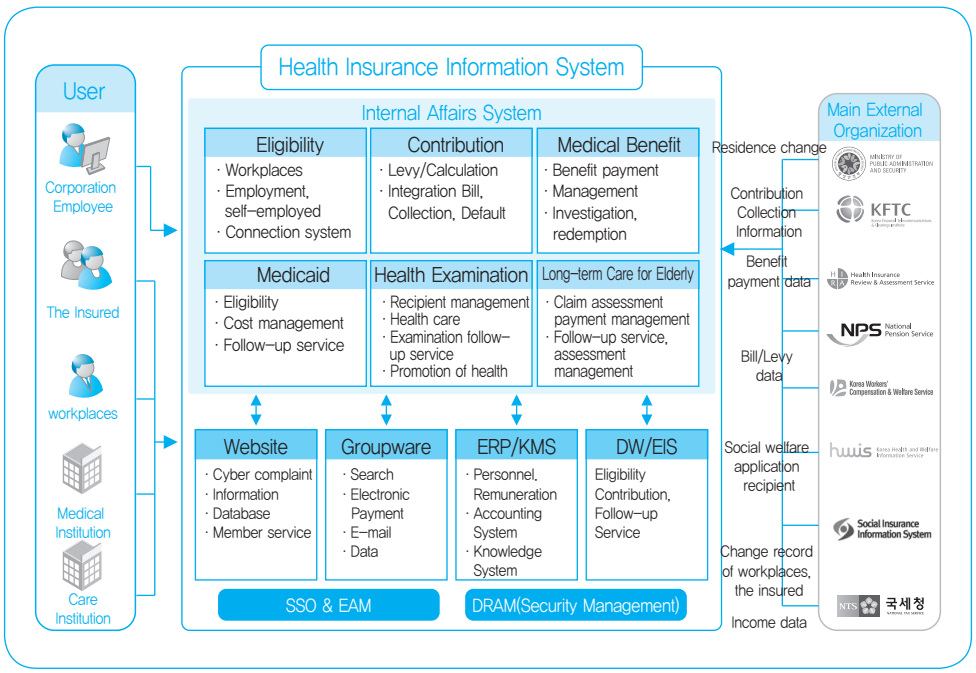
Source: NHIS (2014).

Internal tasks remained as Client-Server mode inasmuch as the nationwide service had provided Java-based WEB environment through the internet. Moreover, the system for the management of imposition, calculation and delinquency regarding the employment-based insurance contribution was entirely re-developed, and the procedures for connecting data of imposing the self-employed insurance contribution system was simplified and automated. Meanwhile a procedural improvement was also made in the examination fee claim method from the health examination institutes, modified from disk-based billing to online billing via the internet. Furthermore, through an integration of the database that was dispersed in the regional headquarters, into one database, duplicated data was erased, and an inaccurate data was re-organized for compatibility of data (data-matching) that enabled more efficient management of resources. The headquarters-oriented centralized operation system enabled efficient construction of the Knowledge Management System (hereinafter KMS), which manages a dispersed knowledge information systematically and comprehensively, and the EIS (explained in Chapter 5.1). The operation system also managed to efficiently compose the Digital Rights Management (hereinafter DRM) that prevents illegal leakage of information from electronic files while the user convenience and security had been strengthened.

Along with the expansion of operating range, NHIS has also constructed a Long-term Care Information System for the elderly in July 1, 2008. In following, on the 1st of January 2011, a system for the integration of collection system regarding to the 4 major social insurances was constructed. The Long-term Care Information System is a separate system from the medical insurance information system and it is divided into two sub-parts: the web portal system and the internal user system. The portal system provides medical institution support service, organizational resource management, welfare kit management, medical institution support, and recipient of care support service while the internal system provides services related to recipient eligibility management and support, long-term care benefits costs claim and evaluation, payment of benefits costs and follow-up service, and resource management of long-term care service. As in the medical insurance system, the Long-term Care Information System is also promoting the efficiency of work process through the information interlock between the internal and the external. The Long-term Care Information System utilizes the data provided from the medical insurance information system, including the eligibility, insurance benefits, medical aid, and health examination-related information, on the eligibility management of long-term care recipients and work on insurance benefits while the system is also sharing the information on medical institutions for long-term care, eligibility of long-term care helper, and contract details of welfare kits with external organizations such as Information Development Institute for Health & Welfare, HIRA, Korean Information Research and Development Institute, Administration Information Sharing Center.

