Design of Health Insurance in The Gambia

Donald S. Shepard, PhD
Wu Zeng, MD, PhD

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Schneider Institutes for Health Policy
Heller School for Social Policy and Management
Brandeis University
Waltham, MA 02454-9110 USA
Email: shepard@brandeis.edu
Tel: +1-781-736-3975
Web: www.brandeis.edu/~shepard

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Executive Summary

Based on its prior work on health financing in Rwanda and other developing countries, the Brandeis team was asked to develop a design for a health insurance scheme for The Gambia. The team reviewed relevant literature, conferred with experts and colleagues, and the lead team member visited The Gambia in October 2010. While The Gambia already has an extensive public system of health care that provides comprehensive services with low out-of-pocket payments at the time of service, the Brandeis team members were asked to review how the new proposed health insurance scheme might seek to reinforce and improve the present system and address some of the gaps in this system. Specifically, the team looked at the occasional shortages of medications at health facilities, shortages of fuel for emergency obstetrical transport, and inadequate financial incentives for health professionals for high quality health care and remaining within The Ministry of Health and Social Welfare (MoH). The MoH may wish to use the proposed scheme to finance other enhancements that they identify to improve the consistency, effectiveness and comprehensive cover of the service.

The Brandeis team would like to complement the foresight and competence of the MoH staff in managing the health service as well as they do within the limited resources available. This review proposes the following 11 recommendations for the consideration of the MoH, Government ministers and His Excellency The President, Sheikh. Professor Dr. Alhaji. Yahya A. J. J. Jammeh.

1. That a comprehensive and universal health insurance scheme is established for the whole population of the Gambia. This should initially be established as simply as possible.

2. The Government should establish an affordable insurance premium that is applicable across men, women and children but is graded to reflect the Government priorities of providing maternal & child care. This will need to be reviewed and determined by MoH to reflect cultural needs, affordability, and total funding to be raised. For example:
   a. What should be the “affordable” level of premium and should the premium reflect differences in gender and ability to pay; and
   b. The scheme could have an indicative annual premium of D 600 (US $20) per adult male (age 18 years and above) who is working in the formal sector or formally self-employed (e.g. with some type of government license), D120 (US $4) per adult male who works in the informal sectors, and D45 (US $1.5) per child (under 18) and per adult female.

3. For the insurance scheme to be successful, it is important that the premiums are pooled across communities, regions and the country. This would also allow for lower premiums in rural areas where the ability to pay is reduced.
4. Once the scheme has been working for a number of years, the Government may wish to evolve the tariffs to reflect ability to pay. However it is recommended that in the initial stages a simple, universal premium be established reflecting gender, age, employment status, and location of the member.

5. The insurance scheme should have a local focus and be managed at the level of the health center, and use community health nurses, where available, to enroll and renew members.

6. Recognising The Gambia’s excellent mobile telecommunications capability and the successes of the recent SMS for Health Project, it is recommended that the insurance scheme be implemented in collaboration with the mobile phone providers and, that for those enrolled who are not salaried employees (a) SMS technology be used for transmitting enrollment information and (b) the mobile phone credit sales collection system be used for receiving the premiums. The Government will want to determine the optimal premium collection mechanism for the families of those who are salaried employees of public and private sector where deductions can be made at source along with employer contributions.

7. A site visit to Rwanda is suggested as the next step alongside the creation of a multi-disciplinary and stakeholder implementation team, to review first-hand how that country’s health insurance scheme was implemented so successfully.

8. The Government should review how it might raise revenue to subsidize the scheme from other sources, for example:

   a. Whether revenue for the scheme might be raised from other sources – e.g. health insurance surcharge which can be levied on the vibrant food import trade sub-sector; and

   b. How other donor programme funds might be incorporated over time as they become available to help subsidize the insurance premium, starting with the next round of Global Fund proposals.

9. The insurance scheme should be piloted in one area before broader rollout across the country. Consideration might be given to identifying a successful health centre in the Western Region with communications, a receptive community, and an empowered MoH team. An initial pool of funding from Government or international donors would need to be identified to pump prime the scheme while enrollment premiums were being collected.

10. A multi-disciplinary stakeholder group should be established to consult and determine the most appropriate way of rolling out the insurance scheme, including the level and application of premium, alternative sources of funding, community sensitization, appropriate pilot roll-outs, timetable, etc.
11. The evidence from successful implementations of schemes in other countries is that strong leadership is required. It is recommended that the introduction of health insurance receive the support and involvement of Government at the highest level and that universal enrollment is an expectation.

The scheme provides an important new source of resource generation for the health service. The level of premiums and amount raised will need to be set to reflect the health priorities of Government after greater analysis.

By necessity, this scoping study has been undertaken at a high level. The levels of premium and financial calculations in the report have been based on areas that might be covered by a scheme and should be viewed only as indicative.
I. Introduction

Despite substantial efforts devoted to improving population health in past decades, the health system in The Gambia is still facing great challenges. Supported by International Health Partners, United Kingdom and working in conjunction with Concern Universal in The Gambia, researchers at Brandeis (Prof. Donald S. Shepard and Dr. Wu Zeng) were invited to suggest options for health insurance schemes for The Gambia and related policies to improve the country’s health system.

This report is based on the interviews conducted by Prof. Shepard through a field trip to The Gambia in Oct 2010 in collaboration with Kay Sey (Concern Universal), input from Brandeis colleagues, and extensive review of related documents and literature. We highly appreciated the chance to work with our partners in The Gambia and UK, and look forward to further cooperation.

The three objectives of this study are to: 1) examine the strengths and weakness of the Gambian health system in addressing the health needs of Gambians; 2) identify gaps in utilizing health services to improve the health outcomes; 3) propose health insurance schemes to address the gaps indentified in objective two, and provide preliminary implementation plan.

The remainder of report has three sections. The next section provides an overview of the Gambia with particular focus on demography, economy, and epidemiology of The Gambia. The third section describes the Gambian health system and current health financing mechanisms. The fourth section proposes some design options for health insurance schemes to address the problems identified, including estimation of premium and implementation of health insurance; it concludes with options for next steps of setting up a pilot study and conducting a site visit to Rwanda as well as providing options for the insurance scheme in the long run.
II. Overview of The Gambia

Population

The Gambia, located in West Africa and bordered by the Atlantic Ocean and Senegal, had total population of 1.66 million in 2008 with annual increase rate of 2.72%. Table 1 shows the detailed population profile in The Gambia from 2005 through 2008. Although we are able to obtain the latest update on the total population of 1.7 million in 2009, we use the data in 2008 for further analysis in section III, as no detailed population data, which are essential for further analyses, are available for 2009 except the total population.

