

# Community-based health insurance in developing countries: a study of its contribution to the performance of health financing systems

Guy Carrin<sup>1</sup>, Maria-Pia Waelkens<sup>2</sup> and Bart Criel<sup>2</sup>

*1 Department of Health Financing, Expenditure and Resource Allocation, World Health Organisation, Geneva, Switzerland*

*2 Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium*

## Summary

We studied the potential of community-based health insurance (CHI) to contribute to the performance of health financing systems. The international empirical evidence is analysed on the basis of the three health financing subfunctions as outlined in the World Health Report 2000: revenue collection, pooling of resources and purchasing of services. The evidence indicates that achievements of CHI in each of these subfunctions so far have been modest, although many CHI schemes still are relatively young and would need more time to develop. We present an overview of the main factors influencing the performance of CHI on these financing subfunctions and discuss a set of proposals to increase CHI performance. The proposals pertain to the demand for and the supply of health care in the community; to the technical, managerial and institutional set-up of CHI; and to the rational use of subsidies.

**keywords** performance of financing health systems, health financing, community health insurance, developing countries

## Introduction

Health financing systems through general taxation or through the development of social health insurance are generally recognized to be powerful methods to achieve universal coverage with adequate financial protection for all against healthcare costs. These systems intend to respond to the goal of fairness in financing, in that beneficiaries are asked to pay according to their means while guaranteeing them the right to health services according to need. In tax-funded systems, the population contributes indirectly via taxes, whereas in social health insurance systems, households and enterprises generally pay in via contributions based on salaries or income.

Many low-income countries experience difficulties in achieving universal financial protection (van Ginneken 1999a). A tax-funded health system may not be easy to develop, due to the lack of a robust tax base and a low institutional capacity to effectively collect taxes. Social health insurance has traditionally started by insuring workers. A further nationally organized expansion of social health insurance to the self-employed and non-formal sector is especially demanding (ILO 2001). It may be particularly difficult to arrive at a nationwide consensus between various partners to accept the basic rule of social health insurance, that is to say, guaranteeing similar health

service benefits to those with similar healthcare needs, regardless of the level of contributions that were made. This problem may be very acute when countries prove to have a significant inequality of incomes and assets, and where middle- and high-income earners would be reluctant to contribute significantly more than the poor do (Lautier 2003). In addition, governments may not yet have the necessary managerial apparatus to organize a nationwide social health insurance system. Often this problem is compounded by lack of infrastructure and capacity to collect contributions and organize reimbursements, to manage revenues and assets and to monitor the necessary health and financial information.

Applicable to both tax-funded and social health insurance financing, there is the factor of poor political stability, usually linked to economic insecurity that interferes with a steady development of the health sector. Indeed, implementation of increased taxes for social development or of a social health insurance policy will be severely restricted if there is no strong and steady political support.

Most countries recognize the impediments to universal financial protection. Other financing methods, which would circumvent political and organizational difficulties at the national level, are therefore explored, including the direct involvement of communities in health financing. In the past, cost recovery for health care via user fees was

established in many developing countries as a response to severe constraints on government finance. User fee policies were also seen as a possible expression of community financing. However, most studies alert decision makers to the negative effects of user fees on the demand for care, especially that of the poorest households (McPake 1993). The involvement of the community in health financing was spurred, among others, by the Declaration of Alma Ata in 1978 (Bose & Desai 1983), urging maximum community participation in organization of primary health care. Community financing for health is referred to as a mechanism whereby households in a community (the population in a village, district or other geographical area, or a socio-economic or ethnic population group) finance or co-finance the current and/or capital costs associated with a given set of health services. At the same time they are expected to gain participation in the management of the community financing scheme and the organization of the health services.

Various forms of community financing exist: the most common being the payment of user fees for health care at the point and time of use. In this paper, we shall concentrate on an innovative form of community financing that has emerged in the second half of the 1980s and that has received increasing attention from policy makers in the last decade, i.e. community-based health insurance (CHI). CHI is a common denominator for voluntary health insurance schemes, organized at the level of the community, that are labelled alternatively as mutual health organizations (Atim 1999; Criel & Van Dormael 1999), medical aid societies (Atim 1999), medical aid schemes (van den Heever 1997) or micro-insurance schemes (Dror & Jacquier 1999). The common characteristics are that they are run on a non-profit basis and they apply the basic principle of risk sharing.

Recent reviews of CHI have been published in the literature (Bennett 2004; Ekman 2004; Palmer *et al.* 2004). They all point to the need for more evidence on the possible impact of CHI on the performance of health systems. This precisely is the purpose of this paper. It is based on existing data from grey and published literature sources, but builds on a methodological originality. Indeed, the contribution of CHI is analysed in relation to the financing function of health systems as it was defined in the World Health Report 2000 (WHO 2000). We first present a framework to assess the performance of CHI in that respect. In the second part of this paper, the empirical evidence is analysed, a detailed overview of the main factors influencing the performance of CHI on the financing function of health systems is presented, and a range of strategies to improve performance of CHI is discussed.