As shown in [Figure 5-6], the integrated social insurance collection system, which has been implemented since January 2011, is constructed to be able to exchange the information with the Korea Worker's Compensation and Welfare Service on the notification and payment of contribution, using the information linkage program (link-solution EAI, etc.). The integrated system has been designed to allow the unification of imposition process for the 4 major social insurances so that the entrusted organization, NHIS, may perform the collecting work, mailing integrated bill, and tracing the record of the bill sent out. In addition, for the convenience of the civil petitioner, the system is constructed to enable to find out calculation details of the contribution on the WEB-EDI, KT-EDI and the collection portal system.

Figure 5-6 | IT Structure of NHIS
(the 4 Major Social Insurance Contribution Inclusive)



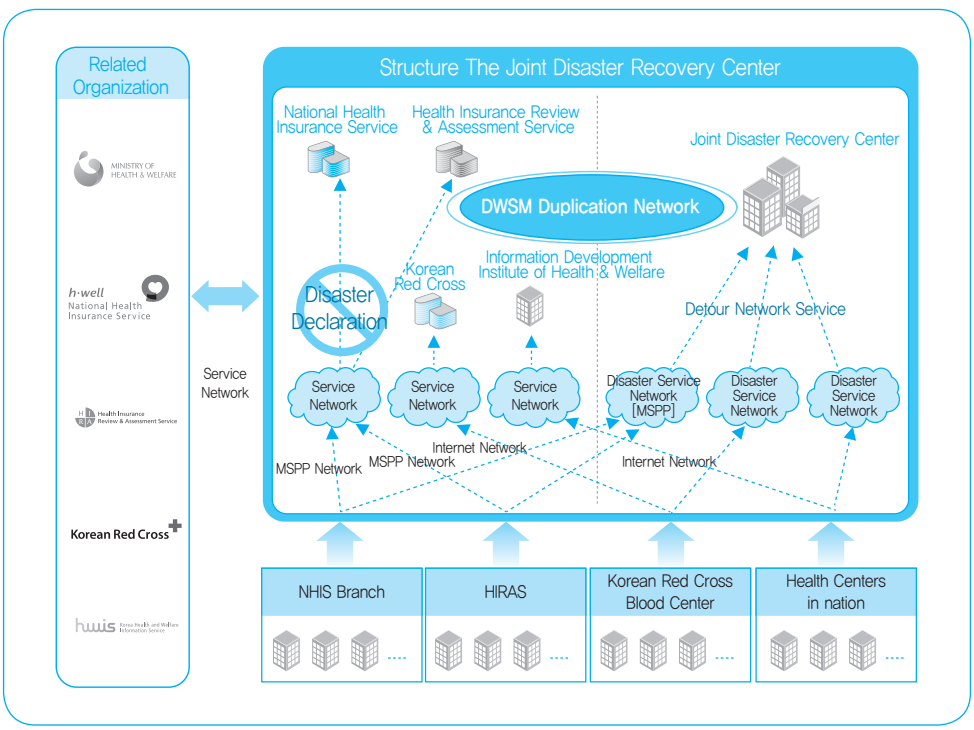
Source: NHIS (2014).

Although the computerization may provide convenience in work process, it may also cause issues regarding to mechanical errors, or other problems such as hacking or loss of the entire information at once as a result of disaster. To be prepared for those risks, NHIS has fully constructed a system of information protection and security with Joint Disaster Recovery Center under MOHW.

After the attacks on the World Trade Centers in New York and the Pentagon in Washington D.C by aircraft in September 11, 2001, the necessity of disaster recovery center was considered in Korea. Consequently, the Disaster Recovery Center was established in November, 2007, under the supervision of, but independent of MOHW. Under the supervision of MOHW, the center is jointly run by HIRA, Korean National Red Cross, Information Development Institute for Health & Welfare and NHIS where NHIS plays a key role in the management. These 4 organizations have constructed and operated "Medical Insurance Joint Disaster Restoration Center" to be prepared for the system suspension or loss of data due to the natural disasters (earthquake, flood, fire) or man-made accidents

(war, terror), and for the continuity of the task. When an organization experiences a natural or man-made disaster, the information service is designed to maintain the continuity of service provision, by the role take-over of another organization. The center also implements demonstration training for the disaster restoration system, based on the state of emergency with scales (1 to 3) by the recovery center as shown below [Figure 5-4]. The Joint Disaster Recovery Center practices simulation training by accident grade (level 1~3) for the state of emergency. Simulation level 1 (the headquarters disaster) is implemented once or twice a year focusing on the disaster alert and switching network, operating disaster recovery systems and recovery of the main center. Simulation level 2 (computer center disaster) is held once a year on the switching network and recovery of main center. Lastly, simulation level 3 (suspension of specified work) is also held once a year on the operating disaster recovery system in its own center and recovery of main center.