There are two noteworthy features of the dynamics of the Gambian population. First, the population is young. Children under 5 represent 16% of the total population, and children under 15 constitute 42%. The Gambia is a country with a high dependency ratio. Second, urbanization is progressing rapidly. In 7 years, the population in urban areas increased from 50% in 2001 to 56% in 2008. Urbanization has brought new health challenges to the country such as high blood pressure and excess body weight that may lead to future chronic illnesses.

Table 1. Demography of The Gambia

<table>
<thead>
<tr>
<th>Population</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1,526,138</td>
<td>1,570,883</td>
<td>1,615,510</td>
<td>1,660,200</td>
</tr>
<tr>
<td>Urban</td>
<td>822,588</td>
<td>859,901</td>
<td>897,900</td>
<td>936,685</td>
</tr>
<tr>
<td>Rural</td>
<td>703,550</td>
<td>710,982</td>
<td>717,610</td>
<td>723,515</td>
</tr>
<tr>
<td>Percent living in urban areas (%)</td>
<td>53.90%</td>
<td>54.74%</td>
<td>55.58%</td>
<td>56.42%</td>
</tr>
<tr>
<td>Annual population growth rate (%)</td>
<td>2.98</td>
<td>2.89</td>
<td>2.80</td>
<td>2.73</td>
</tr>
<tr>
<td>Distribution of population by age group, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 0 to 4 years</td>
<td>16.55%</td>
<td>16.39%</td>
<td>16.23%</td>
<td>16.06%</td>
</tr>
<tr>
<td>-5 to 14 years</td>
<td>26.30%</td>
<td>26.37%</td>
<td>26.40%</td>
<td>26.42%</td>
</tr>
<tr>
<td>- 15 to 64 years</td>
<td>54.37%</td>
<td>54.45%</td>
<td>54.57%</td>
<td>54.71%</td>
</tr>
<tr>
<td>- 65 years and above</td>
<td>2.78%</td>
<td>2.79%</td>
<td>2.81%</td>
<td>2.82%</td>
</tr>
</tbody>
</table>

Source: World Bank

Economy

The Gambia is listed by the World Bank as a low-income country with Gross Domestic Product (GDP) per capita of $495 (in current USD) in 2008, ranking in the lowest quarter at 159 out of 194 countries in the world. According to the World Bank1, about 60% of the population is living in poverty. International donors play a significant role in the Gambian economy; about 12% of Gross National Income (GNI) was from Official Development Assistance (ODA) from other countries (Table 2). Agriculture is the sector in which the largest share of the population is involved, engaging about 70% of population, but accounting for only 33% of GDP2.
Table 2. Economy of The Gambia

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita (current US $)</td>
<td>302</td>
<td>324</td>
<td>403</td>
<td>495</td>
</tr>
<tr>
<td>Net ODA received (% of GNI)</td>
<td>14.45</td>
<td>15.92</td>
<td>12.26</td>
<td>12.09</td>
</tr>
</tbody>
</table>

Source: The World Bank

Health

Health indicators and disease patterns

Life expectancy at birth in The Gambia is 57 years for males and 61 years for females. The infant mortality rate (IMR) is 78.4 per 1,000 live births, ranking 166 out of 194 countries, and the child under 5-mortality rate is 103 per 1,000 live births.

Communicable diseases are the major threats to the population health in The Gambia. As noted by WHO\(^3\), 72% of years of life lost are due to communicable diseases such as malaria, pneumonia, diarrhea, and neonatal diseases (including birth asphyxia, neonatal sepsis, and prematurity), and the remaining 28% are attributable to non-communicable diseases and injury. Among the children younger than 5 years old, the four most important illnesses, malaria, pneumonia, diarrhea and neonatal diseases, constitute 77% of total deaths (Figure 1). Other diseases, such as measles and HIV/AIDS, contribute many fewer deaths. Among adults, communicable diseases such as tuberculosis, HIV and malaria, remain the main causes of morbidity and mortality. The MOH reported that 66.86% of total outpatient consultations in 2008 were due to malaria, and diarrheal diseases and acute respiratory tract infections constituted about 25%\(^2\).

Source: WHO; data are for 2008.

Figure 1. Causes of death in children under 5 years old
Deaths in children under 5 represent almost half of the total deaths in each year from 2001 to 2007. Figure 2 shows death in all age groups as comparison to that in children under 5. Therefore, strengthening the health insurance system is a critical strategy to reduce child and adult mortality rates in The Gambia.

Source: World Bank

Figure 2. Numbers of deaths in all age groups and in children under five

Key diseases

Malaria

As shown in Figure 1, malaria causes 23% of deaths of children under 5. Although the incidence is declining, it remains at a high level compared to other countries\(^4\). The Medical Research Council found that the number of malaria positive slides has declined substantially in 10 facilities among children in recent years, and only 2.8% of a rural cohort of children had a malaria episode in 2008\(^4\). The large decrease of malaria incidence is partly attributable to the increasing use of bed nets among children and pregnant women\(^5\). Similarly, we found some evidence of declining prevalence of malaria from the national data. Figure 3 shows the reported malaria cases from 2001 to 2008, suggesting that the prevalence of malaria in all ages is declining. However, no downward trend of malaria prevalence among children under 5 was observed. On the contrary, the prevalence of malaria has been slightly increasing since 2005 in this age group.
Figure 3. Reported malaria cases in all ages and children under 5

Pneumonia

Pneumonia is another killer among children globally\(^6\)\(^{-8}\). In The Gambia, it accounts for 16% of death among children under 5. We have not found any national estimate of the incidence of pneumonia in The Gambia. A study by WHO estimated that the incidence of clinical pneumonia is 0.33 episodes per child-year in Africa overall\(^6\),\(^7\), and approximately 10% of children with clinical pneumonia require hospitalization. Using the incidence of 0.33, 87,990 episodes of pneumonia are estimated among children under 5 in The Gambia. The high death rate of the pneumonia cases is probably due to lack of knowledge of the children’s parents and other caretakers, limited access to health facilities, shortage of physicians or community health providers to treat pneumonia properly\(^9\). According to UNICEF’s estimates, about 69% pneumonia cases in children under 5 are taken to an appropriate health care provider\(^{10}\).