### **Community-based health insurance: a framework for analysis**

The health financing system, including CHIs, cannot be looked at in a vacuum but needs to be connected to the broader goals of the health system (Bennett 2004). In the World Health Report 2000, the WHO (2000) proposed the following health system's *goals*: contribute to good health, be responsive to people's expectations and establish fairness in the financial contributions to the health system. Financial contributions for health are considered as fair when health expenditure of households is distributed according to ability to pay rather than to actual costs incurred as a consequence of illness. In order to achieve these ambitious goals, the World Health Report 2000 distinguishes four *functions* for the health system to fulfil: (i) the provision of health services; (ii) the creation of the necessary investment and training resources for health; (iii) health financing; and (iv) government stewardship.

The health financing function is about ensuring that sufficient financial resources are made available so that people can access effective health care. Three specific *subfunctions* are distinguished: revenue collection, fund pooling and purchasing (WHO 2000). Revenue collection can be defined as the process by which the health system determines and obtains financial contributions from households, enterprises, and other organizations including donors. In the pooling subfunction, contributions are accumulated and managed in order to spread the risk of payment for health care among all members of a pool, instead of requiring that people pay individually for their health services. Purchasing is defined as the process by which pooled contributions are used to pay providers to deliver a set of health interventions. The 'strategic' approach to purchasing implies a search for those interventions that are most cost-effective in reaching the health system goals.

This paper further focuses on performance criteria within each of the health financing subfunctions. The analysis of these criteria can be considered as a first step towards the overall evaluation of the performance of CHI.

### **Revenue collection**

Recognizing that universal financial protection is a target, we can first assess what the percentage population is that a CHI effectively covers compared with the target population. As yet, enrolment in CHI is organized on a voluntary basis. The percentage of the population covered is therefore an indicator of the general attractiveness of the scheme. It also measures the extent to which the scheme is viable. In addition, and for equity reasons, membership

G. Carrin *et al.* **Community-based health insurance in developing countries**

should not be biased towards the better off, but also be effectively open to vulnerable groups. The distribution of enrolment across income categories can thus be considered an indicator of equality of access.

While membership is a crucial feature, it is equally important that sufficient revenues are collected. The higher the volume of prepaid health insurance contributions, the more one can avoid the financial consequences of treatment costs and secure access to care when it is needed. The latter is especially important with regard to high-cost treatment. Indeed if high-cost treatments were still to require large out-of-pocket payments, effective use of such care for those who need it would suffer. In particular, the low-income population groups are likely to suffer most from low level of prepayment and thus high out-of-pocket payments. Out-of-pocket payments are the result of co-payments, deductibles or maximum reimbursements, or simply exclusion of health services from the CHI benefit package.

A high rate of prepaid contributions may thus protect households from excessive or 'catastrophic' healthcare expenditure on their livelihood. According to the International Labour Organization (ILO), absence of financial protection exists when excessive health expenditure reduces households' other household consumption to below the poverty line (Baeza *et al.* 2002). WHO has proposed that health expenditure be called catastrophic when it is  $\geq 40\%$  of capacity to pay (Kawabata *et al.* 2002). The latter is tantamount to non-food expenditure. It is important to note that prepayment does not only rely on household contributions. Other contributions coming from central and/or local government, national or international NGOs and bilateral donors may contribute to health financing within the context of CHI. What will finally matter therefore is the 'aggregate' ratio of prepaid contributions (including subsidies and/or grants) to health expenditure. The ratio of prepaid contributions to total healthcare costs is thus an indicator of the accessibility at the moment of need and of the degree of financial protection the scheme offers.

### Pooling

Membership and level of prepayment have to be complemented with a further criterion, i.e. that of risk pooling across members of the CHI scheme. Risk pooling is in principle beneficial because it will allow financial resources to be shared between the healthy and the sick (Davies & Carrin 2001). Risk pooling, although its benefits are known, is not always put fully into practice in CHI.

Indeed, a first pitfall of the voluntary membership of CHI is the problem of adverse selection (Cutler &

Zeckhauser 2000) implying inadequate risk pooling. When a CHI scheme proposes a health insurance contribution based on average healthcare costs of the target population, a number of households, usually the healthier ones, may not be interested in signing up, judging that the contribution proposed is exaggerated in view of low expected healthcare costs. The less healthy may be interested in signing up for the opposite reason. In a voluntary framework, adverse selection and its impact on healthcare costs and contributions may even lead to the discontinuation of insurance: contributions may become so high that the scheme stops to attract potential members altogether.

Secondly, there is an important concern that voluntary schemes may have different funds for different categories of people, adjusting contributions and health insurance benefits to the risks in each fund. For example, funds may be organized along professional lines, for instance farmers *vs.* workers. If higher risks are prevalent among farmers, it is they who would then pay higher contributions. The higher contributions for the high-risk professional group may reduce the willingness to sign up among parts of that target population. Similarly, when a group of households decides to set up their own scheme, it is most likely that they will recruit among people who belong to a similar socio-economic background. Schemes formed by wealthier groups can thus afford a more comprehensive benefit package than schemes that recruit among poorer population groups.