Figure 5-7 | Schematic Diagram of the Medical Insurance Joint Disaster Restoration Center



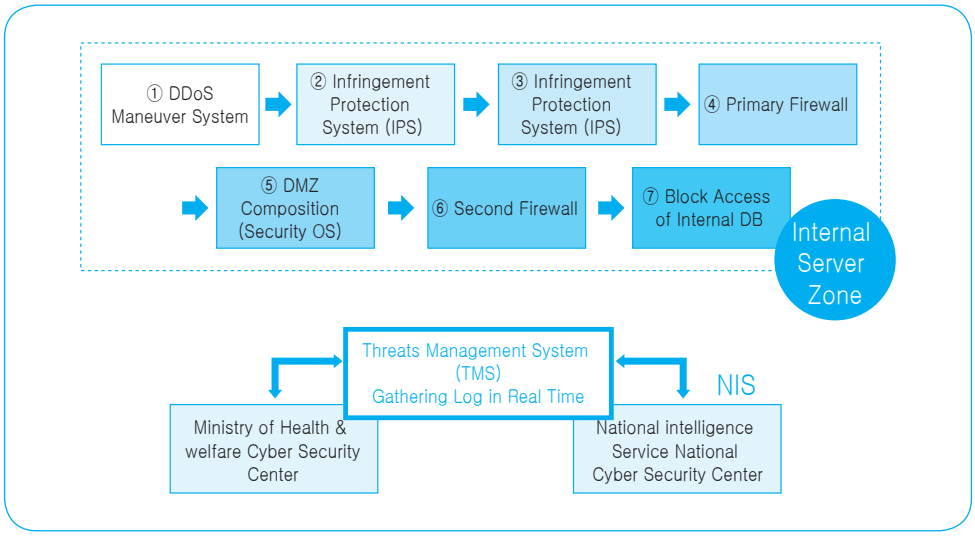
Source: NHIS (2014).

The amount of data that NHIS holds is huge and it is not too much to say that NHIS has the most of information on national individuals in Korea. For this reason, NHIS is constantly putting considerable efforts on the investment and management of information security. Consequently, there was not a single case of security accident such as hacking up to the present time. The achievement of securing nationwide information service can be attributed to NHIS's effort to construct security systems in response to rapidly developing technology and to train specialized personnel in networking. The development process of information security system is explained below.

- From 1998 to early 2000, when the national information service was only a simple system guidance via internet, NHIS focused on the internal information communication network security against outside invasions, by operating basic network firewall system and intrusion detecting system.
- In January 25, 2003, network turmoil occurred due to the attack on DDoS.[66] NHIS dealt with the situation in real-time by constructing Enterprise Security Management (ESM), and the central virus management system which was for cooperating with National Cyber Security Center and thereby building a response system that takes action against external threats and internal infection of malicious code 24 hours a day, and 365 days a year (see [Figure 5-8]).
- From 2006, the issue on the private information leakage has been a hot potato in Korean society. In this regard, NHIS have made various efforts to prevent information spill and to prohibit information abuse from internal users; and thus NHIS constructed the DRM and SSO&EAM (Single Sign on & Extra net Access Management; encryption of files from inside, record of reference log of individual information, strengthening the control system of external data storage media such as USB).
- In 2008, NHIS provided a self-developed monitoring system (patent acquired) to detect misuse and abuse of personal information. The system made the prevention and follow-up control of information leakage and also distributed the system to affiliated organization under the Ministry of Health and Welfare. This has contributed to the privacy protection of the whole nation.

66. DDoS is the way of attack Information System through Internet. This is a kind of hacking, paralyzing the server by simultaneously transmitting a volume of data that cannot be processed in the remote server or network.

