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**Achieving Health Millennium Development Goals
(MDGs) in Africa:
The Role of National Health Insurance Schemes**

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First draft, April 1, 2008
Second draft, April 7, 2008

Analytical Report Prepared for UNECA, Addis Ababa, Ethiopia

Summary

The report identifies proven interventions for achieving health MDGs in Africa. Next, it links the interventions to health outcomes through a health production function. Effective mechanisms for financing the interventions in the short-run are explored, with a focus on the role of social health insurance. It is concluded that national or social insurance has a limited role in achieving health MDGs in Africa over the next seven years. However, it can play an important supplementary function. Revenue from general taxation is recommended as the main financing option. This revenue is proposed to finance free basic health care in public clinics in rural and slum areas, with health care services at higher levels of the public system being funded mainly by social insurance. Additional supportive recommendations in areas of private insurance and institutional reforms are offered.



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1 Introduction

The Millennium Development Goals

In 2000, the United Nations mandated member countries to work towards achieving eight key development goals by 2015, i.e., within the first fifteen years of the 21st Century. The goals were named (and have become popularly known as) the *Millennium Development Goals* (MDGs) because of the strong emphasis that the UN placed on making exceptional progress in key areas of human development at the dawn of the third millennium. The progress made was to be evaluated using 1990 as the baseline.

The MDGs are closely related and are worth stating at the outset in the order in which they were originally formulated (see, e.g., Deolalikar, 2004):

- i. Eradication of poverty and hunger
- ii. Attainment of universal primary education
- iii. Promotion of gender equality and empowerment of women
- iv. Reduction in child mortality
- v. Improving maternal health
- vi. Combating HIV/AIDS, malaria, and other diseases
- vii. Ensuring environment sustainability
- viii. Development of global partnerships for development.

Associated with each goal, are time-bound targets that are to be achieved between 1990 and 2015. As is evident, MDGs 4-6 above, are health related. In particular, and remarkably, the three goals mostly concern the *reproductive* health of the population, a dimension of health that has been neglected for a long time in low-income countries. As an example, interventions that increase the quality and uptake of reproductive health services such as family planning, prenatal and postnatal care, child immunizations, and safer sex practices should substantially improve prospects of achieving MDGs 4-6. This report presents and discusses interventions and mechanisms for attaining *health* MDGs in the Africa region by 2015, with a focus on the role that national health *insurance* schemes can play towards that end.

Health MDGs and the associated targets

Wagstaff et al. (2006) state the health related MDGs as follows:

Goal 4 – reducing child mortality. The target is to reduce by two thirds between 1990 and 2015 the under-five mortality rate, equivalent to an annual rate of reduction of 4.3 percent.

Goal 5 – improving maternal health. The target is to reduce by three quarters between 1990 and 2015 the maternal mortality ratio, equivalent to an annual rate of reduction of 5.4 percent.

Goal 6 – combating HIV/AIDS, malaria, and other diseases. The target is to halt and begin to reverse the spread of these diseases by 2015.

The above three goals are the strict health MDGs. Although in their classification of MDGs, Wagstaff et al (2006) exclude goals (i) and (ii) above from the definition of health-related MDGs, even these two are health related, because poverty, and gender equality and empowerment of women have a strong bearing on the health of individuals and communities. Thus, even though to conserve space, attention in the report is on interventions for attaining health MDGs, sight is not lost of the effects of other interventions in realizing a particular health MDG.

Linking health outcomes to health service consumption

The existing literature on health MDGs (and the mechanisms for achieving them) lacks an explicit model for linking utilization of health services to health outcomes of individuals and communities (see e.g., Wagstaff et al., 2006; Deolalikar, 2004). Thus for example, when researchers working in the area of health care demand urge policy makers to expand access to basic health care as a strategy for improving health, it is not possible for them to *also* demonstrate how health outcomes will be affected by improved access. This state of affairs reduces the policy value of recommendations from research stations. In the same vein, when policy makers advocate for increased allocations of scarce resources to health sectors (away from other sectors), they often do so in the absence of information as to the impact such reallocations on both health and growth. This state of affairs is not conducive to efficiency in the economic management of nations. Needless to say, huge sums of money can be spent on health services without improvements in health. It is also possible for a country to achieve all the health MDGs within the time frame stipulated by the UN, and still remain trapped in a low standard of living. An instance of this situation is when healthy people cannot find jobs, or schools to attend, because investments that create employment and training opportunities were not made at the right time or were neglected altogether.

Several key messages emerge from the above observations. The first is that policy makers cannot afford to ignore efficient management of the *overall* economy in pursuit of health MDGs or of any MDG.

The second message is that policies for achieving MDGs must be formulated and implemented on the basis of sound research. In this connection it is instructive to bear in mind an observation due to Pande (2004). In a review of MDG-related papers prepared for the ABCDE (Annual World Bank Conference on Development Economics) in 2004, Pande noted the charm of development economics. “For academics, the field of development economics is a seductive discipline in that it offers those working in it the possibility of making a difference. However, making a difference also tends to require a partnership with policymakers in institutions that have resources, and political clout.” The third message is that the partnership between researchers and policymakers will make a difference in people’s lives if in pursuit of the MDGs, this partnership promotes good research and efficiency in the management of economies.

Equity in health care and health outcomes

Economic models that link health services to health outcomes merely show the causal relationships between health and the health inputs provided by nature, the government, households and individuals. The models say nothing about the identity of individuals in society who receive the inputs. All that can be inferred about this issue in a market economy is that people with ability to pay will have access to health-improving inputs and technologies. If health services and products that promote the achievement of health MDGs are allocated on the basis of the ability to pay, unacceptable inequalities in health care and health outcomes can arise.

Indeed, by its very nature, the market allocation of basic health care packages would generate socially unacceptable inequalities because income (the means by which individuals acquire basic packages) is typically unequally distributed among households. The literature on MDGs is generally silent on the need to impose equity requirements on policies designed to achieve MDGs. This issue, i.e., equity in health care and health outcomes, is probably the most important consideration in the design and implementation of interventions for achieving health MDGs. Without this equity requirement, a country can easily achieve the UN mandated health goals by 2015 by pursuing interventions that benefit only certain regions or social groups. For example, health investments in populous regions can put a country on MDGs track, leaving disadvantaged regions off the track for decades. Many African countries risk being in this scenario. Worse still, international pressure on countries to achieve health MDGs, particularly when the pressure is in form donor conditionality, can lead countries to sacrifice equity in health outcomes.

In order to achieve health MDGs *with* equity, mechanisms for ensuring broad-based distribution of health-improving inputs and technologies in society should be developed and promoted. Attaining MDGs with equity is closely linked to the hotly debated and controversial issue of how health services in society ought to be financed.

Health Care Financing in Africa: Health Insurance and Health MDGs

From the 1960s to 2000, health services in Africa were financed mainly with revenue from general taxation, supplemented by income from user fees. Health insurance schemes covered a tiny section of the population. After unfavorable experience with user fees in the 1980s and 1990s during the structural adjustment era, many African countries de-emphasized but did not abandon the system of user fees as a supplementary method of financing health care. The same financing system prevailed after the advent of the MDGs, with national health insurance schemes continuing to play a *minor* financing role, in contrast to the revenue from general taxation. However, even though informally, user fees continue to be a non-negligible source of revenue for health facilities in many African countries, the MDGs have created a new global impetus to abolish them. For example, in a recent report on maternal health, the House Commons (2008) has called for the abolition of user charges for health care, especially in low-income countries in order to facilitate the attainment of health MDGs. The House of Commons Report (p.7) states, “DFID should continue to support the abolition of user charges for health care.” In their recent initiative on mechanisms to address inequalities in health care, the World Bank (2008), has called for subsidization of health insurance, i.e., providing private health insurance to the poor at below market premiums. However, a sizeable number of the hardcore poor, and the poorest of the poor cannot even afford subsidized insurance, which gives credence to the House of Commons call to abolish user charges for health care altogether.

The only way to do this however is to implement national social health insurance schemes under which everyone will have access to basic health care regardless of the ability to pay.

The critical question is not whether the existing health care financing arrangements in Africa are appropriate for achieving health MDGs, but whether such arrangements can be reformed in favor of social health insurance. A related question is whether health MDGs have properties that make social health insurance more pertinent as a health care financing mode than before the pre-MDG era. This important question is taken up in later sections.