There is need to ensure that there is risk pooling that allows for transfers from low-risk to high-risk members and from wealthier to poorer members. Thus, the funds collected would allow for adequate financial protection of those households who need it most. This contrasts with the case of non-insurance where such households would have to carry the full burden of the healthcare cost. The practice of risk pooling is an indicator of fairness of contribution and of equity in access to health services. A solid risk pool capable of insuring its members adequately should also consist of a sufficient number of members. The latter requirement is already addressed via the indicator 'percentage of the population covered', which was discussed above.

### Purchasing

What is essential is that purchasing is its 'strategic' character. Strategic purchasing is present when there is an active search for the best health services to purchase, the best providers to purchase from and the best payment methods and contracting arrangements (WHO 2000). Strategic purchasing requires that the mandate that the CHI scheme receives from their members is sufficiently

strong and that the scheme management has the ability to carry out this mandate (Perrot & Adams 2000; Perrot 2002). The mandate may comprise the right of the CHIs to purchase a set of health services at the best price from pre-selected providers. The CHI may receive the authority, among others, (i) to determine the list of healthcare providers from which CHI members can then freely choose; (ii) to establish the set of insured health services or benefit package; (iii) to set quality standards of care; (iv) to propose the provider payment mechanisms. Thus, strategic purchasing is opposed to simple funding or reimbursement of non-specified health services by various providers with whom the CHI has no special contractual relationship.

The issue of the benefit package is one of the recurrent elements in the discussions about strategic purchasing. When the package includes hospital admissions, catastrophic health spending can be avoided and the risk of impoverishment may be reduced. In many developing countries, lack of geographical access to inpatient facilities and the ensuing costs of transportation can also be a major impediment to inpatient care. There is a case then for considering transportation as a possible benefit so as to help avoid or reduce the expected burden on the household budget. Incorporating ambulatory care in the benefit package also has a financial advantage. In cases where ambulatory care would not be fully accessible, lack of effective ambulatory treatment may result in urgent needs for more expensive inpatient care. The practice of strategic purchasing is an indicator of access to adequate health services and access to rational and cost-effective health care.

### Empirical findings concerning the performance of CHI

In this section we review the empirical evidence on the performance of CHI in the domains of enrolment, the ratio of prepaid contributions to healthcare costs, the practice of risk pooling and of strategic purchasing on the basis of published literature. We briefly address the main factors that seem to influence CHI performance. These factors were established on the basis of the joint experience and previous work of the three authors (Carrin 2003; Waelkens & Criel 2004). Table 1 provides an overview.

#### Enrolment

An extensive WHO review was made in 1998 (henceforth called WHO Study) concerning 82 non-profit health insurance schemes for people outside formal sector employment in developing countries (Bennett *et al.* 1998). It was observed that very few of these schemes covered large populations or even covered high proportions of the

**Table 1** Overview of factors influencing the performance of community-based health insurance (CHI) on the health financing subfunctions

Health financing subfunctions	Factors influencing performance of CHI
Revenue collection	Enrolment Affordability of contributions Unit of membership Distance Timing of collection Quality of care Trust Prepayment ratio Mix of contributions by households, central and local government, donors
Pooling of resources	Trust Mechanisms for enhanced risk pooling
Purchasing of services	Contracting Provider payment mechanism Referrals Waiting period

eligible population. From a subset of 44 of the schemes, the median value of the percentage of the eligible population covered was 24.9%; 13 schemes had a coverage rate below 15%, and 12 schemes had a coverage rate above 50%.

Further information became available since 1998 (Table 2). Low percentages of enrolment were observed in a study on five CHIs in East and southern Africa (Musau 1999). In four schemes, enrolment percentages vary between 0.3% and 6.5% of the target population; one scheme is very small with 23 members of a target population of 27 cooperative society members. In Rwanda, a project was launched, establishing 54 CHIs in three districts in July 1999 (henceforth called Rwanda Project). By the end of the first year of operation, the enrolment rate reached in the three districts was 7.9% (88 303 members of a total target population of 1 115 509) (Schneider & Diop 2001). Another study was made in nine West and Central African countries (Atim 1998) (henceforth called

**Table 2** Enrolment in community-based health insurance

Region/country	No. of schemes	% of enrolment	Source
East and southern Africa	5	0.3–6.5	Musau (1999)
Rwanda	54	7.9	Schneider and Diop (2001)
West and Central Africa	22	8–82	Atim (1998)
Senegal	4	37.4–90.3	Jütting (2001)

G. Carrin *et al.* **Community-based health insurance in developing countries**

WCA Study) on 22 CHIs. From the available information on beneficiaries and target population, one CHI in Benin reached an enrolment rate of 24% in 1998, whereas another achieved an enrolment rate of 8%. The target population in these CHIs was 13 000 and 7300 respectively. In two CHI schemes in Ghana and Mali, 53% and 25% of the target population of 25 000 and 200 000, respectively, was covered. And in Senegal, one CHI reached a coverage rate of 26% after 3 years of operation whereas another achieved an enrolment rate of 82%; the target population was 13 650 and 1200 respectively. A study of four of 16 CHIs in the area of Thiès (Jütting 2001) in Senegal (henceforth called the Thiès Study) indicated that in the year 2000, the average household enrolment percentage in these villages was 68%, with enrolment rates varying between a minimum of 37.4% and a maximum of 90.3%.

