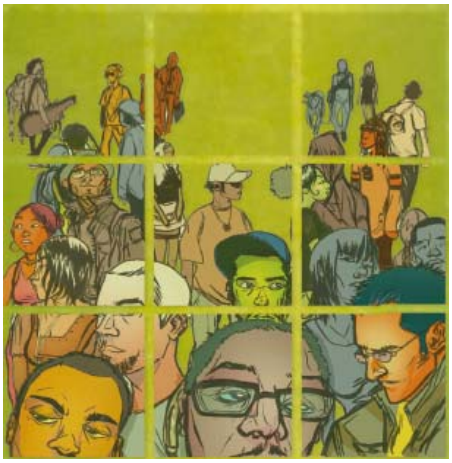
# Financial risk protection of National Health Insurance in the Republic of Korea:1995-2007

Ke Xu, Hyoung-Sun Jeong, Priyanka Saksena, Jeong-Woo Shin, Inke Mathauer, David Evans

**World Health Report (2010)**
**Background Paper, 23**

**HEALTH SYSTEMS FINANCING**
The path to universal coverage

World Health Organization



# Financial risk protection of National Health Insurance in the Republic of Korea:1995-2007

*World Health Report (2010) Background Paper, No 23*

**Ke Xu[1], Hyoung-Sun Jeong[2], Priyanka Saksena[1], Jeong-Woo Shin[3], Inke Mathauer[1], David Evans[1]**

[1] Health Systems Financing Department, World Health Organization, Geneva, Switzerland
[2] Department of Health Administration, College of Health Science, Yonsei University, Wonju-si, Republic of Korea
[3] Researcher, Center for Health Policy and Statistics, Yonsei Institute for Health and Welfare, Kangwon-do, Republic of Korea

## Abstract

Objectives: Korea achieved universal population coverage through national health insurance in 1989. However, out-of-pocket payments (OOP) still accounted for 36% of total health expenditure in 2006. This paper aims to provide evidence for improving the benefit package through analyzing household financial burden.

Methods: OOP and the incidence of catastrophic health expenditure were analysed using data from the Household Income and Expenditure Survey from 1995 to 2007.

Results: The results show that OOP as a share of total household consumption expenditure were between 4% and 5% from 1995 to 2007. The incidence of catastrophic health expenditure has increased in recent years, from a low point of 1.6% in 2001, to 3% in 2007. The richest quintile had the highest incidence of catastrophic health expenditure, followed by the poorest quintile. However, the causes of the catastrophic expenditure are different among these groups: it is driven by inpatient and dental services among the richest quintile, whereas drug and outpatient services are main drivers for the poorest quintile.

Conclusions: Our results suggest that the benefit package need to be rationalized by expanding coverage for inpatient care and particularly addressing special charges. On the other hand, entitlements to other types of benefits such as pharmaceuticals should be restricted.

**Keywords:** Health expenditure, Household expenditure, Household survey

## Introduction

Universal coverage is an essential and accepted objective for most countries. It enshrines the key elements of how health systems can contribute to the betterment of health in general, while ensuring that people-centeredness remains at their core. It is defined as access to key promotive, preventive, curative and rehabilitative health interventions, while guarantying adequate protection against financial risks(World Health Organization, 2005). Universal coverage has three dimensions: population coverage, service coverage and cost coverage. Many countries are actively moving forward on the path to universal coverage and indeed they have employed different strategies to that end. It may take many decades to reach universal coverage as demonstrated in most western European coutnries(Carrin & James, 2005b). However, the recent experience from Korea, Thailand and Taiwan is quite different from that of most other nations. They achieved full population coverage rather rapidly and are transforming this into the full notion of universal coverage through the inclusion of more essential services and expanding the extent of financial coverage for these services.

Korea is often cited as a success story for its rapid achievement of universal population coverage through national health insurance (NHI). After the legislation of the Medical Insurance Act in 1963, Korea covered its whole population by 1989 (Carrin & James, 2005a). However, despite population coverage, many services require substaintial co-payments and there is high reliance on out-of-pocket payments within the financing system. Indeed in 2006, out-of-pocket payments accounted for 36% of total health expendiure, when the average level in the OECD was about 20% (Organisation for Economic Co-operation and Development, 2008). This raises important questions about the extent of coverage provided by the NHI. Undoubtedly, there are many lessons to be learnt from this experience, both for future reforms in Korea as well as for other countries that are considering different strategies to move towards and improve upon universal coverage. This paper provides up-to-date analysis on the burden of out-of-pocket health expenditure and its trend over the past 13 years, from 1995 to 2007. It also discusses the recent developments of the NHI, and builds on these two aspects to identify barriers and strategies to full universal coverage and a more effective system.