Social values, politics, economics and health MDGs

Health care financing is one area in health economics where principles of equity, efficiency, and cost-effectiveness appear to provide little guidance as to how countries actually decide to finance health care for the populace. However, social values, tradition and politics, which should count less than findings from technical economic analysis (since this is an economic issue), in health care financing decisions seem nonetheless, to matter a lot in a country's choice of the method through which basic health care packages of the population are financed. For example, social health insurance programs in much of Western Europe (see Carrin et al., 2003) are based on social solidarity values and traditions in health care that have evolved over the centuries, rather than on the economic principle of efficiency, that was the cornerstone for the widespread adoption of user fees in Sub-Saharan Africa during the era of structural adjustment policies in the 1980s (see Shaw and Ainsworth, 1995). Moreover, the argument that user fees are cost-effective, e.g., over social health insurance, would not receive much weight in the choice of health care financing methods in many European and Latin American countries. Interestingly, while the argument that a system of user fees is more cost-effective than social health insurance in the financing of health services might find support in the United States, for example, the reverse argument, that social health insurance is cost-effective (or equitable) would find little support there due to political reasons. The health economics literature (see e.g., Culyer and Newhouse, 2000) and lessons from experience with both user fees and social health insurance (see Carrin, 2002) suggest that technical economic analysis alone is unlikely to move policymakers to invest in a sustainable system of financing interventions for achieving health MDGs. However, multidisciplinary research in this area is likely to yield more acceptable policy recommendations. Even so, it is still possible to show the contribution that technical economic analysis can make in the debate as to how interventions for achieving health MDGs in Africa should be financed.

The existing health care financing systems can be changed in favor of social health insurance, for example, if it can be demonstrated that national health insurance schemes are associated with significant improvements in the health of the population. A challenge however exists as to how this can be demonstrated given that national health insurance is not an input in the production of health. A model that links health status to health inputs greatly facilitates such a demonstration (see Section 4). The model is presented and discussed after reviewing background information on health status and performance towards health MDGs in Africa, and after a presentation of the interventions that can be implemented to achieve health MDGs.

2 Health Status and Health MDGs in Africa Relative to other World Regions

A useful way to provide some insights into health status in Africa, and the track record of policy makers there towards the achievement of health MDGs is compare the African situation with situations in other world regions. Table 1 shows changes in child health status (measured in under-five mortality rate between 1990 and 2003 for five major world regions. As depicted in the table, Sub-Saharan Africa recorded the lowest measure of health status in both years (had the highest under-five mortality rate), and the least improvement in health status (experienced the smallest decline in the under-five mortality rate) between 1990 and 2003, the period over which progress in achieving MDGs has already been assessed.

Although the absolute reduction in child mortality between 1990 and 2003, for Sub-Saharan Africa is the same as for the all developing countries, the percentage reduction for the African sub-continent is the lowest, indicating that the region has made least progress towards attaining the health MDG-4 (improving child health). It should also be noted that Africa has also made the least progress in achieving other health MDGs (Wagstaff, et al., 2006). In contrast, Latin America, the Middle East and East Asia, in that order, have made the most rapid progress towards the achievement of MDG-4. What is worrisome about Africa in connection with health MDG-4 is not the little progress that has been made towards attaining health MDG-4, but that the continent is far behind other regions. The immediate question here is what is specific about Africa or other similar world regions to account for this huge difference in performance.

We hasten to hypothesize that financial and related barriers to child health services in Africa are the most important determinants of differences in child health trends shown in Table 1. We further hypothesize that health care financing reforms in Africa such as the implementation of national health insurance schemes that would make basic health care services broadly available to households could contribute significantly to the narrowing of child health inequalities that now exist between Africa and other world regions at roughly similar stages of economic development.

Table 1: Child health in developing countries, 1990-2003

Region	Under-five mortality rate (per 1000), 1990 (1)	Under-five mortality rate (per 1000), 2003 (2)	Mortality decline, 1990-2003 (3)	
East Asia and Pacific	59	41	18	30.5
Latin America	53	33	20	37.7
Middle East and North Africa	77	53	24	31.2
South Asia	130	92	38	29.2
Sub-Saharan Africa	187	171	16	8.6
All developing countries	103	87	16	15.5

Source: Glewwe and Miguel (2008), columns (1) and (2); own calculations, column (3).

Another internationally comparable measure of child is the burden of disease among children, expressed in disability adjusted life years (DALYs). A DALY accounts for effects of both illnesses and premature mortality on the healthiness of a life lived. There are two key points to bear in mind when interpreting a DALY. First, a life lived with disability is less valuable than a life lived without

disabilities, or equivalently, a year lived with disabilities is shorter (in terms of healthy time), than a year lived free of disabilities. In other words, disabilities reduce longevity of a healthy life. Second, the longevity of a healthy life is bounded because humans are mortal. Thus, although longevity of healthy life can be reduced by *premature* death it cannot be reduced by death due to old age. Third, apart from disabilities, premature death is the other factor that shortens the potential duration a healthy life.

The DALYs for children take into account disabilities and premature death in calculating the number of years of healthy life that children can expect to live up to age 5. The *burden of disease* for children represents the DALYs lost (healthy years lost by children at age 0-4) due to disabilities or premature death resulting from *diseases*. A child with zero DALYs lost is a child who has lived 4 years of healthy life. In contrast, a child with four DALYs lost is a child who died prematurely at birth. In the same vein, a child with say, two DALYs lost, is roughly one who has had incidence of disability.

The DALYs for children lost in Africa as a proportion of the total DALYs lost in all world regions represents the burden of disease among Africa children. Similarly, the DALYs lost due to malaria, for example, represents the burden attributable to malaria relative to that due to other diseases. Table 2 shows disease burdens for children aged (0-4 years) by disease category and world region.

Table 2: Estimated burden of disease (percent of healthy years lost) for children in developing countries, 2001

Children Age 0-4 years	All	East Asia and Pacific	Latin America &	Middle East and North Africa	South Asia	Sub-Saharan Africa
Communicable Diseases, of which:	52.4	30.8	23.6	35.1	48.7	72.6
AIDS	2.5	0.3	0.8	0.1	0.3	6.0
Diarrhea	12.6	10.8	8.0	11.1	14.5	12.8
Pertussis	2.7	0.9	1.5	1.5	2.7	3.8
Measles	4.0	2.1	0.0	1.4	3.1	6.6
Tetanus	1.3	0.7	0.1	0.5	1.8	1.6
Malaria	8.5	1.4	0.3	2.7	1.3	20.2
Respiratory infect.	14.8	10.5	7.5	7.5	18.7	14.7
Perinatal	21.1	28.8	26.7	19.8	26.3	12.4
Nutrition problems	4.4	4.5	3.7	5.8	4.3	4.1
Non-communicable Illnesses	18.6	30.3	41.8	33.4	17.3	8.4
Injuries	3.6	5.5	4.1	5.9	3.3	2.5
Percent of healthy years lost	15.1	8.4	8.6	11.3	16.8	28.6

Source: Glewwe and Miguel (2008).

As can be seen from Table 2, among children aged 0-4 years, in low-income countries, 15.1% of DALYs (disability adjusted life years, i.e., “healthy years of life”) are lost due to morbidity and premature mortality; where 15% is the weighted sum for the disease burden columns. Communicable diseases (AIDS, diarrhea, pertussis, measles etc) account for about 52% of this overall burden. However, in Sub-Saharan Africa, communicable diseases account for about 73% of the overall disease burden in that region. Three clusters of diseases (communicable, malaria, respiratory, and perinatal illnesses) are the main sources of the disease burden among African children. Generalized access by households to interventions for treating and preventing these diseases should go a long way to improving child

health in Africa. It should be noted that the technologies for curing and treating these diseases have been available for a long time and are relatively inexpensive. However, organizing health care systems to effectively deliver these technologies to the general public has been a major problem, particularly making the technologies affordable to the populace.

It is worth noting that the overall disease burden among children in Africa is twice the average for all developing countries and more than three times the burden for East Asia and Latin America. Greater effort and more resources are needed in Africa to achieve the health MDG-4 than in any other world region.