Neonatal illnesses and maternal death

Neonatal care and maternal health have been major concerns in the country. With high infant mortality rate, and high under 5 mortality and maternal mortality, The Gambia endeavors to reduce these rates and make progress to millennium development goals. All the three indicators are inter-related. An intervention targeting to one of them, in fact, will affect the other two. The infant mortality rate is 78.4 per 1000 live births, the majority of which are due to prematurity, birth asphyxia, neonatal sepsis. The maternal mortality rate (MMR) is estimated at 730/100,000 live births, largely due to sepsis, haemorrhage and eclampsia. Several challenges have been pointed out to address the high IMR and MMR, such as shortage and low quality of the human resources, inadequacy of essential drugs, and lack of timely referral system\(^{11}\). Consistently, studies in rural Gambia indicate that the low standard of care, failure to recognize
the severity of the illness and thus the delay of seeking care, lack of transport are the main contributors to the maternal death\textsuperscript{12,13}.

It should be noted that diarrhea, measles, and HIV/AIDS also account for a significant portion of deaths among children under 5. Considering that most illnesses listed above are preventable, insurance systems that strengthen timely preventive and curative services for children would be very important.
III. Health system and health financing

Health system

The healthcare system in The Gambia is built on three levels, namely primary, secondary and tertiary health facilities. The public sector health care delivery system consists of 6 referral hospitals operated by the government, 38 health centers, and the Medical Research Council (MRC) clinics that are funded by the UK Government. There are also 34 privately-run clinics and NGOs operating in Gambia. Primary health care is focused on villages where Village Health Workers and Traditional Midwives are initially trained and then assigned to deliver primary care to their village of responsibility. The services provided include outpatient care, community health education, ensuring a supply of essential medicines and home visitations. In addition to assisting in-home deliveries, the midwives refer pregnant women who seem to be at risk to the local health centers. For secondary health care, medical care is provided by 38 health centers, with each providing inpatient and outpatient treatment. At the third level, health services are delivered by the six referral hospitals, MRC, several private clinics and NGO operated clinics. The main referral hospital is the Royal Victoria Teaching Hospital (RVTH) in Banjul.

In terms of human resources, the doctor-to-population ratio was 0.04/1000, which is notably lower than that in many other African countries. The average doctor to population ratio in Africa is 0.10/1000. A similar shortfall applies to numbers of nurses and midwives with a ratio of 0.51/1000, which is also lower than the average in Africa of 0.72/1000. As an example of the consequences of these shortfalls, the team was told that one large health center was not able to operate its emergency obstetrical surgery program because of no qualified surgeon available even though the hospital is equipped with sufficient facilities for the surgery. Given the low ratios of doctors and nurses to population, it is important to take the need for personnel into consideration in the design of health insurance. In addition, to improve the utilization of services and receive better quality of services, it is critical to mobilize additional resources to finance the health system given the tight budget from the government.

Health financing

There are differences between the results of National Health Accounts (NHA) estimated by The Gambia researchers from that estimated by WHO. In this report, we use the estimates from The Gambia researchers for the further analyses for several reasons. First, the data were more local, collected from both government agencies and international agencies, as well as from household survey. Second, The Gambia researchers’ estimates probably have higher credibility because the total health expenditure from two sources does not differ too much while the difference lies in the sources of funding.
Donors fund the largest share of total health spending (representing 66%). The next largest payer is the government (funding 24%), and the next is the household out-of-pocket payments (9%). Private employers contribute the smallest share (1%). The total spending on health in 2004 was D 1,682,323,673 (equivalent of US $56,077,456 using the current exchange rate of D30 equals US $1), and the health expenditure per capita is $40. The low burden of household in financing health expenditure is one of advantages of the Gambian health system and offers an opportunity to raise additional monetary resources from households to design health insurance to fill gaps in the Gambia’s health system.

Because few health insurance schemes exist in The Gambia, most funding for health does not have the explicit function of pooling risks. Funding is primarily managed by the government, and private and external agencies. The Government manages 81% of total health funding, private organizations or households 13%, and international agencies 6%. Only 0.52% of funding is managed by private health insurance. Since Gambia does not have a social health insurance system (compulsory health insurance schemes targeting to specific populations) either, the 0.52% of funding is the only money that has the specific function of the risk pooling.

Provision and administration of public health programs, payment for hospitals and institutions providing health services and health centers account for the largest amount of health expenditure. Curative care consumed 42% of funding. In terms of the functions of the services, health administration took with the largest share (33%), prevention and public health services were second (with 29%), and curative care was last (with 21%).

In public facilities, patients pay user fees to receive care, such as D5 ($0.17) for outpatient hospital (health center) visit for an adult, which may include consultation and medicine, and D50 ($1.7) for inpatient care per week. These user fees are used as cost recovery for hospitals and health centers. Health facilities also receive funding from government to cover the costs, including personnel salaries and facilities’ purchases. Medical doctors typically earn $450/year, and nurses $270/year. Additional small allowances apply in certain circumstances.

Given the high disease burden and the need to scale up many essential services in the Gambia, it is critical to mobilize more resources through other financing mechanisms to finance health. Community-based health insurance could be one of mechanisms. Also important is to create a fairer health financing system with people’s contribution to health system based on their ability to pay.

**Gaps in services and possible reasons**

With strong government commitment and international donors’ support, many important health services have been successfully scaled up. However, further efforts are needed, particularly among the poor in rural areas where the utilization of essential services is substantially lower. Table 3 shows the gaps in key services. Compared to many other African countries, the coverage of some services is high. However, there is still much room for
improvement, including interventions on pneumonia, malaria, diarrhea, and HIV/AIDS. Additionally, the high coverage of key interventions does not necessarily yield optimal outcomes. Taking pneumonia again as an example, despite the comparatively high percentage of population promptly seeking treatment of pneumonia (69%), pneumonia remains as a leading cause of deaths among children. Inadequate quality of services may explain the seeming contradiction. In addition, efforts are needed to improve the medical knowledge of the community and educate ill persons to seek care promptly and to comply with prescribed medications. In some rural areas, pregnant women tend to use traditional midwives to assist the delivery without skilled attendants during the labor, resulting in a high risk of delivery complications.