## Overview of national health insurance in Korea

National health insurance in Korea began to take early form in 1977, when the Medical Insurance Act was implemented and companies with more than 500 employees had to be covered by health insurance, prior to which medical insurance, in practice, consisted of voluntary schemes (National Health Insurance Corporation & Health Insurance Review and Assessment Service, 2007). Two years later, the coverage expanded to companies with more than 300 employees as well as school teachers and government officials. It was further extended to companies with more than 15 employees in 1983. The self-employed were the last group to join health insurance programs, with the urban self-employed joining in 1988, followed by the rural

self-employed in 1989. In addition to contributory coverage, the Medical Aid Program (MAP), which is part of the social protection program, covers the poor who represent around 4% of the population.

Until the year 2000, contributory health insurance was managed by over 400 insurance societies. The integration reform of 2000 merged all the insurance schemes into a single scheme with a uniform benefit package(Kwon, 2003). The National Health Insurance Corporation (NHIC) became responsible for enrolment, revenue collection as well as payment of providers. A parallel institute, the Health Insurance Review and Assessment Service (HIRA) is responsible for claims review and assessment. Both NHIC and HIRA are under the supervion of Ministry for Health, Welfare and Family Affairs.

NHI funds mainly come from members' contributions, which amount to 80% of total revenue. In 2008, the contribution rate for formal sector employees was 5.08% of salary, split equally between the employee and employer. Contribution by the self-employed is based on their income and assets. Government subsidies through general taxation and a tobacco surcharge account for 16.5% of funding, while the rest is from other sources (National Health Insurance Corporation & Health Insurance Review and Assessment Service, 2007).

Insurance benefits include service benefits and some cash benefits. Cash benefits include funeral expenses and compensation for cost-sharing and account for 1% of the total NHI fund. The service benefits include inpatient, outpatient, drugs and some prevention services. The cost sharing rate is based on a schedule and is: between 10-20% for inpatient services; between 30-60% for outpatient services, with a higher cost sharing rate at higher level facilities; and about 30% for pharmacy services (National Health Insurance Corporation, 2008). However, not all inpatient and outpatient service costs are entitled to reimbursement. In addition, special charges can be levied to the basic fees in large hospitals and more than 80% of hospital services have these special charges. The rate of special charges is between 50-100% of the basic price. According to the NHIC statistics, the NHI covered 74.0% of the basic service fees in 2006. Yet, when considering total treatment cost, only 53.6% was reimbursed by the NHI (Jeong & Shin, 2006).

Drug coverage by the insurance is generous (Yang, 2008). Almost all prescription drugs and some over-the-counter (OTC) drugs are covered by the NHI. However, Korean traditional drugs are not included. The volume of drug use in Korea is high as patients who access services expect to receive drugs. It is difficult to say whether the generous drug benefit results in a high volume of drug usage or society's preferences lead to generous drug coverage by the NHI. However, in the past 10 years, there have been continued reforms on drug policy, mainly to change doctor's prescription behaviour and to regulate pharmacies (Chung & Kim, 2005; Kwon, 2001; Lee, 2003).

The duration of medical benefit days have increased during the past years and now better accommodate the elderly and those with chronic conditions. The duration of benefits is defined as the sum of days on medication with doctors' prescription, days hospitalized or days with outpatient visits. Additionally, the NHI has been very responsive in covering new diagnostic equipment. For example in 2006, there were 33.7 CT

machines per million population, one of the highest among OECD countries (Organisation for Economic Co-operation and Development, 2008). Table 1 presents some of the key changes in benefit package since 1995.