The burden of HIV/AIDS is also in Africa relative to other world regions. Table 3 shows that in 2004, the HIV prevalence, the number of new infections and the number of AIDS deaths, are all highest in Sub-Saharan Africa. Thus the challenges of achieving health MDG-6 (halting and reversing the spread of HIV/AIDS by 2015) are again greatest in Africa. As can be seen from Table 3, nearly 70% of AIDS death that occurred worldwide in 2004 were in Sub-Saharan Africa. Making ARV treatment and prevention information and technologies affordable to households in Africa can play a significant role in halting the spread of HIV/AIDS and increase in the mortality associated with the disease.

Table 3: Estimates of HIV Infections and AIDS Mortality by Region, 2004

Region	Persons Living with HIV/AIDS	Number of New Infections in 2004	Number of AIDS Deaths in 2004
Sub-Saharan Africa	25.4 million	3.1 million	2.3 million
South and Southeast Asia	7.1 million	890,000	490,000
Latin America and Caribbean	2.1 million	293,000	131,000
Eastern Europe and Central Asia	1.4 million	210,000	60,000
East Asia	1.1 million	290,000	51,000
Middle East and North Africa	0.5 million	92,000	28,000
North America, Western Europe and Oceania	1.6 million	70,000	23,200
Total	39.4 million	4.9 million	3.1 million

Source: Derived from World Bank (2005, p. 5).

The world disparities in maternal health are alarming. In Niger for example, one in seven women can expect to die in childbirth compared to one in 8,200 in UK. In general, the risk of maternal death is highest in Africa (almost a maternal mortality ratio of 1000 per 100,000), a situation that has remained practically unchanged for the last fifteen years (House of Commons, 2008). Despite this devastating erosion of women's health human capital, the technologies for treating and preventing maternal morbidities are available to the medical community. The five major causes of maternal mortality, namely, hemorrhage, infection, unsafe abortion, eclampsia and obstructed labor, can be treated or prevented if births are attended by skilled health professionals (House of Commons, 2008, p. 10). Currently, only about 40% of births in Sub-Saharan Africa are attended by skilled health workers. Thus, expanding service coverage for obstetric emergencies should contribute significantly to the achievement health MDG-5 (improving maternal health). Specifically, the measure would contribute to a reduction by three-fourths, the maternal mortality ratio by 2015.

3 Interventions for achieving Health MDGs

This section presents a prototype of interventions and programs that can be implemented to address the health problems highlighted in Section 2. Needless to say such interventions would facilitate the achievement of health MDGs in Africa. However, there is an issue as to whether there exist health care technologies that can be implemented to reduce the huge disease burdens in Africa due to mortalities and morbidities, especially among children and mothers. This issue is addressed in Levine (2007). In a study of “what works in international health”, Levine found that there exists proven interventions for improving population health in developing countries at relatively low cost (see also Schultz and Strauss, 2008; and Jamison et al. (2006).

The successful interventions documented by Levine (2007) had five features in common, namely: (i) they were implemented on a large scale; (ii) their investment was sustained for a sufficiently long period, at least 5 years; (iii) they were cost effective and received budgetary support from the government; (iv) they received donor resources and technical assistance and (v) they had high level political support.

Briefly, the interventions were financed and implemented in ways that made them broadly available to target populations on a sustained basis. In what follows, I present tested interventions for improving child health, reducing maternal mortality, and halting and reversing the spread of HIV/AIDS from around the world that are *also* feasible in Africa. The evidence supporting the effectiveness of the interventions presented comes from experimental studies and/or from careful statistical analysis of data from relatively large surveys. Interventions supported by weak evidence base, e.g., that derived from small cross-sectional surveys or uncertain analyses were excluded. Needless to say, the interventions proposed have to be adapted to institutional and environmental conditions of specific countries in Africa.

Interventions to improve child health

In a randomized evaluation of a large pro-poor program in Mexico (*Progresa*), the following interventions were found to have a significant impact on child health (see Levine, 2007, pp. 65-71; Parker et al., 2008, p. 3975).

- Basic hygiene
- Family planning
- Prenatal, childbirth, and postnatal care
- Supervision of nutrition and support for better family diets
- Vaccinations
- Prevention and treatment of outbreak of diarrhea
- Anti-parasite treatment
- Prevention and treatment of respiratory infections
- Prevention and control of tuberculosis

- Prevention and control of high blood pressure and diabetes
- Accident prevention and first aid for injuries
- Community training for self-help health care.

The above interventions were implemented in poor villages in Mexico and had the following two additional features. First, health care in public health facilities was provided free of charge. Second, a fixed amount of cash (US\$ 11 per month) was transferred to *mothers* for improved food consumption but on condition that mothers and children were attending maternal and well-baby clinics. Although the package of services depicted above is directed primarily at children, it should be recognized that elements of the package benefit pregnant and lactating women directly. In many cases, maternal health interventions are the same as child health interventions. The delivery of these services was integrated in Mexican *Progresa* program (see Gertler, 2004).

Because the interventions from the Mexican example were randomized between the treatment and control villages, the evidence that the interventions improved child health is quite credible. To avoid political problems associated with implementation of such interventions, the treatment villages received the interventions in the first phase of the program while the control villages benefited in the second phase.

Since these interventions are known to work, they can be implemented without the extra expense of collecting baseline data for evaluation, and without the need to design treatment and control groups. However, in transplanting the interventions elsewhere, the institutional structure of the new environment should be taken into account. It should also be borne in mind that the interventions were implemented in Mexico as a cluster, rather than one intervention at a time. The cost of *Progresa* amounted to about 20 percent of the Federal budget, of which 9 percent was spent on program administration.

Other similar programs, but whose information about positive impacts come from statistical methods and a variety of survey data rather than from randomized experiments are described in Levine (2007) for Southern Africa (measles control), Morocco (controlling trachoma), Democratic Republic of Congo (immunization against childhood diseases), Egypt (diarrhea control), Poland (curbing tobacco use), and Asia and Sub-Saharan Africa (guinea worm control).

Interventions to reduce maternal mortality

The first set of interventions presented below was tested in Sri Lanka (South Asia) over a long period of time dating back to the 1930s, while the second set is based on experiences from Honduras, Central America. The third set of interventions come from Bangladesh (South Asia).

Sri Lanka's interventions. Sri Lanka has halved maternal deaths at least every 12 years since 1935. As a result, maternal mortality ratio has declined from 500-600 deaths per 100,000 live births in 1950 to 60 deaths today.

One major reason for the above outcome is that in Sri Lanka today, 97% of births are attended by skilled health workers in contrast to 30% in 1940. Other factors responsible for this success include (see Levine, 2007, pp. 41-46).

- Widespread access to maternal health care, which is provided free of charge by the state
- Integration of preventive and curative health services, especially in rural health facilities

- A referral health care system – supported by a reliable fleet of ambulances that ensures that obstetric emergencies are properly and speedily handled
- A large number of highly trained midwives, with a resident midwife serving a population of 3,000 to 5,000, both in clinical and community settings
- Efficient civil registration of births and deaths
- Health education and targeting of vulnerable groups
- Quality maternal health services

Because of the implementation of the above simple measures to improve maternal health, maternal mortality ratio in Sri Lanka fell from 2,000 per 100,000 in 1930s to about 60 in 2007. The Sri Lanka's experience shows that broad availability and equitable utilization of reproductive health services, combined with the use of cost-effective cadre of health professionals to deliver the services, can contribute strongly to a reduction in maternal deaths in a high mortality setting such as the Sub-Saharan Africa.

Honduran experience. Maternal mortality ratio in Honduras fell from 182 deaths per 100,000 in 1990 to 108 in 1997, a remarkable achievement for a poor country. The interventions responsible for this success were:

- Inauguration of broad-based community health clinics, with traditional birth attendants delivering obstetric care under supervision of auxiliary nurses
- The construction of maternity waiting homes attached to public hospitals
- The establishment of birthing centers supervised by nurse-midwives in rural
- Expansion of the basic health center and hospital facilities to make them more widely available
- Training of traditional birth attendants and public health system staff to recognize high risk pregnancies, and deal with routine and births and obstetric emergencies
- Traditional birth attendants were encouraged to accompany women with emergencies to hospitals
- Local communities were encouraged to describe and identify solutions to their own health problems and, through newly implemented decentralization policies, were given more decision-making authority, with this governance reform receiving support from donors.