It is equally interesting is to study the enrolment over time. Sometimes, there is evidence about reductions in enrolment rates, which beg for better understanding. For instance in the Maliando Mutual Health Organization in Guinea-Conakry, subscription dropped from 8% to 6% of the target population mainly because of huge disappointment with the quality of care offered at health centre level (Criel & Waelkens 2003). However, membership rates might be low in the beginning, but might increase as the performance of the CHI convinces the population that subscribing may be profitable. One study on the Bwamanda Hospital Insurance Scheme in the D.R. Congo shows that in 1986 when the scheme was established, 32 600 people or 28% of the district population joined within 4 weeks. Over the years, membership climbed to 66% in 1993 and seems to have stabilized at 61% in 1997 (Criel 1998). Another study on the Lalitpur Scheme in Nepal shows that population coverage in the target areas rose from 19–20% in 1983 to 27–48% in 1995 (Harding 1996). Few studies, however, offer a long-term view of CHI.

A variety of factors influence people's decision to join the schemes given the voluntary character of CHI. Affordability of premiums or contributions is often mentioned as one of the main determinants of membership. A number of schemes in the WHO Study had addressed the issue of affordability. For instance in the Nkoranza Scheme in Ghana, the estimated cost of contributions varied from 5% to 10% of annual household budgets (Atim 1998). It was recognized that such contributions could be a financial obstacle to membership.

The technical arrangements made by the scheme management may influence people's perception of personal benefits. One example is the unit of enrolment. In the WHO Study, almost half of the schemes surveyed had the

family as the unit of membership, a measure introduced to avoid the problem of adverse selection. In the Rwandan Project Study, large households with more than five members had a greater probability to enrol in the CHIs than others did (Schneider & Diop 2001). The explanation given is that contributions were kept flat, irrespective of household size up to seven members; the average contribution per household member was therefore less than for smaller families, inducing greater enrolment.

The timing of collecting the contributions may also matter for membership. From the WHO Study, it was observed that schemes in urban areas were more inclined to establish monthly or quarterly contributions so as to match the income patterns of urban informal sector workers. Annual contributions, collected at the time of harvest of cash crops, seem to be prevalent among schemes in rural areas (Bennett *et al.* 1998). However, in some schemes, such as the ORT Health Plus Scheme (OHPS) in the Philippines (Ron 1999), payment schedules were held flexible, with monthly, quarterly or semi-annual payments. Other schemes link the time of payment of the contribution with a suitable event in the community. For instance, burial societies in Uganda use their monthly meetings for the collection of premiums, either for the first-time members or for those who renew their membership (Carrin *et al.* 2001).

Trust in the integrity and competence of the managers of the CHI may also have an effect on enrolment. The existence of entry points in the community, such as a micro-credit scheme, a development co-operative or other social groups, may facilitate the establishment of CHI. If such existing initiatives have won the population's trust (van Ginneken 1999a), it may become easier to start up a CHI. For instance, the development co-operative in Bwamanda, initiated by the local Catholic mission, transformed into an integrated development project at the end of the 1960s (Centre de Développement Intégré, CDI). The CDI gradually improved agricultural activities in the area. This resulted in fairly stable economic conditions in the Bwamanda region throughout the 1970s and 1980s, which has enhanced the capacity and willingness of the population to enrol in the Bwamanda Scheme initiated by the CDI.

Trust can be enhanced when people see that their preferences matter. When the scheme administrators tend to be responsive to the community's preference, people's overall satisfaction with the community scheme's services is likely to increase. An important amount of evidence was recently reported by the ILO in a study about the role of CHI in the extension of social protection (Baeza *et al.* 2002) (henceforth called ILO Study). A total of 258 community-based health schemes were reviewed. Of 100

schemes with information, 57 schemes included participation of the community related to the benefit package. And in 51 schemes of 104 with information, the community was a partner in discussing the level of the premiums (Baeza *et al.* 2002). Trust was also considered as a factor in the development of health insurance among informal workers in Dar es Salaam, Tanzania. Informal sector workers constituted their own associations, which proved to constitute a good basis for building trust among members. Subsequently, health insurance was easier to develop (van Ginneken 1999b).