**Table 1. Main changes in NHI benefit package since 1995**

| Year | Changes |
|---|---|
| 1995 | Duration of medical care benefits was extended from 180 days to 210 days per year.<br>Maximum duration of benefits for people over 65 years old, with disabilities and persons with national merit was removed |
| 1996 | Duration of medical care benefits was extended from 210 days to 240 days per year.<br>Computed tomography (CT) was covered. |
| 1997 | Duration of medical care benefits was extended from 240 days to 270 days per year. |
| 1998 | Duration of medical care benefits was extended from 270 days to 300 days per year.<br>Prevention and rehabilitation were covered. |
| 2000 | Duration of medical care benefits was extended to 365 days per year. |
| 2004 | Co-payment ceiling was introduced. |
| 2005 | Magnetic resonance imaging was covered.<br>Cost-sharing rate decreased from 20% to 10% for a few high cost diseases such as cancer. |
| 2006 | Children under 6 years old were exempt from inpatient cost-sharing.<br>Surgery for transplantation (liver, kidney, lung and pancreas) was covered. |
| 2007 | Co-payment ceiling decreased from 3 million won (KRW) to KRW 2 million. |
| 2008 | Inpatient cost-sharing for children under 6 years old increased from 0% to 10%.<br>Medical examination before childbirth was covered. |

Source: NHIC & HIRA. Statistical year book, 2008

There is no major difference in benefit packages between the NHI and the MAP, except that before 2007, there was no or minimal cost sharing for MAP beneficiaries. Exemptions for cost sharing were applied only to children under 18 years of age or pregnant women who have rare chronic diseases (Jeong, 2009). However, since 2007, all MAP beneficiaries are required to pay cost sharing for outpatient services.

## Methodology

The data used in this section are from the Household Income and Expenditure Survey (IES) from 1995 to 2007. The IES collects detailed information on household income and expenditures, including details on household health expenditure. The data were collected every month for a one year period. Between 1995 and 2002, only urban non-single person households were sampled in the survey. Since 2003, both urban and rural households have been sampled, but single person households have only been included since 2006. In order to maintain comparability, our time series comparison is based on the same sample frame. The nationally representative sample is, therefore, only available for 2006 and 2007.

We focus on out-of-pocket payments (OOP) and their share in the household budget. OOP include the doctor's consultation fees, purchases of medication and hospital bills. However, expenditures on health-related transportation and special nutrition are excluded. In the household survey, OOP were reported in three broad categories: services (inpatient, outpatient and dental services, etc.), appliances (spectacles, hearing aids, etc.), and drugs (prescription, non-prescription and Korean traditional drugs). We then expand the basic household budget share analysis to measure the percentage of households with catastrophic expenditure, which is a direct indicator of the degree of financial risk protection afforded by a health financing system. We take the widely used measure of catastrophic expenditure, which is defined as OOP exceeding 40% of household non-subsistence spending within a one-month period. Subsistence spending is estimated as the average food expenditure of households whose food expenditure share was in the 45th to 55th percentile range (Xu, Evans, Kawabata, Zeramdini, Klavus & Murray, 2003). We analyzed these trends across household economic groups, which were defined according to per capita household consumption expenditure with consideration of economies of scale for the household size.

## Results

### *Household out-of-pocket health payments*

*Level of household out-of-pocket health payment*

Household monthly OOP was KRW 58,422 (US$ 75.7) in 1995 and KRW 116,195 (US$ 125.0) in 2007 for the urban population (Table 2). OOP as a share of total household expenditure was 4.6% and 5.0% respectively in the same years. From 1995 to 2001, the OOP share decreased slightly. The lowest point was observed in 2001, at 4.1%. It then started to increase from 2001 and reached 5.0% in 2007.

**Table 2. Household out-of-pocket payments**

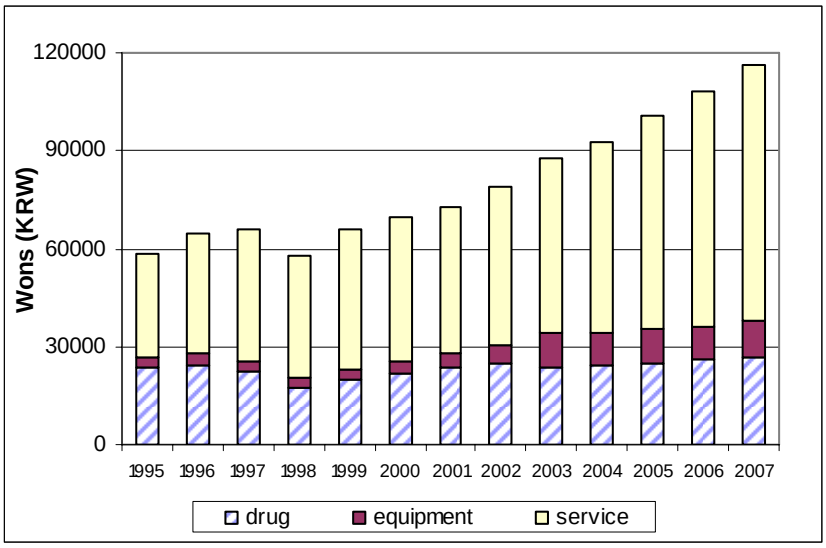
| Year | OOP (KRW) per month | OOP as a share of household expenditure |
|---|---|---|
| 1995 | 58422 | 4.6% |
| 1996 | 64617 | 4.6% |
| 1997 | 65700 | 4.4% |
| 1998 | 57918 | 4.3% |
| 1999 | 66189 | 4.4% |
| 2000 | 69350 | 4.2% |
| 2001 | 72886 | 4.1% |
| 2002 | 79263 | 4.2% |
| 2003 | 87938 | 4.5% |
| 2004 | 92602 | 4.5% |
| 2005 | 100780 | 4.7% |
| 2006 | 108051 | 4.8% |
| 2007 | 116195 | 5.0% |