The above reforms were associated with a large reduction in maternal mortality rates in rural areas of Honduras between 1990 and 1997. The reduction came from better referral of women with complications before, during and after delivery but also from an increased number of women delivering under sanitary conditions. The lessons from Honduras and Sri Lanka on interventions to reduce maternal mortality indicate that these measures can be effectively implemented in poor regions such as the Sub-Saharan Africa. However, the two examples come from small countries, where logistics of delivering basic maternity services, and of training health workers, such as community nurses and traditional birth attendants may not be as challenging as the logistics required to scale up the interventions in African region. Even so, the examples are relevant in specific African countries

because the scale of the effort and sizes of budgets required to implement the interventions would in many cases be similar to situations in Honduras and Sri Lanka.

Bangladesh's Matlab family planning program. In 1977, an experimental family planning program was introduced in the Matlab district of Bangladesh and maintained for two decades (Schultz, 2008). The program was an experiment in the sense that its interventions were initiated in 70 villages of the Matlab district, with 149 other villages of the district being unaffected by the program activities. In 1996, a comprehensive health and socioeconomic survey was carried out in 70 treatment villages and 71 control villages. Joshi and Schultz (2007) used this data, combined with pre-program information on the same villages to examine whether the program had reduced fertility or improved other family welfare outcomes such as female labor supply, female wages, child health, all of which are strongly associated with maternal mortality. Strong effects of the program were found. In particular, fertility was lower in treatment than in control villages. Moreover, other indicators that empower women and improve their health such as female wages, and child survivorship were higher in treatment than control villages. This is rare experimental evidence that family planning improves maternal health, and can therefore be implemented to achieve that purpose in other regions. The main elements of the program (see Levine, 2007; Schultz, 2008) were:

- Deployment of young, married women as outreach workers in treatment villages
- Provision of as wide a range of methods as possible to meet a variety of reproductive health care needs
- Establishment of family planning clinics in rural areas to provide clinical contraceptive services
- Provision of information, education, and communication activities to change norms about family size
- The state of the art use of mass media to reach large sections of the target populations.

The cost-effectiveness ratio of the program has been estimated at \$13 per birth averted, which is below the acceptable cut-off point in the literature. In addition to reducing surviving fertility and thus increasing maternal health, a family planning program, can accelerate demographic transition, and thus increase economic growth and help achieve other MDGs. More generally, interventions for reducing fertility and thus for improving maternal health include:

- Subsidization of home production inputs
- Subsidization of the cost of adopting new technologies
- Provision of local public health care for preventive and curative purposes
- Strengthening of property rights in favor of women and increasing their bargaining power
- Involuntary population policies such as those that enforce fertility compliance.
- For details of the above interventions see (see Schultz, 2008, p. 1261).

The experimental evidence from Bangladesh indicates that investments in family planning programs in Africa can succeed in reducing excessive fertility in the continent and empower women along many dimensions, in improving their labor market outcomes. However, the Matlab data show that a successful family planning program can increase income inequalities among women because

its positive effects on wages and asset accumulation accrue mainly to better-educated women (see Schultz, 2008).

Evidence from experimental settings: Interventions to improve general health of mothers and that of their unborn children are described in Villar et al. (2003). The interventions that have been shown to work in randomized trials include helping women to improve their diets and health as a general rule. In particular, calcium and iron supplementations during pregnancy have been shown to be effective in reducing risks of hypertension, miscarriage, and anemia but when the only problem is deficiency in these nutrients. However, when other diseases are present, the effects of these nutritional interventions are muted. In general, no specific nutrient on its own or a blanket intervention is capable of preventing or treating the major causes of maternal mortality, namely, eclampsia, hemorrhage, infections, obstructed labor, and preterm deliveries (see Villar et al., 2003). These problems must be addressed by an integrated system of reproductive health services, as in Sri Lanka.

The role of improved periconceptional nutrition in tackling maternal morbidity is particularly important. “Periconceptional nutrition” is the state of nutrition of a woman before and after conception, e.g., three months before and after conception. Nutrition status during this period is vital for the health of the mother and that of her fetus. A nutrition program targeted at newly weds and adolescent girls would improve periconception nutrition (see Costello and Osrin, 2003).

Interventions to halt and reverse the spread of HIV/AIDS

What credible policies exist to reduce the prevalence and incidence of HIV/AIDS in low-income countries, where the problem is most severe? This question has been examined in Thailand using data from a nationwide HIV-prevention program (Levine, 2007); in Uganda and Kenya using experimental and quasi-experimental data (CDC, 2000?; Thirumurthy et al., 2005), and in four other African countries using data from nationally representative demographic and health surveys. Examples of local level interventions that would succeed if implemented to halt and reverse the prevalence of HIV/AIDS are presented in an independent evaluation of projects designed to control HIV/AIDS (World Bank, 2005; see also World Bank, 2000). Information on effectiveness of interventions from the above studies is among the most robust evidence as to what works in the struggle against HIV/AIDS in developing countries. Examples of these interventions are presented below.

Thailand’s “100% Condom Program.” In 1991, the National AIDS committee led by Thailand prime minister implemented the “100% condom program”, in which all sex workers in sex establishments were required to use condoms with clients. The programs’ statistical epithet, “100%” means that using a condom in commercial sex without exception. The program essentially made commercial sex without a condom a taboo, enforced by social norms but not by law. Health officials provided boxes of condoms free of charge to sex establishments, and local police held consultation meetings with sex workers despite the illegality of prostitution in Thailand (Levine, 2007, p.9). The Thailand Government spent 2% of the overall health budget on this program. As a result of the program, condom use among sex workers in Thailand increased from 14% in 1989 to 90% in 1992. In terms of health outcomes, the program is associated with averting 200,000 new HIV infections between 1993 and 2000, a reduction in sexually transmitted infections from 200,000 in 1989 to 15,000 and 2001 and with a five-fold decline in new HIV infections between 1991 and 1995. The key features of the “100% condom program” were:

- Strong political support at the highest levels of Government
- Widespread distribution of HIV-prevention information using all available channels, particularly mass media
- Financial support from the Government and donors that allowed free distribution of some 60 million condoms annually
- Good network of accessible services for sexually transmitted infections
- Effective collaboration between different sectors (the police department, the health ministry, and provincial government) in combating the epidemic
- Near exclusive focus on the commercial sex industry.

The “100% condom program” has been replicated with considerable success in Cambodia. However, the program has three limitations. First, it focused on HIV/AIDS control using interventions that ignored the spread of the disease through non-sexual means, such as the sharing drug injections and the mother-to-child transmission. Second, it ignored non-condom use in casual sex in the general population, especially among the youth. Third, the cost-effectiveness of the program is still unknown so that it is not possible to tell whether the outcome of the program can be achieved through alternative, cheaper approaches. However, in view of its impressive performance, there is little doubt that the program is cost-effective.

Provision of antiretroviral therapy in western Kenya. Thirumurthy et al. (2005) show that AIDS patients who receive ARV treatment when their CD4 count is too low (below 35) (the control group) have much smaller survival probabilities than patients who begin therapy early (the treatment group). Moreover, early uptake of ARV reduces the intensity of HIV infection, thus helping halt the spread of the virus. The main feature of the ARV treatment in Western Kenya is that it is community-based, and is provided free of charge through donor support. Indeed, broad-based provision of ARVs does prolong lives, while at the same time reducing the spread of the virus. The ARV provision program has also enabled AIDS patients to resume their economic activities thus enabling them to work with other citizens in the fight against poverty (see Thirumurthy et al., 2005).

Other HIV/AIDS control interventions. Administration of Nevirapine to a mother at the onset of labor and to her child at the time of delivery to substantially reduces the likelihood of mother-to-child transmission of HIV (see Canning, 2006). Information received from VCT (voluntary counseling and testing) for HIV can help individuals seek ARV treatment early and adopt prevention measures. Although HIV/AIDS awareness campaigns are important, data from the demographic and health surveys (DHS) show that the knowledge transmitted through such campaigns is not linked to adoption of prevention behaviors such as demand for VCT services or use of condoms (see Gersovtz, 2005). Interventions that remove constraints on such behaviors, e.g., expansion of VCT centers or subsidization of the services provided by the centers should be considered.

Experimental evidence from Kenya (CDC, 2000?) indicates that male circumcision can reduce the spread of HIV if extended to communities where the practice is not already prevalent. Experimental evidence from Uganda suggests that provision of STI services is strongly correlated with a reduction in HIV/AIDS prevalence so that strengthening of existing STI prevention and treatment programs should contribute to the control of the epidemic.