Table 3. Gaps in key services

<table>
<thead>
<tr>
<th>List of health services that require scaling up</th>
<th>Current coverage</th>
<th>Gap</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompt and better treatment of pneumonia¹</td>
<td>69%</td>
<td>31%</td>
<td>WHO</td>
</tr>
<tr>
<td>Proper use of oral rehydration therapy (ORT)²</td>
<td>38%</td>
<td>26%</td>
<td>UNICEF</td>
</tr>
<tr>
<td>Early detection and treatment of TB (2008)³</td>
<td>54%</td>
<td>46%</td>
<td>WHO</td>
</tr>
<tr>
<td>Delivery with skilled attendant (2006)</td>
<td>57%</td>
<td>43%</td>
<td>WHO</td>
</tr>
<tr>
<td>Bed net distribution and use (2006)⁴</td>
<td>49%</td>
<td>51%</td>
<td>WHO</td>
</tr>
<tr>
<td>AIDS education and condom distribution (2005)⁵</td>
<td>39%</td>
<td>61%</td>
<td>WHO</td>
</tr>
<tr>
<td>Antiretroviral treatment (2007)</td>
<td>18%</td>
<td>82%</td>
<td>WHO</td>
</tr>
</tbody>
</table>

1. Measured by % under-fives with suspected pneumonia taken to an appropriate health provider
2. Measured by % under-fives with diarrhea receiving ORT; gap was compared to average ORT use rate in African in 2000 reported by UNICEF’s the state of the world’s children
3. TB case detection rate
4. Measured by % children sleeping under insecticide-treated nets
5. Measured by % female having comprehensive correct knowledge on HIV/AIDS

There are several reasons for the gaps of services or the low performance of Gambia health system:

First, generally, accessibility is not a major issue for seeking care. Most of households (85%) live within one-hour travel time of a facility. On average, it took approximately 30 minutes to reach health facilities nationwide, with variation of 40 minutes in rural Gambia and about 10 minutes in urban areas. However, apparently short travel time may overestimate the access to health facilities, considering the availability to pay for the transportation and the time to wait for the transportation, as well as the time to access to the health services. Several articles pointed out the lack of transport have led to substantial delay of treatment.

Second, low quality of health services may be primarily responsible for the high death rate among populations. The low quality of services includes the incompliance of practice guidelines, lack of experience in handling complexities, and a shortage of essential medical
equipments to make correct diagnosis. According to African Press International (API) reported in 2008, half of government-trained public health workers in The Gambia have left public hospitals and clinics over the past decade and the departure rate is rising. Kasse reported a high percentage of population in The Gambia seeking care in the public sectors for patients with coughing, but requires necessary equipment to make correct diagnosis and to provide treatment accordingly\(^\text{19}\).

Third, even though people may access to health facilities, sometimes the patients is not able to receive the drugs that are needed. A recent news show reported the shortage of drugs in RVTH, and noted that many patients have to obtain medications from private pharmacies\(^\text{20}\). Specifically, 65\% percent obtain their antibiotics supplies from public facilities, while 28\% have to obtain from private facilities\(^\text{21}\).

Last, but not the least, the lack of emergency obstetric care contributes to high maternal deaths. Given the unpredictability of obstetric complications during labor and delivery, initiating and institutionalizing emergency obstetric care would significant reduce the numbers of maternal and child deaths\(^\text{15, 22-24}\).

There will undoubtedly be further reasons that our initial analysis has not highlighted. These are likely to confirm the need for additional expenditure on health service and the additional support that can be provided by a health insurance scheme.
IV. Proposed health insurance scheme in The Gambia

Objectives

In this section, we describe a potential health insurance scheme to supplement current health financing mechanisms in The Gambia. However, it should be noted that the proposed health insurance and the suggested premium are indicative, because (1) our understanding of The Gambia’s health system is primarily based on literature review and extensive interviews with a selected group of people, and may not accurately reflect the needs of consumers and the government; (2) due to the limited available data, we use several assumptions, to the best of our knowledge, to estimate the cost of some services, but may not be perfectly sound; and (3) designing health insurance is a evolving process, and design changes as the need for the services, the financing mechanisms, the role of government, and the structure of health system alter.

The potential health insurance scheme seeks to improve health care provision by 1) ensuring the availability of virtually free essential drugs, 2) guaranteeing transport of pregnant women for obstetric emergencies, 3) improving retention of health personnel in public health facilities, and 4) mobilizing more resources for health to manage illness without posing substantial financial burden to the population.

Covered benefits

The plan will provide five benefits that will start to directly address the gaps identified:

1. First, if an essential primary care medication is not available at a minor or major health center, the patient can obtain a voucher to take to a nearby private pharmacy. The voucher will authorize the pharmacy to dispense the drug to the patient and receive payment from the health insurance plan.

2. Second, if a woman needs an emergency obstetrical transfer to a higher level facility and fuel is not available at the health facility, then her family will be given a voucher to allow them to purchase the fuel for the journey, with the seller being guaranteed reimbursement from the health insurance plan.

3. Third, the additional financial resources mobilized through community-based health insurance could allow using extra money to increase remuneration to health personnel to alleviate the attrition of doctors and nurses.

4. Fourth, the additional resources from insurance allow managers to use part of the fund as incentive to health professionals to encourage higher quality of services. This would be particularly useful for services that are under utilized and are neglected by providers. For example, additional payment could be provided to health centres if they confirm a TB case or refer complicated TB cases to hospitals.
5. Fifth, additional funding might also be raised or reallocated from other sources to cover (a) specific training needs to improve, for example, maternal and child care services (employ more community health nurses, develop more midwives, etc) and/or (b) additional fuel for generators in health centres; and/or (c) invested in improving facilities that directly improve staff retention (e.g. staff housing).

Cost of services to be covered by health insurance

This proposed health insurance plan aims to finance prescription drugs, referral emergencies, and qualified personnel. Our estimation of premium of health insurance is purely illustrative and is based on the cost of services that would be covered in the health insurance and administrative cost of health insurance plan. Assuming that universal enrollment would eventually be achieved, the average full premium per person would be calculated as the cost of health insurance divided by total population of The Gambia. Recognising the social and cultural framework, it is recommended that the premium needs to be initially established as simply as possible, with few/no concessions. Once the scheme is implemented and has been operating effectively for a period of years, the Government needs to determine whether the premium tariff needs to be refined to better reflect the ability to pay, such that indigent participants’ premiums would be subsidized.

We calculated the scheme’s cost according to standard economic costing methods. The total cost of a service is the product of the unit cost times the quantity of the services that needed to cover the service gap. Although the framework is simple, its application to health care in The Gambia requires detailed demographic and epidemiologic data as well as the pattern on how services are used. As objective data for needed data items are not available, we made assumptions based on the authors’ experience or data from countries with similar conditions to The Gambia.