*Components of out-of-pocket payment*

The largest component of OOP is on services and it has been increasing over time. From 1997, expenditure on services accounted for more than 60% of total OOP (Figure 1). Drug expenditures in absolute terms have

been rather stable, which resulted in a decrease in their share in total OOP. In 2007, purchases of drugs made up about 23% of total household OOP.

**Figure 1. Components of out-of-pocket payments from 1995-2007**




Household spending on health varies significantly across income groups. In general, higher income groups spend much more on health than lower income groups in absolute terms. Expenditures on inpatient and dental services are much higher among the highest income group (Table 3). These expenditures include both co-payments for services covered by the NHI as well as the full charges for non-covered services. It should be noted that the coverage of dental services under NHI is very limited.

**Table 3. Components of out-of-pocket payments by quintile in 2007 (KRW per month and as a percentage of total OOP)**

| Quintile | Drugs | Outpatient services | Inpatient services | Dental services | Other |
|---|---|---|---|---|---|
| 1 | 15384 (17.8%) | 12235 (14.2%) | 1399 (1.6%) | 1163 (1.3%) | 4349 (5%) |
| 2 | 18757 (15.3%) | 17486 (14.3%) | 3450 (2.8%) | 3679 (3%) | 8438 (6.9%) |
| 3 | 22573 (12.8%) | 22421 (12.8%) | 6678 (3.8%) | 7385 (4.2%) | 11770 (6.7%) |
| 4 | 28379 (7.6%) | 29206 (7.8%) | 14347 (3.9%) | 16759 (4.5%) | 16313 (4.4%) |
| 5 | 39000 (14.6%) | 50251 (18.8%) | 71331 (26.7%) | 74464 (27.9%) | 32198 (12%) |

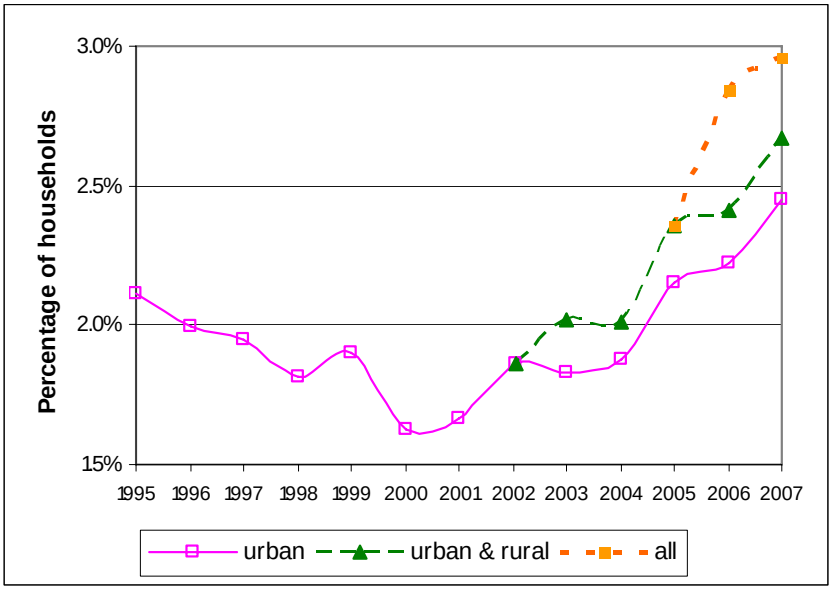
The drug expenditure includes co-payments for reimbursable drugs and full cost for other drugs. Certain "non-prescription drugs" such as Aspirin are covered by the NHI if they are prescribed by a doctor. Data show that prescription, non-prescription and traditional drugs account for 36%, 25% and 39% of the total out-of-pocket drug expenditure, respectively, in 2007