Interventions to control malaria

Surprisingly, little solid evidence exists in the world as to an intervention that can be recommended as means to control malaria. The best but inconclusive evidence on how to control malaria comes from Brazilian Amazon basin. In 1989, the Brazilian Government initiated a large malaria control project in the Amazon basin with financial support from the World Bank. The project had three key features: (i) detection of malaria cases using a simple inexpensive diagnostic procedure (dipstick); (ii) treatment of malaria patients with new antimalarials (mefloquine and plus artemisinin); and (iii) a good health service coverage. This project is associated with a reduction in malaria prevalence in the Amazon basin from 557,787 cases in 1989 to 455,194 cases in 1996 or by about 22.5% over a period of seven years. However, the causal effect of the project on malaria prevalence cannot be measured because the project was not experimentally designed. What can be said is that accessible health facilities if stocked with effective antimalarials can contribute significantly to a reduction in malaria prevalence.

Insecticide treated bed-nets have been shown to be highly effective in controlling malaria in small scale experimental studies in Kenya, Senegal, Tanzania and other countries. However, the effectiveness of bed-nets in malaria control has not been demonstrated in a large-scale setting.

It appears that a combination of good health service coverage, supplemented by localized provision of bed-nets to households would go a long way in controlling malaria epidemic in Africa.

Interventions against tuberculosis

Tuberculosis ranks third as the leading cause of death and disability in the world. However, replicable interventions to control the disease have been documented for China. In 1991, China revitalized its tuberculosis program and launched a new control project in 13 of its 31 mainland provinces. The elements of the new TB control strategy were:

- DOTS (directly observed treatment short-course) recommended by WHO
- Trained health workers watched TB patients take their drugs at local TB county dispensaries
- Information on each patient was sent the country TB dispensary
- Treatment outcomes were sent to the national project office quarterly for feedback
- Strong political support.

Successful treatment was achieved at less than \$100 per patient. The project averted TB death at a cost of \$15-20, which amounts to an economic rate of return of \$60 for each dollar invested in DOTS interventions. As a result of this project, China achieved a 95% cure rate for new cases within two years of adopting DOTS. However, although DOTS can be scaled up at modest cost, new forms of drug resistant tuberculosis pose a challenge to this strategy, especially in Africa where resources to treat complicated cases may not be forthcoming from ministries of finance.

4 Linking Health MDGs to Interventions: A Framework

Introduction

This section presents a model that can be used to link the health outcomes described in Section 2 with the interventions discussed in Section 3. Unless this linkage is understood, it is not possible to tell how the interventions affect the health MDGs. Another key policy value of the model presented here is that it shows that the cost of the interventions, e.g., prices of health care services, are key determinants of the type and scale of interventions that can be implemented.

The preceding observation directly leads to considerations of how best to finance health-improving interventions in order to achieve health MDGs. Thus, the model is the bridge between health MDGs and technologies and resources that are required to achieve the goals. I hasten to point out that *national health insurance schemes* for financing interventions directed at achieving health MDGs cannot be properly articulated without a model that links *health* to technologies that produce it, and to the costs of the technologies. The existing literature on social health insurance suffers from this shortcoming.

Health MDGs summarize changes in health status when people use health services that are for example made available by a policy intervention, such as construction of a prenatal clinic in a village. In health economics, the analog to the change in health status following an intervention is the change in a health production function when its determinants change.

It is important to note that health is produced by individuals within households using home-produced goods, such as nutrition and shelter and using inputs from outside the home, such as medical care and drugs. Moreover, people benefit directly from improvements in their health status.

The idea that people *benefit* from the health human capital that they *produce* was first modeled by Rosenzweig and Schultz (1982) and has been used by Ajakaiye and Mwabu (2007) to analyze demand for reproductive health services. This idea embeds health production in a utility maximizing behavior of an individual. Roughly speaking, when an individual is improving her health status she is also improving her well-being, a notion that is intuitively appealing.

A framework of the linkage between health and health interventions

The idea of a health status that is embedded in a *utility function* can be expressed in an equation form as follows.

$$U = U(X, Y, H) \quad (1a)$$

where,

U = utility function (an indicator of an individual's level of well-being);

X = a health neutral good, i.e., commodity that yields utility, U , to an individual but has no direct effect on health status of an individual; an example of such a good is clothing;

Y = a health-related good or behavior that yields utility and also affects health status, e.g., smoking, alcohol consumption, or preventive activities;

H = health status of an individual.

The health production function is given by

$$H = F(Y, Z, \mu) \quad (1b)$$

where,

Z = purchased market inputs such as medical treatments and immunizations that affect health status directly;

μ = the component of health due to genetic or environmental conditions but uninfluenced by behavior of an individual.

An individual maximizes (1a) given (1b) subject to the budget constraint given by equation (2)

$$I = XP_x + YP_y + ZP_z \quad (2)$$

where,

I is exogenous income;

P_x, P_y, P_z are, respectively, the prices of the health-neutral good, X (such as clothing), health-related consumer good, Y (such as quitting smoking) and health investment good, Z (e.g., immunization).

Notice from equations (1a) and (1b) that the health investment good is purchased for the purpose of improving health so that it enters an individual's utility function only through H . Also notice that expression (2) says that expenditure on X, Y and Z exhausts the household income, I .

Equation (1b) describes an individual's production for health. The health production function in (1b) has the property that it is imbedded in a constrained utility maximization behavior. Equations (1a,b) and (2) can be manipulated to yield the following health input demand functions

$$X = D_x(P_x, P_y, P_z, I, \mu) \quad (3.1)$$

$$Y = D_y(P_x, P_y, P_z, I, \mu) \quad (3.2)$$

$$Z = D_z(P_x, P_y, P_z, I, \mu) \quad (3.3)$$

Key observations on the framework

The above framework is that although it is formulated at the level of an individual it can also be specified at the household, community, national and regional levels.

In equations (3.1-3.3), the symbols, X, Y and Z represent health improving interventions that directly influence the achievement of health MDGs.

The variables, P_x, P_y, P_z , represent the costs that households must pay in order to use the health services (D_y and D_z) that are offered by the interventions. Notice that because focus is on health MDGs,

demand for non-health goods, D_x , has been ignored. The non-health MDGs are not being analyzed directly, but see below.

The prices (P_x) of non-health goods, X , affect utilization of health services because they appear in equations (3.2 and 3.3).

The prices of non-health goods affect utilization of health services through the budget constraint (equation 2). The model helps households or governments to bear in mind (when allocating scarce resources to achieve health MDGs) that there are other goals to achieve also.

The household income, I , is the critical variable in the context of this study, because it is the variable that gives rise to considerations of social health insurance schemes in Africa. The bulk of households in Africa have low-incomes (~50% live below the international poverty line of one US dollar per day, and a similar or a higher proportion of households face high risks of falling into poverty). Thus, the majority of households in Africa cannot afford existing costs of health care. Without a *health care financing system that enables the poor to access health-improving technologies and services*, health MDGs in Africa will not be achieved. However, whether not that financing system should be a national health insurance scheme or some other mechanism is a different matter. It is worth repeating that Equations (3.2 and 3.3) constitute the framework for discussing the various options for financing health services when primary focus of governments and international community is achieving health MDGs. These equations will be used in the next section to discuss the role of national health insurance schemes in attaining health MDGs in Africa.

It should be noted that the quantities of health inputs (Y and Z) in Equations (3.2 and 3.3) are the determinants of health in Equation (1b). Thus, there is a natural linkage indeed, between health status and health interventions. It can be seen that when predicting health status one is also at the same time, predicting the quantities of health inputs required for that health status. This is in contrast to standard health care demand models that predict utilization of health inputs without asking what is being achieved in terms of health outcomes.

The unobservable variable, μ , in Equation (1b) and the fact that the health inputs there (Y and Z) reflect the choices of households and policy makers, means that it is very difficult to statistically identify the effects of Y and Z on health. Although statistical methods can be used to overcome this identification problem, they are in many cases not reliable. This is why in Section 3 it was difficult to associate interventions with particular outcomes. Appropriate estimation methods (experimental and non-experimental) should be used to estimate Equation (1b). Availability of relevant data is a major challenge in the estimation of Equation (1b). This issue is taken up a later in the report.