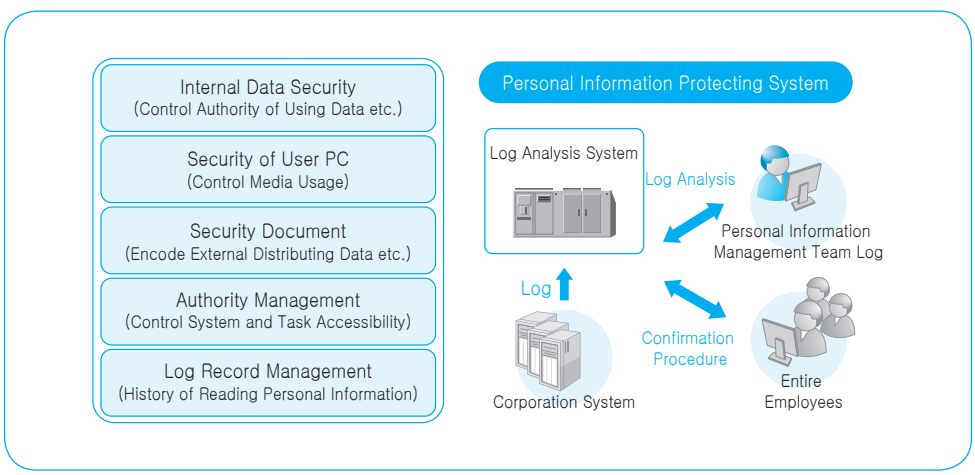
Figure 5-8 | Security System against External Hacking



Source: NHIS (2014).

Following [Figure 5-9] shows the structure of schematic diagram for the systematic prevention of information leakage and abuse from internal users, and enabled follow-up trace. More detailed information for the security program and information protection have been described in Appendix 3.

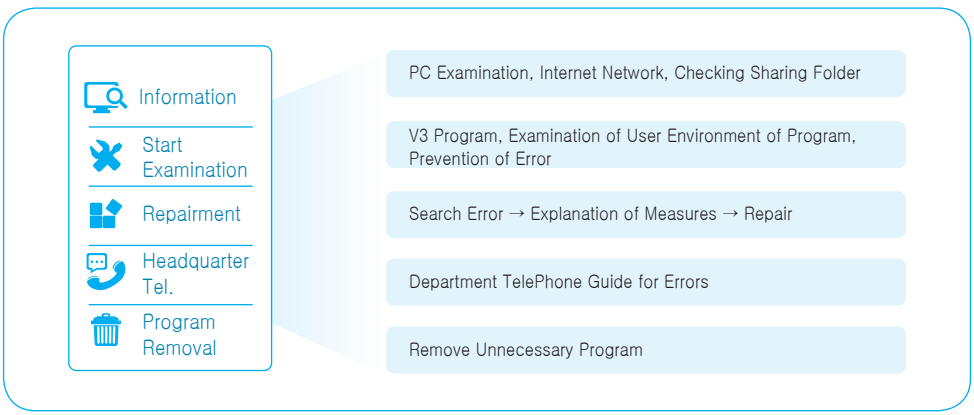
Figure 5-9 | Structure of Information Leakage Prevention



Source: NHIS (2014).

As mentioned earlier, in isolation from the commercialized and known information protection products, NHIS has been developing, adapting and strengthening its own information protection program for an immediate but efficient response to issues like work environment and social security. For instance, with a program developed by NHIS (see [Figure 5-10]), the users can examine the condition of their PC and take action on the problem detected by a simple click of the program (One-Click Check-up Program), as seen in [Figure 5-10]. NHIS also has developed and operated a simulation training program for every quarter so that the workers get trained how to deal with e-mail that has viruses and block spam mail. For an advanced prevention of infection from the malicious code and personal information leakage, shared folder (hidden shared folder, C$, D$ etc.) between PCs are programmed to be automatically eliminated from the worker's PC. And access to the individual information is shut off from the first when PC has not installed several security programs that are necessary.

Figure 5-10 | One-Click Check-up Program and Modulatory Tools



Source: NHIS (2014).

NHIS regularly co-operates with external IT-specialized companies for the improvement of NHIS' data works and data processing system. Any information leakage or abuse of confidential that may occur during the co-operation is fundamentally prevented by adaptation of self-developed "Automated System for the Control of Out-Sourcing Company on PC Security Management and Security Check-out". Moreover, for the security management on the products from out-sourcing, the Specialized File Security Server has been constructed and operated.