The costs in the following sections have been estimated as an illustrative model based on available data from The Gambia, and from other country’s health systems to gauge and validate the quantum of premium that might be required. As examples to illustrate how we estimate the cost of services and the premium of health insurance, we provide detailed calculations of the cost for the malaria and pneumonia drugs because they are the items with the most available data.

Cost for obtaining malaria drugs

We received the list of the 20 drugs covered under The Gambia’s innovative mobile phone system, SMS for Health. The list includes drugs to treat and prevent malaria and other major preventive and curative diseases (Table 4). Among all the drugs, we focus on two drugs: Coartem and amoxicillin, as malaria and pneumonia (acute low breath tract infection) are the two major vital diseases that cause death among children and adults. The need for drugs fits well the disease pattern of the country.
Table 4. Drugs currently included in SMS for Health in The Gambia

<table>
<thead>
<tr>
<th>Item</th>
<th>Name of drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coartem 6 tabs</td>
</tr>
<tr>
<td>2</td>
<td>Coartem 12 tabs</td>
</tr>
<tr>
<td>3</td>
<td>Coartem 18 tabs</td>
</tr>
<tr>
<td>4</td>
<td>Coartem 24 tabs</td>
</tr>
<tr>
<td>5</td>
<td>Sulphadoxine/pyrmethamine 525 mg</td>
</tr>
<tr>
<td>6</td>
<td>Quinine 300mg tabs</td>
</tr>
<tr>
<td>7</td>
<td>Quinine 600mg tabs</td>
</tr>
<tr>
<td>8</td>
<td>Amoxicillin 250mg caps</td>
</tr>
<tr>
<td>9</td>
<td>Cotrimoxazole 580mg tabs</td>
</tr>
<tr>
<td>10</td>
<td>Paracetamol 500mg tabs</td>
</tr>
<tr>
<td>11</td>
<td>Mebendazole 100mg tabs</td>
</tr>
<tr>
<td>12</td>
<td>Ferrous sulphate &amp; folic acid 250mg</td>
</tr>
<tr>
<td>13</td>
<td>Benzyl penicillin inj 2MU</td>
</tr>
<tr>
<td>14</td>
<td>Metronidazole 250mg tabs</td>
</tr>
<tr>
<td>15</td>
<td>Methyldopa 250mg tabs</td>
</tr>
<tr>
<td>16</td>
<td>Dextrose 5% inf</td>
</tr>
<tr>
<td>17</td>
<td>Hydrochlorthiazide 25mg tabs</td>
</tr>
<tr>
<td>18</td>
<td>18 Adrenaline inj</td>
</tr>
<tr>
<td>19</td>
<td>Azithromax (azithromycin) 250 mg tabs</td>
</tr>
<tr>
<td>20</td>
<td>Prevnar (pneumococcal vaccine) inj</td>
</tr>
</tbody>
</table>

Previously, chloroquine was the first line drug to treat the malaria. Due to drug resistance, The Gambia revised its treatment guidelines in 2008 and designated Coartem as the first-line drug to treat uncomplicated malaria cases and Quinine for treatment of severe malaria cases as well as for pregnant women with malaria\textsuperscript{25, 26}. To facilitate widespread access to this new drug, Novartis reduced the price of Coartem to $0.37/dose for children up to 15 kg. (1 tab)\textsuperscript{27}. The amount of Coartem prescribed depends on the weight and age of patients. For uncomplicated cases, the dosage is specified according to the weight of patients (Table 5)\textsuperscript{28}. Each patient is expected to take 6 doses of Coartem, i.e., twice a day for 3 days. We are not able to get the information on the distribution of weight of malaria patients seeking treatment. Instead we transform weight to corresponding age group using the US standard table\textsuperscript{29}. As the table is for the US children, whose weight pattern may be different from those in The Gambia, we select a higher age group of Gambian children than the one found from US table for each weight category to adjust for the difference. The approximate age groups corresponding to dosage are shown in column 2 of Table 5.
Table 5. Requirements for anti-malaria drugs

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Approximate age distribution</th>
<th>Number of tablets per dose</th>
<th>Number of doses</th>
<th>Total number of malaria cases</th>
<th>Number of total cases using Coartem</th>
<th>Total doses needed (4-tablet equivalent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15</td>
<td>0-4 years</td>
<td>1</td>
<td>6</td>
<td>217,750</td>
<td>176,378</td>
<td>264,566</td>
</tr>
<tr>
<td>15-25</td>
<td>5-7 years</td>
<td>2</td>
<td>6</td>
<td>124,939</td>
<td>101,200</td>
<td>303,601</td>
</tr>
<tr>
<td>25-35</td>
<td>8-11 years</td>
<td>3</td>
<td>6</td>
<td>74,963</td>
<td>60,720</td>
<td>273,241</td>
</tr>
<tr>
<td>≥35</td>
<td>≥12 years</td>
<td>4</td>
<td>6</td>
<td>91,194</td>
<td>73,867</td>
<td>443,205</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>603,944</td>
<td>491,969</td>
<td>1,284,612</td>
</tr>
</tbody>
</table>

The epidemiological data from WHO shows that 508,846 malaria cases were reported in 2008 in The Gambia, of which 217,750 were in children under 5\(^3\). To categorize the rest of malaria cases into age groups according to Table 5, we use the age distribution of malaria inpatients\(^30\) in a pediatric hospital in The Gambia to allocate the rest of the cases by age categories as shown in Column 5 in Table 5. Assuming that 90% of malaria cases are non-complicated cases and among them 90% used Coartem for the treatment, we estimate that The Gambia needs 1,284,612 doses (4 tabs equivalent). Assuming 10% waste, the total doses needed is 1,427,347. The Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) provides The Gambia with a supply of anti-malaria drugs that should, in theory, be adequate. Actual shortages of malaria drugs for patients are probably due to managerial factors, including errors or delays in ordering, receiving, processing, and transporting medications through the supply chain from international suppliers to peripheral health facilities. Assuming an out-of-stock rate of 10% for Coartem, we estimate that 128,461 doses are needed under the insurance scheme. Meeting this gap will cost $422,495 per year with the assumption that the retail price is 100% higher than the wholesale prices given by Novartis.