All the interventions presented in Section 3 can be grouped into health inputs Y and Z in accordance with Equations (3.2 and 3.3). As already indicated, the Y -interventions relate to behavioral inputs such as family planning practices, sexual practices, exercising, smoking, breastfeeding, dietary habits and so on, while the Z -interventions concern market inputs such as food, medical treatments and immunizations. This classification greatly simplifies the analysis of policies for achieving health MDGs.

Equations (1b), (3.2) and (3.3) can be estimated with micro data, such as the welfare monitoring surveys (living standard measurement surveys), and demographic and health surveys, combined census data where available. Demographic and social economic variables such as age, education, area of residence and income can be used as controls during estimation. Moreover, data collected at higher levels such as the district, a province or a country can be processed and adapted to estimation needs of the above equations.

5 Financing Interventions for Achieving Health MDGs: The Role of National Health Insurance

Introduction

Investments on interventions for achieving health MDGs should have the first call on health budgets in Africa. These goals will not be achieved if sufficient investments are not made to make basic health care services broadly available to the population. However, the services can be available and still remain unused or under-utilized due to financial barriers such as the user charges. As demonstrated in Section 4, if health services are not used they will not improve health.

Full, complete health insurance enables households to access health care services free of charge at the time of need. Under this financing arrangement, all households have equal access to health care regardless of ability to pay. Progress towards attainment of health MDGs has been made in countries where basic health services are broadly accessible to the poor. National health insurance facilitates such access. However, this form of insurance is by no means the only mechanism that can guarantee the poor access to basic health care and must therefore be considered against other health care financing alternatives such general tax revenues and subsidized user charges.

It is helpful to explain early the basic ideas and practices behind health insurance. There are three parties to an insurance scheme: the *insured* (the payer of insurance premiums), the *insurer* (the intermediate receiver of the premiums paid by diverse payers), and the *service provider* (final receiver of the amount paid in premiums for health services rendered to the insured). Three points are worth noting about a health insurance scheme.

First, the final amount that an insurer transfers to the service provider is less than the amount that the insurer receives in form of premiums. This is so because the insurer keeps part of that income to cover the cost of managing an insurance scheme (e.g., expense on bookkeeping and security). This management expense (the loading charge) is an extra cost to the premium payer (the insured) for any service he receives. Thus, insurance is *more* burdensome than direct payments such as user charges for health care. However, the 'extra management cost' is more than justified by the fact that insurance guarantees availability of health care when needed. An individual is willing to pay for this assurance of treatment in the event of illness because of a commitment to being in *solidarity* with other people against the *risk* of not being treated when ill. In the absence of solidarity (pooling of individual risks), an insurance scheme is not possible.

The second point is that everyone must pay insurance premiums in order to receive coverage against the risk of not getting care when ill or injured. In this sense, medical cover under insurance depends on ability to pay. However, because people are in solidarity against poor health, society pays premiums for those unable to pay. The revenue from general taxation is used for this purpose. This insurance situation parallels the case where user fees are waived for those unable to pay. The only difference is that the waiver here occurs at the time of service use. Thus, poor people must bear the risk that the waiver may not be given, in contrast to the insurance case where waiver is guaranteed.

The third point is that payments of premiums to insurers, the transfer of these payments to service providers, the management of an insurance scheme, and provision of quality service to members of the scheme require complex institutional and organizational arrangements. An insurance scheme can fail to emerge or to perform properly because certain institutions or organizations are lacking.

Moreover, many of the institutional and organizational structures associated with insurance schemes such as insurance law, insurance brokers, and code of ethics in public and private service take decades to develop.

To summarize, health insurance schemes eliminate the financial barrier to usage of basic health care. If the schemes are compulsory or national, all citizens have equal access to health care along a *financial* dimension. However, lack of money is not the only barrier to better health care or to any care. In many African settings for example, time and travel costs are major barriers to care. A national health insurance scheme may therefore not improve access to care if lack of money happens to be a minor consideration relative to time costs in consumer demand for medical care. A second non-financial barrier to access is lack of information about availability and quality of the services offered. A third barrier is under-valuation of health benefits of the services available. Thus, in reforming access to basic health care, all forms of constraints to usage must be addressed.

Are interventions for achieving health MDGs best financed through an insurance scheme?

Many of the services necessary to achieve health MDGs fall under the category of public goods or quasi-public goods, e.g., immunizations and treatment for communicable diseases. Thus, there is a strong case for *public financing* of such services. However, whether this financing should take the form of an insurance scheme is debatable. It is also an open question, whether government should provide such services, since private production of public goods can be justified on efficiency grounds. For example, the governments can contract private clinics at a fee to provide treatment for infectious diseases such as tuberculosis or measles more efficiently than public clinics can. Moreover, a multiplicity of financing arrangements might be more effective in achieving health MDGs than one uniform form of financing (see Mwabu et al. 2001). In a multiplicity of financing arrangements, a national health insurance program for example or a highly subsidized voluntary scheme can guarantee high quality basic care to the poor, with other forms of financing being used to ration services to non-poor (see World Bank, 2008).

Three criteria can be used together to determine whether a particular financing method should be preferred over other methods, namely, (i) feasibility of implementation, (ii) the extent to which it is *cost-effective*, and (iii) the degree to which it *mobilizes* resources for the health sector while at the same time offering *protection* to the poor against exclusion from basic care (see Ekman, 2004). All these criteria require substantial data to apply, and no attempt is made to use them to assess the merits of national health insurance schemes in Africa. A national health insurance scheme is ideally consistent with the third criterion above, but might not satisfy the first and the second requirements in most countries.

Health insurance schemes in Africa

Little information is available on health insurance schemes in Africa. Adopting a broad view of health insurance, Vogel (1990) classified “health insurance” in Sub-Saharan Africa, as it existed in the 1980s, into the following categories.

- I. *Government: mandated or voluntary*
 - Free health care for all citizens, e.g., in Tanzania.

- Free health care for the poor and the cost recovery for those who can afford to pay, e.g., in Ghana.
- Social Security or National Health Insurance, e.g., in Senegal.
- Government employees' health insurance fund, e.g., in Sudan.
- Discount for government employees, e.g., Ethiopia.
- Other public insurance, e.g., Kenya's National Hospital Insurance Fund.
- Mandated employer coverage of employees, e.g., in Zaire

II. *Private sector: voluntary*

- Private insurance policies bought from insurance companies, e.g., Zimbabwe
- Voluntary (self-insuring) risk pools, e.g., in Rwanda.
- Employer provided, medical care in own clinics, e.g., in Zambia or through contracts, e.g., Nigeria.

In addition to the above forms of insurance schemes, mutual health organizations (MHOs), which are variants of community-based health insurance schemes, currently exist on the continent (see Atim, 1998). However, the focus of this report is on social and community-based insurance, because the two have some important common features.

Social Health Insurance and Community-based Insurance in Africa

Introduction

The literature on health care financing provides insufficient distinction between user fees, health care prices, health care costs and health insurance. As a result, the role of user charges in social insurance schemes is widely misunderstood. A user charge is the *price* that consumers pay for medical care at the time of use. In a perfect market, a user charge is equal to the *cost* of care, i.e., it is the same as the *value* of resources spent to produce a unit of health care, e.g., the amount of care provided to a patient during a visit to a health facility. Thus, like other goods, health care has a true price. That is, the price that reflects the opportunity cost of the resources used to produce care, e.g., a package of basic health services. This price is the same, regardless of the method used to finance health services. In a hypothetical case where the price of health care is equal to zero, social health insurance is unnecessary, because health care is equally accessible to all. The need for social health insurance arises because user charges for health services exist.

Social health insurance is a mechanism for paying user charges *before* the need for health care arises. Under a social health insurance system, *all* health facilities have user charges for their services. It is these user charges that determine the amount of reimbursement that facilities claim from an insurance scheme. However, members of an insurance scheme do not notice these charges at

the point of service use. In contrast, under a fee-for-service system, user charges are paid in full, unless they are subsidized. However, in a national health service, where health care is provided in a network of government clinics user charges need not *exist*. What exists instead is the cost of care, which is known to health facility managers. There is no need to display this cost to service users when it is being met entirely by revenue from general taxation. However, if part of the cost is being met by patients, user charges would exist in a government clinics.

Briefly, user charges *necessarily* exist when health care is being financed a through social health insurance scheme or by a system of user fees. However, user charges need not exist when service financing is through general taxation in a network of government health facilities unless there is cost-sharing between the government and service users.