Along with the efforts mentioned above, NHIS has set up a 3-year plan in order to react against threats on information security and strengthen the information security system. Additionally, in 2014, to take a pre-emptive action against Advanced Persistent Threats (APT)[67], which recently has been pointed out as a new threat to security, a physical division of the intranet and internet has been achieved, thereby preventing the invasion by hacking from the fundamental basis. Henceforth, NHIS is planning to expand the security enforcement to the personal computers and mobile phones that use the internet so that complete protection from the APT and other malignant codes can be achieved.

Implication

The fast evolution of medical insurance system in Korea is attributed to adoption of ICT in the early stage and to stipulate in the law that all data for insurance administration should be shared between NHIS and external agencies.

Today, an enormous amount of data that NHIS possess is stored in Data Warehouse, and has been utilized in making the medical insurance policies and expanding the value of the health insurance resources in social and economic aspects.

NHIS, as a guardian of healthcare, has provided the customized healthcare service along with the life cycle of individuals and file lawsuits against tobacco companies by using Big Data Analysis System.

The database that NHIS possesses is the crucial personal information of each individual, and thus all data of NHIS requires strict security systems against personal information leakage and hacking

67. APT is a kind of malicious execution code. When a user opens the e-mail sent by a hacker, PCs are infected, and then become zombie PCs. Many zombie PCs destroy and extract the information on the Server.

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Appendix 1 | Financial Trends (1977~2013)

(Unit: million KRW)

Year	Revenue (A)	Contribution	Governmental Subsidy	Expenditure (B)	Benefit Cost	Management and Operation Expenses	Net Balance for the Year (A)-(B)
1977	14,928	14,353	307	5,118	4,579	522	9,810
1988	1,283,260	1,095,523	94,559	1,030,356	914,365	58,542	252,904
1989	1,783,532	1,432,613	220,517	1,372,427	1,141,645	67,617	411,105
1990	2,432,063	1,883,528	363,902	2,164,039	1,802,637	192,392	268,024
1991	3,268,871	2,331,673	586,790	2,491,036	1,926,423	232,599	777,835
1992	3,774,455	2,658,243	592,440	2,970,441	2,217,163	288,402	804,014
1993	4,199,230	2,858,616	638,149	3,463,522	2,598,987	321,385	735,708
1994	4,710,922	3,187,442	692,407	3,970,036	2,956,545	380,274	740,885
1995	5,614,382	3,600,700	755,319	5,076,432	3,640,884	384,684	537,951
1996	6,630,948	4,175,375	872,304	6,464,198	4,681,450	559,492	166,750
1997	7,554,231	4,878,728	995,353	7,795,112	5,634,090	663,770	-240,882
1998	8,229,694	5,254,985	1,076,026	8,787,618	6,419,956	662,972	-557,924
1999	8,892,385	6,305,553	1,165,621	9,610,122	7,665,562	596,757	-717,737
2000	9,827,717	7,228,817	1,552,746	10,744,194	9,285,605	695,621	-916,476
2001	11,928,330	8,856,158	2,624,980	14,105,819	13,195,616	628,807	-2,177,489
2002	14,305,319	10,927,688	3,013,934	14,798,463	13,823,665	598,231	-493,145
2003	17,466,651	13,740,851	3,423,829	15,972,379	14,893,489	634,117	1,494,272
2004	19,408,384	15,578,806	3,482,965	17,330,520	16,265,350	693,043	2,077,864
2005	21,091,074	16,927,714	3,694,802	19,152,505	18,393,587	758,918	1,938,569
2006	23,263,083	18,810,579	3,836,190	22,366,497	21,587,980	778,517	896,586
2007	25,400,495	21,728,700	3,671,795	25,279,702	24,560,092	719,610	120,793
2008	28,999,271	24,973,026	4,026,245	27,326,335	26,654,305	672,030	1,672,936
2009	30,848,912	26,166,081	4,682,831	30,700,594	30,040,871	659,723	148,318
2010	33,313,822	28,457,726	4,856,096	34,424,398	33,749,303	675,095	-1,110,576
2011	37,950,433	32,922,110	5,028,323	36,441,409	35,830,249	611,160	1,509,024
2012	41,733,142	36,389,962	5,343,180	38,195,719	37,581,294	614,425	3,537,423
2013	44,831,248	39,031,893	5,799,355	40,305,228	39,674,332	630,896	4,526,020

Note: Management and operation expenses comprise of personnel expenses, current expenses, business expenses, however, business expenses has been separated from management and operation expenses since 2007.