The quality of care offered through the CHI is another factor to be considered. The latter was highlighted in an evaluation of the Maliando scheme in Guinea-Conakry (Criel & Waelkens 2003). Focus group discussions were organized with 137 persons sampled from the member and non-member population. Participants referred to rapid recovery, good health personnel, good drugs and a nice welcome at the health facility as the most important features of quality. When membership was discussed specifically, lack of quality of care was cited as the most important cause of non-enrolment.

It is also important to see whether community health insurance is accessible across different population groups. One conclusion from the WHO Study was that very few schemes reached the vulnerable population groups, unless government or others facilitated their membership through subsidies (Bennett *et al.* 1998). In the Thiès Study, income appeared to be a significant factor in explaining enrolment. Belonging to lower and upper income tertiles decreased and increased enrolment respectively. When households classified themselves into poor and non-poor, it also appeared that the self-reported poor had a lower probability to join CHI than higher income households (Jütting 2001; Jakab *et al.* 2001). One way to increase insurance membership for poor households is to introduce exemptions. Yet, only a minority (13) of the 44 schemes surveyed in the WHO Study had exemption policies to allow the poor households to join. In one of the three districts in the Rwandan Project, attention was paid to this particular issue: in Kabutare, the local church paid for the contributions of about 3000 orphans and widows with their family members. Contributions are also generally levied as flat sums, which is a disadvantage for the poorest: flat contributions are regressive, a flat rate contribution as a percentage of income being higher for poor than for the non-poor.

Related to policies to increase access of the poor to CHI, most schemes can be qualified as deficient. One scheme from the start introduced a pro-poor policy is the Gonosasthya Kendra (GK) Scheme in Bangladesh, differentiating contributions according to one of four socio-economic

groups (the 'destitute', 'poor', 'middle class' and 'rich'). For instance, contributions for the destitute were one-tenth of the contribution proposed to the highest income category. Contributions and other payments by households were minimized by using subsidies transferred to the scheme either from GK's own commercial ventures or from international sources. An important finding is that the membership rates among the two lowest socio-economic groups are substantially higher than in the other groups. However, after 15 years of operation of the GK scheme 20% of the 'destitute' group and more than half of the 'poor' group had still not been reached. The contribution levels and other payments are still said to be too excessive especially for the 'poor' as well as the lower middle income group of the 'middle class' (Desmet *et al.* 1999).

The household's geographical location is a second determinant of inequality in access. For instance, in the GK scheme, membership among the two lowest socio-economic groups appeared to be related to distance: up to 90% of that target population from nearby villages subscribed, whereas only 35% did so for the target population in the distant villages (Desmet *et al.* 1999). In the Rwandan Project Study, it was also found that households who lived <30 min from the participating health facility had a much larger probability to enrol in the CHIs than those who lived farther away (Schneider & Diop 2001).

A few case studies refer to measures introduced to reduce the impact of distance on enrolment and utilization. In the RAHA Scheme in India, a sliding scale of co-payments was established, decreasing according to distance (RAHA 1990; Bennett *et al.* 1998). A similar principle was established in the Bwamanda Scheme (Criel & Kegels 1997). However, although enrolment was seen to increase among the population living at the greatest distance from the affiliated hospital, utilization of the insured hospital care did not increase. For this reason the sliding scale was later abandoned.

#### Ratio of prepaid contributions to healthcare costs

From the WHO Study, information about the prepayment ratio, but through household contributions only, was available for 24 CHIs (Bennett *et al.* 1998). Thirteen CHIs had a ratio  $\leq 60\%$ . This means that assuming there would be no subsidies or grants from sources other than households (which is unlikely), the share of out-of-pocket payments (co-payments or user fees) in health expenditure would be 40% and higher.

In our framework, it is important to identify all stakeholders that contribute to the prepayment of health care, including central and local government, enterprises and donors. Communities indeed do not necessarily have

G. Carrin *et al.* **Community-based health insurance in developing countries**

to finance all healthcare costs and may draw on the financial inputs coming from the above-mentioned stakeholders. In the case of CHI, most schemes strive to cover only the portion of care that is currently recovered through user fees; hence the relevance of having information about the aggregate prepayment ratio. For six of 13 CHIs mentioned above, sufficient information was available to assess the out-of-pocket payments that are finally incurred by households. In four of those schemes, these out-of-pocket payments were in the 40–70% range, so that many households are likely to be subject to excessive out-of-pocket payments. A similar finding comes from the Mutec Health Centre in Mali (Atim 1998), where in 1996 the household prepayment ratio proved to be 15%, and user fees for medical visits and drugs accounted for 85% of health expenditure. It is likely that in such cases catastrophic payments will be incurred by certain families. It is obvious however that if the CHI enrolment rate in a given community is low, which is often the case, user fees will inevitably remain the main source of funding of health care in that same community.