### *Household financial burden from out-of-pocket payment*

*Overall trend of catastrophic expenditure*

In 1995, 2.1% of households faced catastrophic health expenditure. It then reduced to its lowest point of 1.6% in 2000. It has, however, increased continuously since then and reached almost 2.9% in 2007. Figure 2 shows catastrophic health expenditure from different survey sampling frames. When the sample includes both urban and rural households, catastrophic expenditure is higher compared to when only the urban population was sampled, which was the case in the 2003 to 2007 surveys. When one-person households were included in the sample (since 2006), the figure became even higher.

**Figure 2. Catastrophic health expenditure from 1995-2007**



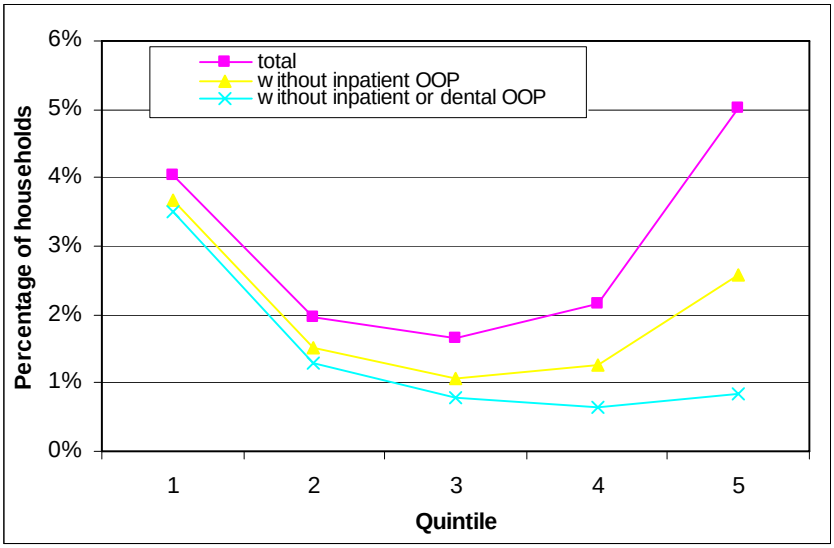

### *Distribution of catastrophic expenditure among socio-economic groups*

In 2007, 82% of households spend less than 10% of their capacity to pay on health; 9% spend between 10-20%; 6% spend between 20-40% and 3% of households spend more than 40% of their capacity to pay. However, the numbers vary among different income groups.

*Catastrophic expenditure by quintiles*

Catastrophic expenditure occurs in all income groups. The percentage of households with catastrophic expenditure is the highest in the richest quintile, followed by the poorest quintile, whereas the 3 middle quintiles have rather similar levels (Figure 3). Catastrophic expenditure among the 5th quintile is mainly caused by inpatient and dental services, while in the 1st quintile, drug and outpatient services are the main drivers. In addition, as quintiles are defined by household consumption expenditure, which includes out-of-pocket payments, some households are categorized in the 5th quintile due to their unusually large spending on health.

**Figure 3. Catastrophic health expenditure by quintile in 2007**




This raises the question whether the 1st quintile is well protected by the system or if they forgo inpatient services. There is no direct utilization data in the survey. However, given that every one has to pay some OOP for inpatient services (either through copayment or special charges) in the 2007 data, the number of households reporting spending on inpatient services can be considered as a proxy of utilization. Indeed, based on this proxy, higher income households use more inpatient services compared to lower income groups. The number of households using inpatient services in the 5th quintile is about 7 times higher than that of the 1st quintile. Among those who used inpatient services, one in three households faced catastrophic expenditure.

Additionally, it should be also noted that a far higher percentage of pensioners' households experience catastrophic expenditure. Data from the wider sampling frame of 2006 and 2007, which is likely to be more reflective of elderly households, shows that about 10% of pensioners' households faced catastrophic expenditure, compared to just around 2% of other households.