Social health insurance schemes are national in scope while community-based schemes are localized and voluntary. Since a national or social health insurance scheme is compulsory, a country that adopts it must finance *all* health services (not just the interventions for achieving health MDGs) using that scheme.

Thus, even within a framework for achieving health MDGs one may ask: Is social health insurance an appropriate model for financing health care services in Africa? What evidence or argument can be brought to bear on this issue? We start with clarification of social health insurance.

Characteristics of social health insurance

Social health insurance pools both the health risks of its members, on the one hand, and the contributions of enterprises, households and government, on the other. It enables a set of basic health care services to be accessible to all, irrespective of income or social status (see Carrin, 2002). The essence of social health insurance may best be conveyed by a description rather than a definition. Social insurance has six key characteristics that distinguish it from other mechanisms for financing health services, namely (see Thompson, 2002, pp. 3-4):

- Compulsory payroll contributions to a common Fund, collected from employees and/or employers, but in some countries persons outside the formal sector are allowed to contribute voluntarily.
- The Fund is managed separately from the government budget or revenue from general taxation.
- Contributors have a say or voice in how the fund is managed and used
- Like any insurance scheme, the Fund covers members only, but since by definition, all citizens must enroll, the government pays contributions for the poor
- The Fund acts as a third party payer, i.e., it has a contractual relationship with health care providers to pay for services rendered to its members.
- The Fund has a defined package of health care and does not cover health care outside this package.

Implicit in the last attribute, is the fact that a social health insurance scheme must define a minimum package of care to which all members are entitled. The definition and the costing of the minimum package of care, is a continuing challenge in all countries concerned with equity in health care, and in health outcomes. According to a variety of estimates, the cost of a minimum package of health services

in Africa varies from US \$ 14 to US \$ 30 per capita (see World Bank, 1993, Republic of Kenya, 2004). The elements of the package include many of the interventions described in Section 3.

The cost of the minimum package is essential for implementation of a social health insurance scheme because it shows the level of resources that the scheme must *mobilize* in order to meet the health needs of the population. The mechanisms for mobilizing resources to finance the minimum package (e.g., level of contributions and social groups that are able to afford them) indicate whether or not the scheme also serves the social objective of equity in health care, with which all methods of health care financing must be consistent to be nationally acceptable. Thus, the sixth characteristic has implications for the size of the fund. Attributes (ii), (iii) and (iv) also affect the cost of the minimum package because they have efficiency and equity implications.

Viability of social health insurance in Africa

Based on the above characteristics, and the information provided in Thompson (2002), the following conclusions emerge about social health insurance schemes in English speaking Sub-Saharan Africa:

- a. Since African countries have diverse social and institutional contexts and differ as well in their ability to mobilize resources for health care, a uniform social health insurance scheme is not workable for the whole continent. Examples of differences in national health insurance programs in Kenya and Tanzania and, in schemes proposed for Zimbabwe, Nigeria and South Africa are used to illustrate practical difficulties of a uniform social health insurance scheme on the continent. In particular, the schemes differ in minimum packages in important ways. In Nigeria for example, the proposed scheme excludes HIV/AIDS from the minimum package, but includes preventive care such as family planning; in Tanzania, tuberculosis treatment is excluded, while in South Africa and Kenya, outpatient care is excluded; in Zimbabwe, no minimum package is defined. The governance structures also differ across schemes, with the insurance fund being managed by one organization in Kenya, while in Nigeria management by different organizations is preferred.
- b. It is difficult, probably impossible, to scale up the existing national health insurance schemes to full coverage over the medium term (say 20-30 years) or to implement new full coverage schemes for the following reasons:
 - The money raised through contributions from the formal sector through payroll deductions is insufficient to cover health care needs of the whole population. The payroll base is weak, covering a tiny proportion of the population. The current social insurance coverage ranges from 0.9% in Burkina Faso to 25% in Kenya.
 - Sub-Saharan African countries have large informal sectors, where contributions cannot be collected through taxation. The insurance schemes have to rely on voluntary contributions, which are unreliable.
 - Many of the schemes have design features that are cost escalating. For example, in the existing and proposed schemes, reimbursement is on a fee-for-service basis, a provider-payment system that increases unit costs thus reducing the capacity of the scheme to increase coverage. Although this is a design feature that can be fixed, the managerial and institutional constraints that must be overcome in the process should not be underrated.

- The capacity to manage the schemes efficiently on a national scale is limited. For example, parastatal organizations in Africa are poorly managed, almost in all countries. A new parastatal dedicated to the management of an insurance scheme is unlikely to do better than the existing parastatals dedicated to other ends.
- The schemes are likely to worsen inequalities in health care by directing resources to health facilities that have the advantage of providing high quality care, such as the regional and national hospitals. Small-scale health facilities, such as health centers and district hospitals, which dominate health systems in Sub-Saharan Africa, may not have the capacity to claim reimbursements from a centralized insurance fund. Thus, such facilities would lack resources to provide adequate care to their clients.
- The large number of people living with HIV/AIDS in Africa complicates a national health insurance scheme and greatly increases its cost. For example, inclusion of people living with HIV/AIDS (a relatively small fraction of scheme members) has the implication that a large share of the scheme benefits will be received by a few people because ARV (antiretroviral) drugs are costly and must be taken regularly. Excluding HIV/AIDS patients is also ethically and politically difficult. There is no other region in the world where a social health insurance scheme faces such a dilemma. However, to keep the contributions to social health insurance low, a separate program can be created for HIV/AIDS patients, which obviously would increase the complexity of the national health system.

Another barrier to scaling up of existing small social insurance scheme is that the services defined in a minimum package are unlikely to be produced or delivered in adequate quantities in a vastly expanded insurance scheme, thus discrediting it in the eyes of the public (see Carrin, 2002). Carrin (2002) notes that the above barriers to implementation or scaling up of a social health insurance can be overcome by robust growth, strong administrative capacities, formalization of an economy and greater voice of the populace in political and social affairs. Aptly noting that this is a long-run “golden” basket of factors that facilitate the achievement of universal coverage, he wonders whether a country like South Africa, where the majority of the population is in favor of a social health insurance scheme (see Shisana et al., 2007) should wait for decades before implementing the scheme or extending its coverage. In the same vein, there is the question as to whether such a scheme should be abandoned, as implied in (b) above because it cannot be implemented now.

Using Asian experience, Carrin (2002) argues that there is a substitute for the distant ‘golden basket’ in the implementation or expansion of a social health insurance scheme. Specifically, a combination of (i) a family health insurance where a worker insures the whole family, with (ii) enhanced contributions to the scheme by government and donors and (iii) regulated, decentralized management of the scheme would facilitate its implementation or scaling up. An obvious limitation of this approach is that family health insurance schemes are not viable in underdeveloped formal sectors, where wages for the majority of workers are barely above subsistence levels, and where contributions of governments to the schemes cannot be increased because tax bases are weak, as in much of Sub-Saharan Africa. Thus, the barriers noted in (b) above are still valid. A highly informative discussion of ways to speed up transition to full coverage (*adequate* basic health care for *all*) in the face of some of these barriers is in Carrin and James (2005).

In an interesting article, Ossei (2008), observes that the national health insurance scheme (NHIS) introduced or announced in Ghana in 2004 will help the country achieve health MDGs by “increasing public access to health care, improving the quality and efficiency of health care delivery and lastly, improving and increasing programs of education on curative and preventive health care.” However, whether or not these activities are capable of being scaled up is a different matter. Ossei is

aware of this difficulty because he asks: “Is the NHIS sustainable over a longer period of time? Will poorer people eventually be priced out of the NHIS system over the longer period? What measures do we need to counter NHIS fraud and are the rural poor who are at least an hour away from a health center enjoying the fruits of the NHIS?.” Although the evidence to assess these issues is not yet available, conclusion (b) above still has force.

Mutual health organizations and community-based health insurance

An extensive survey of mutual health organizations (MHOs) in West Africa, variants of community-based health insurance (CBHI) schemes in Eastern and Southern Africa (see Huber et al., n.d), indicates the following:

- Access to health care for scheme members is good.
- Schemes have low coverage in target populations, i.e., the communities in which the MHOs operate.
- The provider-based schemes lack skills and health care technology to improve efficiency in service delivery.
- Resource mobilization capacities of the schemes are modest due to low coverage and low premiums.
- The majority of the schemes had little capacity to protect the health of the poorest segments of society, and these need government assistance.
- HMOs are promising models of improving access to basic health care but face great implementation difficulties.
- Governments are not capable of financing health systems alone.
- Health insurance schemes should be seen as playing a supporting role, not as an exclusive financing option.
- Like user fees, insurance schemes are means to top up existing government budgetary financing.