Source: NHIS (2014).

Appendix 2 | Financial Indices of health Insurance

(Unit: %)

Year	Expenditure/ Revenue	Benefits Costs/ Contribution Revenue	Management and Operation Expense/ Expenditure	Contribution Revenue/Revenue	Government Subsidy/Revenue
1977	34.28	31.91	10.21	96.15	2.06
1978	51.63	41.53	9.54	76.31	1.98
1979	71.26	70	10.83	91.42	1.55
1980	84.58	86.21	8.93	89.47	1.18
1981	76.67	76.19	9.49	90.98	0.71
1982	87.37	87.49	8.55	91.57	0.68
1983	94.27	93.82	7.62	92.87	0.45
1984	100.87	99.77	6.67	93.61	0.37
1985	101.12	100.1	6.4	93.59	0.23
1986	78.61	77.37	7.53	93.88	0.22
1987	77.84	76.72	7.43	92.03	0.2
1988	80.29	83.46	5.68	85.37	7.37
1989	76.95	79.69	4.93	80.32	12.36
1990	88.98	95.71	8.89	77.45	14.96
1991	76.2	82.62	9.34	71.33	17.95
1992	78.7	83.41	9.71	70.43	15.7
1993	82.48	90.92	9.28	68.07	15.2
1994	84.27	92.76	9.58	67.66	14.7
1995	90.42	101.12	7.58	64.13	13.45
1996	97.49	112.12	8.66	62.97	13.16
1997	103.19	115.48	8.52	64.58	13.18
1998	106.78	122.17	7.54	63.85	13.07
1999	108.07	121.57	6.21	70.91	13.11
2000	109.33	128.45	6.47	73.56	15.8
2001	118.25	149	4.46	74.24	22.01
2002	103.45	126.5	4.04	76.39	21.07
2003	91.44	108.39	3.97	78.67	19.6
2004	89.29	104.41	4.0	80.27	17.95
2005	95.52	108.66	3.96	80.26	17.52
2006	98.63	114.77	3.48	80.86	16.49

Year	Expenditure/ Revenue	Benefits Costs/ Contribution Revenue	Management and Operation Expense/ Expenditure	Contribution Revenue/Revenue	Government Subsidy/Revenue
2007	99.52	113.03	2.85	85.54	14.46
2008	94.23	106.73	2.46	86.12	13.88
2009	99.52	114.81	2.15	84.82	15.18
2010	103.33	118.59	1.96	85.42	14.58
2011	96.02	108.83	1.68	86.75	13.25
2012	91.52	103.27	1.61	87.20	12.80
2013	89.90	101.65	1.57	87.06	12.94

Source: NHIS (2014).

Appendix 3 | Intrusion Prevention System

Type.	Main Functions
Firewall (Intrusion Prevention)	Protecting the information system from external malicious hacking attempt (Blocking and detecting intrusion threats)
IDS (Intrusion Prevention)	
IPS (Intrusion Prevention)	
VPN	Protecting virtually exclusive network connecting to external organizations
Secure OS	Protecting information system from malicious hacking attempt passed through the firewalls and IPS
ESM	Integrated control of occurrences in entire security system
TMS	Analyzing possible patterns of intrusion based on communication traffic
Block Junk mail	Blocking junk of viral e-mail from the outside of the NHIS
Anti-DDoS	Detecting and Counteracting DDoS attempts
Web-Firewall	Blocking NHIS Web-server attacks

Source: NHIS (2014).

Appendix 4 | Prevention system from data leakage

Type	Main Functions
SSO & EAM	Assigning authorities by 338 types of tasks entering through integrated authorization process and logging in
Collection of Log Record and Exclusive Transmission System	Management of history records of referring personal information and monitoring collection status (referring, modifying, deleting and printing)
Registering the Purpose of Reference	Register purposes when referring the insured
Warning for Information Reference of Celebrity	Warning for referring information of internal employees' or celebrities
Access Control System	Save tasks and assigning authority with accessing database and TELNET to employees
Analysis of Accessing Log	Analyze accessing log between WAS and DB and monitor threats from fabricated application
Forgery Prevention System of Logging Record	Forgery prevention of logging record of referring personal information
DB Encryption System	Encryption of membership DB
Tools for Analyzing Security Vulnerability	Analysis of vulnerability with communication equipment and information system
Tools for Analyzing Web Vulnerability	Analysis of vulnerability with application ※ Connection of Configuration Management System in 2012
Constant Surveillance for Personal Information	Prevention of unnecessary reference by analyzing logging records
File Security Server	Preventing leakage of output from external service project (encryption) ※ Advanced blockage of saving data from NHIS to external service providers' PC
Automated System of Security Check and Controlling External Service Providers' PC	Compulsory measures of security program in external service providers' PC and monitor in real-time

Source: NHIS (2014).