Cost for pneumonia treatment drugs

There are several antibiotics in the list. We selected amoxicillin for the analysis because amoxicillin is the primary drugs recommended by WHO to treat both mild and severe pneumonia\(^31\). When a child suffers from pneumonia, doctors often prescribe amoxicillin for 5 days, three times a day\(^32,33\). The dosage depends on the patient’s weight and age. Amoxicillin is often given as 25mg/kg for children up to 250 mg. To simplify the analysis, we assume that all children suffering from pneumonia take amoxicillin 250 mg, three times a day for five days, to account for additional cost from the out-of-stock medicines that may be taken with amoxicillin.

We have not found specific epidemiological data from The Gambia, but found that the average incidence of clinical pneumonia was 0.33 episodes/child-year among children under 5 in Africa\(^7\). The total number of children under 5 is 266,637. It is estimated that 87,990 pneumonia episodes occur annually among children under five. Assuming that of all the pneumonia cases,
50% are sensitive to amoxicillin\textsuperscript{34}, there are 43,995 cases use amoxicillin for pneumonia. Total capsules needed are 659,927.

The price of amoxicillin is estimated at $0.35 per capsule. We understand that since this drug is not supported by The Global Fund, there may be more shortages. Again, assuming a 10% wastage rate but a 20% gap at health facilities for amoxicillin, we estimate an additional cost of $51,328 to be covered by insurance. Considering that amoxicillin is often used for other bacterial infections and other infectious diseases, this estimate is a substantial under estimate of the entire additional financial requirement for providing adequate amoxicillin. Additionally, many other drugs are used with/without amoxicillin to treat pneumonia. We estimate another $50,000 of drugs for pneumonia treatment. Thus, the total cost for pneumonia treatment is estimated at $101,328 per year.

\textit{Cost for fuel for obstetrical referral}

The inadequacy of monthly fuel allowances for ambulances has been reported as an important barrier to provide timely treatment to emergent obstetric cases, due to the rising cost of fuel and the limited funding for purchasing fuel. The cost for the fuel is estimated for two sub-populations: pregnant women who have institutional delivery and those who do not.

Currently, the rate of institutional delivery is about 57\% in The Gambia. Assuming that 2\% of them need emergency care\textsuperscript{23}, we estimate 684 cases that require obstetric emergency with a total of 60,000 pregnant women in the country. We further assume 30\% of the 684 cases (205 cases) cannot be transferred to a higher level of health facilities due to the lack of fuel. For the remaining 43\% of pregnant women who do not have institutional delivery, using the same assumption of 2\% of emergency rate, we estimate that there are 516 emergency cases for obstetric referral.

Assuming that the average distance from household to hospital is about 45 miles with a round trip for each patient of 90 miles, we estimate that the total distance is about 64,908 miles for all 721 cases (205 plus 516) with additional 3245 gallons of fuel (assuming the ambulance runs 20 miles/gallon). Using the price of $4.8/gallon for the fuel, the total cost for the fuel is estimated at $15,559. Once the scheme is established, benefits could be further strengthened by supporting emergency obstetrical transfers at locations without ambulances by prior arrangements. A system of prior approval, a co-payment by the user, and arrangements for direct payment to the vehicle operator will be needed for sound financial management.

The cost estimated above is only for the fuel for ambulances and does not include the fuel to run generators for health centers. If we include the later, the cost would be increased. We estimate that about $35,000 of fuel is needed for the fuel used for generators in the health centers. Thus the total cost for the fuel is estimated at $50,559.

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Cost for increasing remuneration of personnel

The shortages and exodus of physicians and nurses in public facilities were described above. Although we would have liked to be able to mobilize resources with health insurance to hire more doctors and nurses, the effect of such programs, even if feasible, would not be immediate because it takes time to train people to become health professionals. Thus, we concentrate our analysis on increasing remuneration for health personnel and leave the hiring more doctors and nurses to the next phase.

The current doctor to population ratio is 0.04/1000, and the average salary of medical doctors is $450/year\(^{17}\). The low wage has resulted in many doctors leaving their government jobs and seeking to jobs in private sectors. The same happens among nurses with average salary of $270/year\(^{17}\) and a rate of 0.51/1000 population. To retain them in the public facilities, assuming the remuneration is doubled to $900/year for physicians and $540/year nurse. To allow flexibility in increasing the remuneration, it might best be termed “allowances,” and tied to geographical areas and services in special need, such as serving in remote areas, work in hardship conditions, and being on call and serving during nights and weekends. The total funding required is $285,388. The level of allowance needed, and the extent to which this needs to be enhanced the further one goes from greater Banjul, should be a matter of review by the Ministry of Health & Social Welfare. The pooled insurance premiums could also be used to provide for health worker housing, which may be the principal incentive for retaining nursing staff up country.

Total costs and premium

Table 7 shows all the cost associated with increased availability of malaria drugs and pneumonia drugs, referral, and personnel.

Table 7. The total cost of proposed services covered by health insurance

<table>
<thead>
<tr>
<th>Items</th>
<th>Additional US dollars required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria drugs</td>
<td>$422,495</td>
</tr>
<tr>
<td>Pneumonia drugs</td>
<td>$101,328</td>
</tr>
<tr>
<td>Fuel for Referral and generate</td>
<td>$50,559</td>
</tr>
<tr>
<td>Personnel</td>
<td>$285,388</td>
</tr>
<tr>
<td>Sum</td>
<td>$859,770</td>
</tr>
<tr>
<td>Cost/capita ($)</td>
<td>$0.52</td>
</tr>
<tr>
<td>Cost/capita (Dalasi)</td>
<td>15.5</td>
</tr>
</tbody>
</table>

These calculations show that it costs $0.52 per capita to cover the gaps of drugs of malaria, pneumonia, and referral, as well as raising salaries of health personnel. We have not yet included the cost for purchasing new facilities, the cost for space to expand health centers, the
cost for administration of health insurance (estimated at 10%–15% of the premium, which corresponds to about 11%–17% of the cost of services), treatment costs for adults, other incentives for staff and physicians (e.g. housing), and gaps in other medications. Considering these additional items, we propose a premium, on average, of $3 (D90) per person per year. This average premium represents about 1.0% of GDP/capita. If all the services covered are ones that would not otherwise have been obtained, the premium of $3 would represent an increase of 7.5% on per capita health spending of $40. However, The Gambia devoted only 10% of its health spending in 2003 and 2004 to health centers according to the country’s National Health Accounts reports. Therefore, per capita health spending for health centers would be only $4, so an increase of $3 mainly devoted to health centers would be a very large and welcome addition.