## Discussion

Many countries that chose health insurance to achieve universal coverage face the challenge of expanding coverage to the informal sector. Korea successfully demonstrated that with strong political will and financial support from the government, universal population coverage can be achieved within a short period of time. This is a very valuable experience which differs in many ways from that of the European nations who took much longer to achieve the same objective. Indeed, other countries that are employing a similar strategy, such as Philippines, Vietnam and China, can draw important lessons from Korea.

However, policymakers must not forget that population coverage is only one part of the story. Without appropriate service and financial coverage, the goal of universal coverage is still unattained. Whereas national health insurance in Korea covers a wide range of outpatient and inpatient services, diagnostic tests and drugs, the extent of coverage for different types of services varies considerably. Despite the continuous

expansion of the NHI benefit package, the percentage of households with catastrophic expenditure has increased in the past years.

In most high income OECD countries less than 1% of households encountered catastrophic expenditure (Xu et al., 2003; Xu, Evans, Carrin, Aguilar, Musgrove & Evans, 2007) while in Korea the figure is 2.9% in 2007. It should be noted that in 2004, a cost sharing ceiling was introduced and lowered in 2007. We would expect this to have implications for the incidence of catastrophic health expenditure. However, this effect is not apparent from the data. One of the reasons is the unregulated special charges went up at the same time(Mathauer, Xu, Carrin & Evans DB, 2009).

This study shows that out-of-pocket expenditure for inpatient services is highly correlated with catastrophic expenditure, while drug and outpatient expenditure rarely cause financial catastrophe for households. In 2007, a third of households whose members used inpatient services incurred catastrophic expenditure. This is particularly noteworthy as the NHI co-payment for inpatient services was only 10% to 20% of the basic treatment cost. However, the total cost to patients is much higher as insurance does not reimburse the special fees, which can be as high as 100% of the basic costs. Our results suggest that there is rather limited coverage for inpatient services (Jeong & Shin, 2006). In order to alleviate households' financial burden, tackling special fees through more strict regulation and expanding the benefit package is essential. The coverage of special charges by insurance should be negotiated so that the extra funds can purchase more services and not simply increase the unit cost of services.

Drug expenditure has been high in Korea compared to other OECD countries. Before reforms in 2000, physicians could dispense drugs at their office, including those being covered by NHI. Since then, many modifications have been implemented. This seems to be reflected in our results as there is gradual decrease in drug expenditure as a share of total health expenditure. But this does not mean that the consumption of drugs has decreased. NHI benefits for drugs have increased as a result of the Separation Reform, which decreased the scale of OOP by covering some drugs that were previously excluded (Jeong, 2005). Drugs are still the most frequent items within household health expenditure but they rarely cause catastrophic expenditure, even among the lowest income group. The generous drug coverage in NHI also includes commonly used OTC or “non-prescription” drugs as discussed earlier. This allows everyone to benefit from the national health insurance and therefore helps in maintaining public support for it. However, there is trade-off between smaller benefits for everyone and bigger benefits for a few. Firstly, generous drug coverage inevitably limits coverage for other services such as inpatient services given a fixed amount of total NHI revenue. Secondly, the fact that NHI reimburses drug expenditure as long as the drugs are prescribed by a doctor encourages patients to use more outpatient services in order to have their drug spending reimbursed.

Our results also suggest that poorer and elderly households are more disadvantaged. Indeed, catastrophic expenditure among quintile 5 is largely caused by dental services. However, among quintile 1, basic services

are the main drivers. There is also a substantial difference in the use of inpatient services between richer and poorer households, which indicates insufficient use of inpatient services by low income households.

Similarly, pensioners' households face catastrophic expenditure much more. With the same level of cost sharing, they are forced to spend more of their disposable income on health. Various options could protect the elderly from large financial losses due to paying for health services. These could be through differentiation or reduction of insurance cost sharing or indeed, other social welfare programs. Korea introduced long-term care (LTC) insurance in mid-2008 as a public nation-wide scheme(Campbell JC, Ikegami N & Kwon S, 2009). This is expected to reduce financial burden of households with elderly members as well as alleviate financial constraints for the national health insurance.

Our results suggest that the benefit package need to be rationalized. Indeed, discussions in the country on restricting drug reimbursement (e.g. shortening the drug list, increasing cost sharing, regulating and encouraging rational prescription behaviour, etc.) and increasing the coverage of inpatient services are under way. Special charges need to be addressed as well and low-income and pensioners' households require special attention. However, these changes may face both political and technical challenges. For example, cutting down pharmaceutical benefits will not be popular with the pharmaceutical industry or with patients.