Appendix 5 | Strengthening Information Management System

Type	Main Functions
Internet Control System	Monitoring information leakage and managing record of game, gambling, P2P, Webhard, mail, messenger
DRIM	Automated encryption of file downloaded from internal system
Controlling RAM and USB	Control information leakage and record management using security USB
Automation of Vaccine & Window OS Security Patch	Central management system of PC vaccine and OS security automated patch
On-line Anti-virus Checking	On-line anti-virus checking for homepage user
Vulnerability Assessment Tool	Vulnerability assessment of information system and communication equipment
Defense Discipline System of Vicious Mail	Discipline system of vicious mails from outside
Finger Scan and CC-TV	Control system of computer room visitor
Prevention of Hacking Keyboard	Blocking program for collecting personal information using ghost mouse
Encryption of Data Transmission	Encryption system of data transmission in communication network
Filtering Personal Information	Filtering posts containing personal information
Forgery Prevention System	Water marks in downloaded output
Authentication System based on Smart Card	Use 2-factor when accessing information system Smartcard authentication based on certification
Forgery Prevention of Personal Information Accessing Log	Preventing forge of reading personal information using WORM storage Satisfy the Act on the Protection of Personal Information

Source: NHIS (2014).

Appendix 6 | Information Link among External Organization

Task	Purpose	Data	Providing Organization
Eligibility	Baseline data	Registration information for resident	Ministry of Security and Public Administration
		Changes in individual basic data	
		Beneficiary of national basic livelihood	
	Organize eligibility information	List of people registered for the national pension program	Government Employees Pension Service
	Verification of eligibility of health insurance	Human resource in health care field	HIRA
	Immigration control of native (resolve civil complaint)	Local immigrants including foreign sailors and crew members	Korea Immigration Service
	Registration management of foreigners	Data for registered foreigners, Koreans with foreign citizenship, Koreans residing in a foreign country data	
	Managing retired soldiers' eligibility of employment-based insurance	Discharged army, navy, and air forces	Ministry of National Defense
	Adjustment of contributions and eligibility	Information of disabled person	Ministry of Health and Welfare
		Patriots and veterans	Ministry of Patriots and Veterans Affairs
		Information of disabled person	Social Welfare Information Center
	Prompt information linkage for lower income bracket	Receiving information of recipient	Department of Welfare (Social Welfare Integration Network)
		Sending information of cancellation	

Task	Purpose	Data	Providing Organization
Imposition/ Billing/ Collection of Contributions	Imposition for Self-employed insured	Income of national pension recipients	National Pension Service
		Income of public officials' pension recipients	Government Employees Pension Service
		Income of teachers' pension recipients	Teachers' Pension
		Pension of special post office	Special Post Office Pension Service Agency
		Income of veteran's pension recipients	Ministry of National Defense
		Total income	National Tax Service
		labor income	
		Business income	
		incomes of rectification	
		Record of land registration	Ministry of Land, Infrastructure and Transport
		Record of car registration	
		Property tax (buildings, housing, land, ship, aircraft)	Local Autonomous Entity
	Contribution reduction	Farmers and fishermen	Ministry for Food, Agriculture, Forestry and Fisheries
		Sufferers from defoliants exposure	The Ministry of Patriots & Veterans Affairs
	Verification of credit card	Verification and cancellation of credit card	KT
	Confirmation of bad check	Reference of checks	KT
	Payment of contribution	Claim and cancellation of payment by credit card	
		Payment record	
	Billing of contribution	Notification of collection	