We note that paying the premium for women and children may pose a challenge for many families, as children, and to some extent women, have less access to cash income. Additionally, uniform payments could post a severe challenge for populations with irregular income. Therefore, we suggest that the government consider the following three-tiered system. It consists of an annual premium of $20 (D600) per adult (age 18 above) male who is working with formal wage (e.g. government employee) (assuming 3% of total population) or formally self-employed with cash income (e.g. with some type of government license, such as taxi drivers and shop owners, assuming 3% of total population), $4 (D120) per male adult who is working in informal sectors (e.g. farmers and hawkers) (assuming 19% of total population) and $1.5 (D45) per woman and per child (under age 18) (assuming 75% of total population). For this scheme, the premium would average $3.09 (D92) per person.

**Implementation of health insurance**

*Policy support and leadership*

Strong leadership is one of the most important factors to ensure that the proposed health insurance operates successfully, achieves a high enrollment, and fulfills its public health goals. We have seen that The Gambia government has set the establishment of health insurance as one of priorities in the national health policy.\(^{14}\) Learning from the successful implementation of health insurance in Rwanda, the following policy steps are important:

1) To engage the government’s continued commitment during the implementation of health insurance.

2) To legitimize policies and regulations on health insurance.

3) To go beyond the health sector and put the establishment of health insurance on the prioritized agenda of all levels of the government.

4) To advocate for health insurance as a tool in shaping the health system.
5) To educate the population about the importance of the health insurance in benefiting consumers.

6) To cooperate with donors to seek technical support in managing the health insurance.

7) To explore government subsidy of the insurance scheme as a way of promoting enrollment and supporting primary health care, possibly funded through higher co-payments for some hospital services at tertiary hospitals.

8) To discuss with donors subsidies for the insurance premiums of indigent households, as the GFATM has done in Rwanda.

**Enrollment**

For those working in the formal sectors (e.g., government), the premium for them and their families could be collected through the salary payment system directly (e.g., deduction of the amount of premium from paycheck). For those who have jobs with cash income (e.g. taxi drivers), consideration should be given to the collection of the premium for the earner and their families being undertaken through the taxation system, imposing the additional amount of premium as tax and collected revenues.

For the rest of the population in rural areas, community health nurses (CHN) could be asked to serve as enrollment and renewal agents. They would be asked to sensitize the population and process enrollments, preferably by household. In urban areas where CHNs may not be available, staff at health centers will serve the role of CHNs as enrollment agents. For all adults living in the household, the CHN or staff would record their national identification card numbers, names, and contact information. For children, a new health insurance number would be created for each child. The preferred system is to base this on the present Government ID system and use the mother’s information (if the child is living with the mother) with the oldest child being – 01, the next 02, etc. If the mother’s ID number is not available, alternative arrangements could be developed.

The collection of cash premiums across the country is not easy. However, there is an excellent opportunity for the Government to use the cash collection system used by the mobile phone companies. The CHN and the staff will use phone card sellers to sell phone cards equal to the combined premiums of all household members enrolling. For example, as discussed above a household with 4 adults and 5 children would have a combined premium of D540. The following is one example a possible system. The health insurance system would establish with each of the 4 mobile phone companies a unique validation number, e.g. 222. The CHN and staff would then dial this number on his or her phone, enter the ID number or community health insurance number of the enrollee, his or her number, and, if desired, an additional mobile phone number to which the verification information will be sent as a text message (SMS). The phone system would then send back an SMS to the CHN and the staff a supplemental number.
confirming receipt of the payment, issuing a unique transaction number and enrollment of the ID number specified. The CHN will carefully issue a card showing the ID number, the transaction number, and the date and details of the transaction. That process would be repeated for each household member.

From IHP’s experience with SMS for Health, it is clear that reports could be easily generated centrally, on a daily basis, identifying to the Health Insurance Company, who has enrolled and confirming that the premiums have been paid. The CHN and the staff would also receive a commission, like that of other phone card sellers, for the enrollment. The CHN and health center staff will be responsible for managing the phone card sellers to ensure the quality of the enrollment (e.g., the required information of enrollees is correctly entered). The mobile companies will ensure that phone care sellers are paid through their usual mechanisms.

Another aspect that needs to be considered is to avoid “adverse selection” during the enrollment period. Adverse selection occurs when individuals at greater risk of illness are enrolled in an insurance program in larger proportions. Individuals at greater risk or illness are more likely to desire insurance, since losses from illnesses are more certain events for them. However, if premiums are calculated based on the statistical probability of illness in the general population, an over-enrollment of individuals who are at greater risk of illness will cause costs to be greater than revenue, thus threatening the financial viability of the system. To avoid adverse selection, we intend to enroll members using family as a unit. If one of family members would like to join the health insurance, the whole family needs to be enrolled to avoid the selection of sicker people only in the insurance. If the coverage of health insurance is large enough, it is possible to create a mandatory health insurance scheme to avoid the adverse selection. The optimum position is for the President and Government to make joining the system compulsory

The greatest challenge in this step is sensitizing communities to encourage them to join the scheme. This proposal, like any insurance product, entails paying in advance for service that one may not necessarily use during the coming year. It will need strong political support to advocate for the scheme and encourage people to join as a patriotic duty. For the purposes of the pilot, consideration ought to be given to approaching the Global Fund or other international funding body to underwrite the initial trial and take up period of the scheme.

**Pooling resources and management**

After the premium is collected, we suggest that the allocation and use of revenues be managed at the health center level to pool the resources within a clear national and regional framework. This increases local acceptance and enables the health center is able to respond immediately to the needs of consumers for the covered services, such as prescription of drugs and referral. This will reduce delays and also the efforts of supervision otherwise from a higher level. The pooling of premiums across health centres and regions is the main way to spread
risks among participants\textsuperscript{37}, allowing the richer to subsidize the poorer and the heather to support the sicker, thus to protect the poor and the sick from catastrophic health expenses.

The major challenge of pooling the risk is to build a large pool to buffer the risks from the population joining the health insurance. If the pool is small, the available funding does not have enough capacity to meet the uncertain need due to illnesses. It is possible that in some years with high epidemic of illness, health insurance schemes may be subjected to bankruptcy. A large pool is better. For some small health centers serving less population, it is important to combine their health insurance schemes with that of large neighboring health centers to form a large pool of resources.