The Korean experience neatly demonstrates some of the possible pitfalls of the "population coverage route" to achieving universal coverage. Whereas the rapid population coverage with a uniform package is an extremely praiseworthy achievement, the NHI's benefit package is still limited. Indeed in the 20 years, the country has had full population coverage, yet it has not achieved full notion of universal coverage which stresses access to essential care without financial difficulty. Additionally, "easily accessible" benefits such as generous drug coverage directly mean less coverage for other more financially burdensome services such as inpatient care.

From this experience, we can learn that moving from full population coverage to universal is no easy task, despite how rapidly the former was achieved. It is with continued and diligent effort on the part of Korean stakeholders that universal coverage will finally be achieved. However, the Korean experience has been illustrative of one other essential fact: there are different strategic paths that countries can move along to achieve the goal of universal coverage. Expanding an "ideal" benefit package slowly from a small group of the population to the whole country as many high income OECD countries did is not the only option. Whereas different strategies may have different shortcomings, choosing the most efficient one to achieve universal coverage depends on the country context and policymakers should take full advantage of this while drawing on lessons from all their international peers.

## Acknowledgements

The authors are grateful to Chang-Yup Kim and Guy Carrin for insightful discussion and useful comments. The views expressed in this paper are those of the authors and do not necessarily represent those of the organizations and institutes to which the authors are affiliated. Some related work was funded by the Dr.Lee Jong-Wook Memorial Fund, Korean Foundation for International Healthcare.

**REFERENCES**


Campbell JC, Ikegami N, & Kwon S (2009). Policy learning and cross-national diffusion in social long-term care insurance: Germany, Japan, and the Republic of Korea. *International Social Security Review 62*(4), 63-80.

Carrin,G., & James,C. (2005a). Key performance indicators for the implementation of social health insurance. *Applied Health Economics and Health Policy 4*(1), 15-22.

Carrin,G., & James,C. (2005b). Social health insurance: key factors affecting the transition towards universal coverage. *International Social Security Review 58*(1), 45-64.

Chung,W.J., & Kim,H.J. (2005). Interest groups' influence over drug pricing policy reform in South Korea. *Yonsei Medical Journal 46*(3), 321-330.

Jeong,H.S., & Shin,P.K. (2006). Time-series change in benefit coverage of Korean health insurance and cross-country variation in public financing share of personal health care expenditure. *Korean Social Security Studies 22*(4), 27-48.

Jeong,H.S. (2005). Health care reform and change in public-private mix of financing: A Korean case. *Health Policy 74*(2), 133-145.

Jeong,H.S. Health policy under economic crisis. 2009. Korean Social Security Association Spring Academic Congress.
Ref Type: Generic

Kwon,S. (2001). Economic crisis and social policy reform in Korea. *International Journal of Social Welfare 10*(2), 97-106.

Kwon,S. (2003). Health care reform and the new sigle payer system in Korea: social solidarity or efficiency? *International Social Security Review 56*(1), 75-94.

Lee,J.C. (2003). Health care reform in South Korea: Success or failure? *American Journal of Public Health 93*(1), 48-51.

Mathauer,I., Xu,K., Carrin,G., & Evans DB. An analysis of the health financing system of the Republic of Korea and options to strengthen health financing performance. 2009. Geneva, WHO.
Ref Type: Report

National Health Insurance Corporation. National health insurance system of Korea. 2008.
Ref Type: Serial (Book,Monograph)

National Health Insurance Corporation, & Health Insurance Review and Assessment Service. Statistical booklet on 30-year history of Korean National Health Insurance. 2007.
Ref Type: Generic

Organisation for Economic Co-operation and Development. OECD Health Data 2008. 2008.
Ref Type: Generic

World Health Organization. Sustainable health financing, universal coverage and social health insurance. A58/33. 2005.
Ref Type: Bill/Resolution

Xu,K., Evans,D.B., Carrin,G., Aguilar,A.M., Musgrove,P., & Evans,T. (2007). Protecting households from catastrophic health spending. *Health Affairs 26*(4), 972-983.

Xu,K., Evans,D.B., Kawabata,K., Zeramdini,R., Klavus,J., & Murray,C.J.L. (2003). Household catastrophic health expenditure: A multicountry analysis. *Lancet 362*(9378), 111-117.

Yang,B.M. (2008). Economic evaluation and pharmaceutical reimbursement reform in south Korea's national health insurance. *Health Affairs 27*(1), 179-187.