Task	Purpose	Data	Providing Organization
	Payment of benefits	Transferring records of benefits to an account	Hi-Bank
	Billing of contribution	Notify integrated virtual account	
		Notify without bills	
	Payment of contribution	Payment record of integrated virtual account	
		Payment Record of a deposit without a bankbook	
		Record of payment without bills	
	Confirmation payment account	Confirmation refund account	
	Payment refund	Payment refund	
	Payment of LTC benefit	Records of LTC benefit return	
	Billing of contribution	Payment of contribution using 2D (convenient store)	DUZON
	Payment of contribution	Record of payment of contribution using 2D	
	Attachment of VAT refund	Recipients of VAT refund	National Tax Service
	Electronic coercive auction	Record of coercive auction request	Korea Asset Management Corporation
	Coercive attachment, collection and cancellation for saving	Coercive attachment, collection and cancellation for saving	Korea financial telecommunications & clearings institute
	Receiving deposit collected	Record of deposit credit collection	Hi-Bank

Task	Purpose	Data	Providing Organization
	Information linkage of integrated billing	National pension billing information	NHIS
		Data of working welfare employment, occupational health and safety insurance	
	Information linkage of integrated collection	National pension payment information	
		Data of payment of working welfare employment, occupational health and safety insurance	
	Information linkage of integrated arrears	Data of arrears of working welfare employment, occupational health and safety insurance	
		Arrears data of working welfare employment and occupational health and safety insurance	
	Securing properties	Contract information	Public Procurement Service
	Request detail information linkage of transfer	Transmission of detailed information of transfer	National Pension Service
	Data of national pension contribution in December 2010	Fund transfer	Korea Workers' Compensation & Welfare Service
	Recipient data of social insurance support		
	Record of car attachment/ cancellation	Car attachment/ cancellation	Ministry of Land, Infrastructure and Transport

Task	Purpose	Data	Providing Organization
	Automatic transfer application and result information	Automatic payment of contribution (application, change, cancellation)	Korea financial telecommunications & clearings institute
	Cross checking of automatic transfer application result	Automatic payment of contribution	
	Automatic transfer claim and withdrawal	Reflection of contribution payment	
	Electronic receipt (internet billing, CD/ATM)	Billing of contribution	
	Record of electronic receipt (internet billing, CD/ATM)	Contribution payment	
	Result of compensation request of delayed transfer	Compensation payment	
	Collection of standard OCR and error	Contribution payment	
	Record of LTC benefit cost refund	LTC benefit payment	
Contribution benefit	Calculation of benefit and baseline data of benefit suspension	Enlistment and discharge of army	Medical Command in Ministry of National
		Voluntary enlistment	
		Marine officer, conscripted policeman	Defense Korea Coast Guard
		Obligatory fire brigade	National Emergency Management Agency
		Inmate in facilities	Ministry of Justice
		Instructor guard	
		Riot police, conscripted policeman	National Police Agency
	Benefit follow-up management	Injury factors (car accident)	

Task	Purpose	Data	Providing Organization
	Confirmation of qualified benefits	Follow-up management of medical benefit	Department of Welfare (Social Welfare Integration Network)
	Prevention of duplication for assistive device for the disabled	Registration of Assistive devices for the disabled	
	Duplication contract record of assistive devices	Reference duplication contract record of assistive devices	
	Application record of assistive device for the disabled	Prevention of duplicated benefit	
	Baseline data to determine compensation for public officer	Verification of compensation for public officer	Government Employees Pension Service
	Payment of medical costs for public officer	Review records	
	Post-inspection of damage	Verification of damage	Korea Workers' Compensation & Welfare Service
	Payment of benefit costs	Transfer notification of treatment cost	Healthcare Institution
	payment of copayment for rare disease	Recipients of medical aid for rare disease	Korea Centers for Disease Control and Prevention
	Confirmation of duplication for dentures for elderly	Registration record of dentures for elderly	
	Payment of benefit costs	Baseline data for health insurance treatment claim	HIRA
		Record of provisional payment of treatment claim	
	Reference of follow-up management	Data of electronic statement of claim of treatment record	
	Payment of benefit costs	Baseline data for the review of treatment claim	

Task	Purpose	Data	Providing Organization
	Payment of benefit costs	Calculation record of benefit costs	
		Calculation record of outpatient prescription	
	Calculation of benefit costs	Calculation record of benefit costs	
		Calculation record of outpatient prescription	
	Inquiry of benefit	Calculation record of actual inspection of health insurance	
	Benefit cost redemption	Calculation record of actual inspection of medical benefit	
	Payment, follow-up management	Data of health institution changes	
	Post-inspection of wrongness	Record of prescription	
	Reference of follow-up management	Request results of electronic statement of claim	

Source: NHIS (2014).

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