Some schemes are performing particularly well in terms of the prepayment ratio. In the Bwamanda Scheme (Moenes 1990), the total prepayment ratio amounted to 80.3%; the household prepayment ratio was 58%, and 22.3% came from subsidies and gifts. The co-payments of scheme members and user fees of non-members amounted to 8.7% and 11% of hospital expenditure respectively. There is also recent information (Ranson 2002) from the Self-Employed Women's Association (SEWA) health insurance scheme in Gujarat (India). SEWA is an organization of self-employed women and workers in the informal sector, a cooperative bank being one its major initiatives (Krause 2000). In 1992, SEWA started to offer health insurance. By 1999–2000, this scheme had 23 314 members. From data on hospital-related claims between mid-1994 and mid-2000, it was found that this scheme had an important impact on the occurrence of catastrophic spending. In this study, 'catastrophic spending' occurs when a patient consumes more than 10% of the person's annual household income on health care. It was found that without the insurance, hospital care would have been catastrophic for 35.6% of patients. However, as a result of the SEWA health insurance, the latter percentage was able to drop to 15.1%. We submit that this reduction was made possible by the relatively high prepayment ratio (76%) and by the inclusion of costly inpatient care in the benefit package.

Prepayment does not have to rely on households exclusively. As explained above, financial contributions can come from other sources as well, such as central or local governments, or local and international donors. In doing so, one may obtain a prepayment ratio that is high

enough to ward off the negative impact of out-of-pocket payment. In the GK Scheme in Bangladesh, the real out-of-pocket payments were much lower than initially thought from simply inspecting the household prepayment ratio of 12% of recurrent expenditure. International subsidies and an internal subsidy from GK's commercial venture represented 50% and 14% of expenditure respectively. Finally, out-of-pocket expenditure by the GK members and non-members represented 8% and 16% of health expenditure in the GK scheme respectively (Desmet *et al.* 1999).

From the ILO Study it appears that most of the schemes (90 of the 136 for which information was available) do not bear the bulk of the financial risk (Baeza *et al.* 2002). Schemes may only cover a small part of the cost of the benefit package from members' contributions. It is observed that in most of those cases (69 of 85 for which information was available), central and local government cover the larger part of the cost of health services. Again, central government together with others are the most important financiers in seven cases (Baeza *et al.* 2002). The latter results are not totally surprising, as central and/or local governments are the legal or *de facto* owners of CHIs in 61 (or 33%) of 184 cases that had sufficient information. These results, among others, lead the ILO study to conclude that most of the CHIs are in fact 'entry points' to larger pooling arrangements (Baeza *et al.* 2002). CHI may also be understood as an institutional mechanism for organizing risk pooling, thereby explicitly or implicitly using funds from both public and non-public sources. Thus, the role that CHIs could play in universal coverage strategies is clearly a subject for further policy research.

#### Practice of risk-pooling

From the ILO study, the evidence related to the size of the risk pool is that of 85 CHIs for which information was available, a majority (47) has <500 members. Only 14 schemes had more than 10 000 members (Baeza *et al.* 2002). Expansion of these groups may be problematic. Trust among the members is an important factor of the viability of such associations (Meessen *et al.* 2002). Trust is built on knowledge of each other, which initially at least tends to keep the groups small. An important element is also the availability of information among potential members of a CHI. The importance of information in shaping trust in the management of CHI schemes was clearly established in the Maliando Scheme in Guinea-Conakry (Criel & Waelkens 2003). Flows of information can in fact be considered as a form of social capital (Ray 1998). Adequate knowledge about how people behave vis-à-vis health insurance, in particular concerning moral hazard behaviour, should in principle

help potential members decide to enrol or not. Geographical proximity enhances the information flows between people (De Weerd 2002), and therefore is likely to help voluntary risk-sharing arrangements such as CHI. The latter may partly explain why pooling of risks across populations from geographically separated villages in a number of counties in the Rural Cooperative Medical Schemes (RCMS) project in China (Carrin *et al.* 1999) proved to be difficult to achieve in a short period of time.

The small scale of a CHI not only implies poor financial viability and danger of bankruptcy, it also has implications on the managerial capacity. Small schemes cannot set aside the financial resources needed to hire professional management. Managers are often voluntary members and may lack the skills as well as the time to improve the performance of the scheme. The need for administrative and management capacity was stressed in the WCA Study. The cases reviewed show a shortage of skills that are specific to CHI, such as the setting of contributions, collection of contributions and compliance, determination of the benefit package, marketing and communication, contracting with providers, management information systems, and accounting.

Several alternative strategies exist for greater risk pooling aiming at protecting schemes from bankruptcy and sustaining the financial protection of insured households. A first possible measure to protect CHIs against unexpected high-level expenditure is that of reinsurance: a scheme buys insurance with a re-insurer in order to avoid the risk of financial insolvency when expenditures are exceptionally high, for example due to an epidemic or a catastrophe involving a large number of members (Dror 2001). A more fundamental measure, however, is to expand the size of the risk pool. Larger risk pools can be achieved via assistance to management of small-scale schemes or via the establishment of a federation (Mills 1998) or network (Steinwachs 2002) of CHIs.