The management team will consists of representatives from all stakeholders, such as medical doctors, nurses, government officials, donors, and consumers. The inclusion of all stakeholders allows ensuring the funding is appropriately used without fraud. Within the management team, it is necessary to form a supervision group to check the consistency of prescription and the benefit that consumers received, to ensure the prescription is properly made and the claims from doctors and nurses properly filled without fraud\textsuperscript{38}. Learning from the experience of Bamako, it is important that local decision-making is focused more to allocating the revenues that will be expended across a menu of options, rather than agreeing to disburse the funds. If the community cannot agree what to spend the money on, then the funding would not be made available for disbursement.

\textit{Paying providers}

The primary types of providers to be paid are private pharmacies in the vicinity of the health centers. In setting up the scheme, the Ministry of Health will discuss with the pharmacists a mutually agreed reimbursement tariff for the essential medications. The tariff would seek to cover their costs of efficient procurement and dispensing. For fuel, special vouchers for 5 litres each will be issued to the garage for furnishing the fuel. As the design is refined, procedures for reimbursing the pharmacies and garages will be developed.

To pay the providers, one issue has to be taken into consideration is moral hazard. Moral hazard is defined as "the tendency of individuals, once insured, to behave in such a way as to increase the likelihood or size of the risk against which they have insured." Moral hazard refers to the danger that insured individuals, having paid a premium in advance, will demand more services than they would have had they not been covered by insurance\textsuperscript{36}. Moral hazard thus results in an "over" consumption of health resources. Generally, insurance systems must develop safeguards to reduce moral hazard. Frequently used methods include co-insurance (required contributions from the insured individual for his or her coverage) and deductibles (an initial amount per illness episode which must be paid by the insured individual before the insurance covers the remainder of expenses). In our case, introducing higher copayment may not be necessary because the safeguard mechanism has been set up in order to receive the benefits from the health insurance. To obtain
malaria or pneumonia drugs, health professionals (physicians or nurses) act as gatekeepers. Only those who really need the drugs will receive the voucher to get the medicine from private clinics. And for emergency referral, the community midwives and physicians are on the frontline to decide whether the referral is needed or not. To encourage the enrollment of the health insurance and the utilization of health services, we suggest keeping the current copayment unchanged.

However, the health insurance scheme does not necessarily improve the quality of the services. It is critical to design incentive payment to motivate providers to provide services that are under-utilized. Pay for performance has been proved as a successful program in both developed and developing countries (such as Rwanda, Haiti, and Afghanistan).

By designing an insurance scheme to provide additional funding at health center level this provides the opportunity to provide financial incentives to improve of clinical services. Health professionals (doctors, nurses, CHNs) could be rewarded for identifying the need and providing critical services, such as increasing TB compliance, pre-natal checkups, referral of obstetric emergencies, etc. For those who provide the quality services, a certain amount of monetary incentives will be provided, for those who don’t there are no such rewards. The indicator and the amount of incentives would be decided based on detailed discussion. To make the incentive effective, it entails auditing records at the health center to check the consistency between diagnoses and treatments, the waiting time of patients to be seen, and the percentages of patients treated according to guidelines.

**Proposed pilot project**

As an initial pilot project, the government should consider selecting a non-urban site in the Western Region. This region was suggested because communications and purchasing power tend to be more favorable than those in other parts of the country. A subsequent pilot will consider an urban area. As there are fewer CHNs for urban areas, other workers will have to be hired and supervised by the Ministry (e.g. Regional Health Team) to manage enrollment. The pilot will start with working populations and their families, and then extend it to the rest populations who have a lower ability to pay. The pilot will provide the experience to refine the cost and utilization estimates and enrollment and reimbursement procedures.

Though we would have liked to have differential premium based on household income, to ease the implementation we plan to use the three-tiered premium among people based on gender, age, location, and the type of job because the identification of poor is challenging in the pilot study. With the maturation of the health insurance scheme, further development of setting premium will be considered (e.g. progressive premium, and having international donors to subsidize premium for poor regions and/or poor families).

**Site visit to Rwanda**
MOH officials have explored the feasibility of approximately three Gambian officials to visit Rwanda for about 5 workdays to observe the community-based insurance and related reforms (such as incentive schemes) in operation in that country. In view of the combination of political and technical issues required for a successful health insurance scheme, we encourage the Ministry to recall that such a delegation include both technical and political officials. The technical officials would, ideally, include staff who would be involved in the implementation of the proposed pilot schemes, while the political officials would be ones with the vision and ability to obtain political and financial support for the proposed scheme.

**Health insurance options**

As the first step of setting up the health insurance, we encourage the Ministry of Health to focus on demonstrating its feasibility, testing and refining procedures as needed. Specifically, we suggest the Ministry consider the following options:

1. **Premium:** We propose premiums of $20 (D600) per adult man per year who is employed in formal sectors or formally self-employed (i.e., in an activity involving some government license), $4 (D120) per adult man for the rest men, and $1.5 (D345) per child and adult female per year. The premium would average $3.09 (D92) per person. This simple system should facilitate implementation of health insurance schemes in the pilot study in the Western Region. In the future expansion of health insurance, further consideration of more complicated mechanisms to collect the premium is needed, such as premium will be set based on the need and the demand (e.g., community rating) and affordability (e.g., household income) of subset of population, and the cost of services in the local areas. Additionally, mechanisms to identify and subsidize poor families should be developed, so that government or international donors will subsidize the premium for them to ensure that all members of the population are enrolled without hardship.

2. **Services covered:** In this proposed health scheme, we focus on three services: malaria drugs, pneumonia drugs, and obstetric emergency. In the future, services will be expanded, based on the adequacy of the funding and the need of the services. According to our calculations, the average premium of $3/person/year would allow more services to be covered besides the three services mentioned above. Certainly, with the expansion of the coverage of the services, the premium will increase. Also, the additional resources mobilized through health insurance could be used to strengthen the health system. This could be done by channeling some resources to health centers overall.

3. **Role of the government and international donors:** The government assumes the major role of the stewardship in the health system. In the pilot study, the government is involved only in management of funding. However, if the health insurance were scaled up at the national level, the government would take additional roles of providing a subsidy to poor families and establishing a health-financing agency to manage the links between the revenue collection, risk
pooling, and purchasing of health services. Similarly, the international donors could also take a role similar to that taken by the government as a financing and stewardship agent.

In sum, designing and improving health insurance scheme is a long process. The scheme will need to be modified to accommodate the changes of needs for health services and the management capacity of insurance in the long run.
References