The limited evidence available from operations of MHOs and CBHIs in West Africa (Huber et al., n.d) and East Africa (Ekman, 2004) suggests that these schemes have low coverage and the resources they mobilize for basic health care packages are modest. Moreover, in a given country, only a few of these schemes exist. Thus, their role in financing interventions for achieving health MDGs is modest at best.

Performance of health insurance schemes in general

In a study on health insurance programs in 23 Sub-Saharan countries, Vogel (1990) arrived at the following conclusions:

- The ministry of health spending on health care is low in geographic areas where the poor live and on kinds of services used mainly by the poor.

- People in Sub-Saharan Africa have little access to formal health insurance, including social insurance.
- Social insurance schemes in Africa are prone to the problem of cost escalation.
- Development of private health insurance would free government health resources for investment in health interventions that benefit the poor.
- “Be as it may, it seems safe to conclude that the development of health insurance to date in Sub-Saharan Africa has not promoted greater equity in the access to health services by the poor, nor has it permitted greater access” (Vogel, pp. 22-23).

Although Vogel (1990) described the situation prevailing in the 1970s and 1980s, the situation has not improved over the past two decades, and has certainly deteriorated in some countries, such as Kenya, Zimbabwe, Somalia, and Cote d’Ivoire. Vogel also provides evidence that social health insurance coverage in Africa is mainly in the formal sector, and is exceptionally low, ranging from less than .1% in Ethiopia to around 11% in Kenya. The social health insurance coverage in Kenya has been variously estimated at 25% over several decades but this figure includes unreliable coverage in the informal sector (see Republic of Kenya, 2004).

The strong evidence from Vogel’s survey suggests that the poor are excluded from the services provided by direct government spending, as well as from services made available through social insurance programs. In order to make progress towards the achievement of health MDGs over the next seven years, there is need to *extend* social health insurance to the poor over this period, and/or to *reallocate* government health care spending in favor of the poor.

How effective has social health insurance been in achieving health MDGs

The evidence available on the effectiveness of social health insurance schemes in attaining health MDGs in Africa is indirect. The proper way to generate direct evidence on this issue is to:

- (i) study the effects of social insurance on *demand* for services offered by interventions that reduce child and maternal mortality and by programs that control HIV/AIDS and other major diseases such as tuberculosis and malaria.
- (ii) estimate the impact of basic health care consumption *induced* by social insurance in (i) above on child and maternal mortality and on prevalence of major diseases using the health production framework presented in Section 4.

A combination of regression and experimental methods can be used to perform the above estimations depending on the nature of the data available (see Schultz and Strauss, 2008). Due to time and data constraints, generation of this direct evidence is not possible. Thus, I use in this section indirect and suggestive evidence to address the above question.

The literature on health care financing in Africa shows that the bulk of health finance on the continent comes from government budgetary allocations and from out-of-pocket payments by patients. Moreover, the amount that is spent on health services of the public goods nature (e.g., immunizations, ante-natal services and control of disease epidemics) comes almost exclusively from the government budget (see e.g., Thompson, 2001; and World Bank, 1993). Since social health

insurance schemes reduce reliance on out-of-pocket-payments for essential medical care, they can be said to have contributed to the attainment of health MDGs. However, we also know from the literature, that the coverage of social health insurance over the past two decades in Africa has been small, and geographically restricted mainly to urban areas. Thus, *ceteris paribus*, the impact of these schemes on health care consumption, and in turn, on health outcomes is unlikely have been substantial.

One intervention that has received insufficient attention in the literature on health care financing in Africa in relation to health MDGs is the improvement in the effectiveness of basic health care services that are financed by revenue from general taxation. Reallocation of greater government budget to provide health care services at lower level government facilities *free-of-charge* particularly in *rural areas and slums* should contribute substantially to the achievement of health MDGs. Locally trained health personnel, as in Sri Lanka (see Levine, 2007) can be used to deliver the bulk of preventive health services and simple medical care. Such a strategy, which would increase access to basic health care among the poor, would be easier to implement than the scaling-up or implementation of a social health insurance scheme.

The available health insurance schemes (both public and private) can be used to finance health care services at higher levels of the public health system, and in the private health care sectors. Under such a financing arrangement, revenue from general taxation would be the main method of financing interventions for achieving health MDGs, supplemented by health insurance schemes, particularly social insurance and community-based schemes. In order for progress to be made towards the achievement of health MDGs over the next seven years (2008-2015) efforts of policy makers in Africa should be directed at finding ways to spend more of *government and donor resources* to provide basic health care *free-of-charge* at peripheral health facilities in rural and slum areas. The indirect evidence does not favor spending the next seven years in attempts to scale-up or implement social health insurance schemes if the objective of the policy makers in Africa is to achieve health MDGs. However, reforms that allow the development and better functioning of these schemes should be undertaken.

6 Discussion

The situation of social health insurance in Africa has been shown to be very different from situations in Asia, Europe and Latin America. In Europe and Asia, particularly in Europe, most people pay for their basic health services through social insurance. In Africa social insurance coverage is extremely low, varying from less than .1% to 14% across the continent. The coverage rates in most countries are unreliable due to data limitations. While social insurance seems to be contributing substantially to the achievement of health MDGs in Asia and Latin America, this is not happening in Africa.

The structural factors in the continent (large informal sectors, administrative and political constraints, and weak tax bases, poor health infrastructure including staff shortages) present major challenges in the extension of social insurance coverage to a sizeable percentage of the population. It seems that in the short-run (over the next seven years), African countries will rely on general tax revenue (and on donor funding where available) to achieve health MDGs. Social insurance will likely play a supplementary role.

7 Conclusions and Recommendations

The main contribution of this report to the literature on health MDGs in Africa is in a demonstration of how the goals are linked to a set of interventions, and in a proposal of how the interventions can be financed in the short-run, i.e., over the next seven years. The interventions are based on what has worked in other developing regions, particularly in Asia and Latin America. A model that links health outcomes to interventions and methods for financing the interventions has been developed but has not been estimated. Nonetheless, the model is a useful conceptual tool for assisting policy makers to select and finance interventions that are likely to achieve health MDGs.

Conclusions

The three main conclusions of the report are as follows:

- There exist effective and affordable interventions for achieving health MDGs in Africa.
- Social health insurance is not the main option for financing the above interventions in the short-run.
- The few social health insurance schemes in Africa do not address the health needs of the poor, and are generally not efficiently managed.

Recommendations

The recommended measures for achieving health MDGs in Africa are:

- Re-allocation of government budget (including donor resources) towards lower-level public health facilities in rural and slum areas to finance basic health care services, and these should be provided to the population free of charge.
- Financing of health services at higher levels of the public health system using social insurance funds.
- Strengthening of the referral systems so that poor patients from peripheral health facilities can be treated in tertiary hospitals free of charge.
- Subsidization of community-based health insurance schemes in order to encourage the poor to enroll
- Legislative reforms to create incentives for greater coverage and better management of social insurance schemes.
- Legislative reforms to encourage development of private insurance for health care services not covered by social health insurance or not provided at lower levels lower levels the public health system.
- On-the-job training of health personnel in the public health sector.
- Subsidization of user fees in countries or communities where they are a significant source of health finance and where direct government provision is not possible.

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Appendix: Tasks of Consultant

The tasks of the consultant include:

- Develop an annotated outline of the report and submit after one week of signing the contract;
- Using recent data develop/present a conceptual analysis of the role of National health insurance in supporting improved health outcomes and equity;
- Review and analyze existing literature on the role that National Health Insurance has played in African and international countries (eg. in Latin America or Europe) highlighting the lessons learned and challenges experienced;
- Based on the review and analysis indicate how effective National health insurance have been as an intervention for achieving the Health MDGs;
- Provide recommendations on how African countries can establish or strengthen National health insurance to facilitate the achievement of the Health MDGs.
- Present the technical report in a seminar for review by peers at ECA;
- Revise draft report to incorporate comments and submit finalized report.