Given the limitations to the size of the association due to voluntary management, assisting voluntary managers to carry out certain administrative tasks may promote expansion of the schemes. In Burkina Faso, several support organizations are set up to assist starting mutual health organizations. Some make professional staff members available to help voluntary scheme managers in daily management. One example is the Mutual Health Organisation of Bobo-Dioulasso that gets regular assistance of an employee of the support organization 'Projet Houet-Comoé-Kéné Dougou' for certain management tasks. The Network for Support to Mutual Health Organisations (Le Réseau d'Appui aux Mutuelles de Santé), another support organization, gives permanent support to the elected

scheme managers of several CHIs for book keeping and administration (Zett 2001).

Another approach is to subcontract the management of the scheme to an umbrella organization. This approach combines the advantages of the strong group identity of existing schemes, with the advantages of professional management. Ownership remains with the small-scale associations. An example of this approach is the Mutual Society for Health Care in the Informal Sector (UMAS-IDA). This is a CHI scheme owned and operated by a group of co-operatives of informal sector workers in Dar es Salaam, Tanzania. One person is employed for the administration and a second ensures medical control of the claims. But this arrangement does not achieve a larger risk pool, as every group keeps its own fund and there is no risk sharing among various groups (Steinwachs 2002). In Ivory Coast, the Federation of Medical Mutual Health Organisations (Fédération des Mutuelles Médicales de Côte d'Ivoire) has set up a similar construction. The federation is formed by eight mutual health organisations created by eight enterprises. It covers about 38 000 beneficiaries (workers and their dependants). The management is delegated to an insurance company, Managed Care International. In this case, too, each mutual health organization has negotiated its own conditions and funds remain separate (Lichtenberger 2003).

Depending on the socio-economic context, keeping funds of different population groups separate may well be an initial but necessary phase in the development of CHI. For example, the RCMS in China organized different funds for different groups within the same rural area. One of the reasons is the growth of industry in these rural areas in China, basically establishing two professional groups, that of farmers and of workers. From research in 42 townships (Carrin *et al.* 1999), it was found that at least eight townships established separate accounts for farmers and workers. The benefit package was also found to be different, with that of workers better than that of farmers. Benefits were adapted to the financial situation of the two funds. It was said that enterprises and their workers were reluctant to have funds pooled, workers fearing that in a fully pooled system, they would have to pay a multiple of the farmers' contribution. The absence of willingness to pool funds was exacerbated after workers judged that farmers' declared income was far below their real income and that, therefore, their capacity to pay contributions was underestimated.

One step closer towards forming one common pool is the initiative of the Union of Mutual Health Organisations (Union Technique de la Mutualité Malienne, UTM) in Mali. The UTM created a CHI to which all kind of groups can subscribe: mutual health organizations, small and



G. Carrin *et al.* **Community-based health insurance in developing countries**

middle enterprises, saving and credit organizations, etc. (Ouattara 2002). The UTM ensures the management of the individual schemes that cannot however negotiate their own conditions: the package of benefits is the same for all schemes.

Real merging of small-scale groups is achieved in hospital-based schemes in Uganda where pre-existing groups such as dairy co-operatives of burial societies, rather than individual households, constitute the basis for enrolment (McCord & Osinde 2003). All these schemes have in common the sharing of management tasks with clear delimitation of the roles of the manager(s) of the small groups and the professional insurer (Walford *et al.* 2000). The managers of the constituting units carry out the tasks of community sensitization, collection of contributions, and control of possible misuse. The insurer or the umbrella organization, however, takes care of the technical aspects: actuarial and financial management, selection of providers and negotiation of contracts, follow-up of quality of care, etc., for which voluntary managers have neither the time nor the competence. Enrolment based on existing groups favours an extension of the pool in urban areas where the constitution of solidarity groups large enough to form one single may be problematic, but where there is abundance of all type of small associations. The same holds for rural areas, where distance between villages may hamper the creation of one single large group. To be viable however, the introduction of professional management may well require external subsidies.

The set-up of the Rwandan schemes is yet another way to create a larger risk pool. The schemes function as individual CHIs at the health centre level, while a federation at district level covers the costs of hospital care.

A last strategy for large pools at the local level may be worthwhile considering, i.e. that of aiming for larger risk pools from the very start on (Davies & Carrin 2001). In that case, there is also greater likelihood of having cross-subsidies between rich and poor households. Instead of focusing on village populations, for example, the population of an entire district could be targeted. This has proved successful in the case of the Bwamanda Scheme in the D.R. Congo and in the Nkoranza Scheme in Ghana where the enrolment was high. It was however not so in the case of the CHF established at district level in Tanzania where the enrolment remained low.

As an alternative to merging, it could be explored whether CHIs could not be interconnected via risk-adjustment or equalization mechanisms (Cutler & Zeckhauser 2000). Basically, the latter would bring about financial support for those CHIs that face more than average risks; this support would be financed via transfers from those CHIs that face lower than average risks. Thus

CHIs in relatively poor areas with high health risks would be able to set contributions at an affordable level, in view of subsidies received via equalization mechanisms. In this respect, we refer to van den Heever (1997) who studied employer-based health insurance schemes in South Africa. He notices that, since the late 1980s, new employer-based medical benefit schemes for low-income and largely Black workers have been established, and that these are largely separated from the funding of medical benefits for high-income workers. In other words, virtually no cross-subsidy seems to exist, so that the health insurance benefits of the former schemes are relatively limited. Policy proposals were therefore made to establish an equalization mechanism across medical schemes, probably through a para-statal organization, in order to offer a similar basic package of health insurance benefits.

#### Practice of strategic purchasing

From the ILO Study, of 62 schemes for which information was available, 10 were only found to have adopted some form of strategic purchasing (Baeza *et al.* 2002). Information on 67 mutual health organizations in the WCA Study showed that strategic purchasing was not imbedded yet in management practice (Atim 1998). For example, only four schemes had introduced essential and generic drug policies.

One of the conclusions in the WHO Study was that, overall, benefit packages were only weakly defined (Bennett *et al.* 1998). Although some schemes defined exclusions, there was a tendency to include all available services at facilities participating in the CHIs. With this broad approach, enrolment rates among patients with pre-existing conditions, especially chronic illnesses, tended to be high. After financial review, some schemes had to redefine the benefit package, even excluding certain population groups such as the elderly and/or excluding patients with pre-existing conditions (Bennett *et al.* 1998). Another way to contain costs as a result of introducing a broad benefit package was to introduce strict gate-keeping and referral practices. The latter was the case of the Bwamanda Health Insurance Scheme and the Chogoria Hospital Scheme, whereby patients could only get access to (insured) hospital care after being referred by a primary healthcare centre.

The WHO Study noted however that some schemes gradually took a greater role in purchasing. This was the case of the UMASIDA scheme in Tanzania. This scheme has contracted with providers who respect a number of conditions, such as access to services of a qualified medical officer, the availability of maternal and child health services, adequate laboratory services, provision of health education and occupational health, use of essential drugs list and prescription by generic name, and engaging in

appropriate record-keeping. The SEWA scheme in India also engaged in more active purchasing, learning from claims processing which clinics could provide adequate care at reasonable prices, and then encouraging members to use these.

The OHPS in the Philippines designed a benefit package consisting of ambulatory and inpatient care, prescribed drugs and basic ancillary services (Ron 1999). Primary health care was directly provided by salaried doctors and nurses. Hospital-based diagnostic and therapeutic services were purchased from a private non-profit hospital through a capitation contract. Hospital-based care could only be accessed after referral from a primary healthcare doctor.

In the Rwandan Project (Schneider *et al.* 2000, 2001a,b) efforts were undertaken to strategically purchase health services. At the health centre level, services covered include preventive and basic curative care by nurses, essential drugs, hospitalization at the health centre, and ambulance transfer to the district hospital. At the district hospital, a number of services were covered, but only after referral from the health centres. In two districts, the hospital services covered were: consultation with a physician, overnight stay and Caesarean section. In the third district, malaria cases (>5 years), paediatric cases (<5 years) and Caesarean sections were covered.

The CHIs in Guinea-Conakry (Criel & Waelkens 2003) have also introduced active purchasing by way of official contracts between schemes on the one hand and providers on the other. For instance, via a contract valid for 1 year, the Maliando Scheme in Yendé provides access for its members to pre-defined health services from the Prefectoral Hospital of Gueckédou; the services included emergency obstetric and surgical care for adults and paediatric care. In the same way, a contract was established with the Health Centre of Yendé in order to purchase a package of curative and preventive primary healthcare services. Emergency transport of patients to hospitals is also arranged for via a contract with a local transport association.

The provider payment mechanism is an important element of strategic purchasing. In the WHO Study, 42 of 60 schemes for which information was available used salaries and budgets as payment method (Bennett *et al.* 1998). These payment mechanisms are expected to be beneficial for cost containment. But they may also lead to rationing, as a result of the enforcement of hard budgets.

Fee-for-service payment was found the second most prevalent way of paying providers in this review (11 of 60 schemes). In the WCA Study, fee-for-service was found to be most frequent payment method (Atim 1998). Fees may be used to induce the performance of providers, certainly in a situation of under-provision of health services. In one study in Pereang District in Cambodia, fees were part of an

incentive system to increase the quantity and quality of publicly provided care. It even appeared that patients' out-of-pocket expenditure decreased with respect to the time before the establishment of the incentive system; the latter was the result of official fees being competitive vis-à-vis unregulated private healthcare prices and being associated with good quality of care (Soeters & Griffiths 2003). A major disadvantage of the fee-for-service method, however, is that it may induce providers to over-prescribe treatment, certainly when part of fees collected are used as additional remuneration for providers. There is the additional risk that this payment method provokes a reduction in demand for health services, especially among the poorest.

Capitation payment, which has built in incentives for providers to keep costs down, so far was used in a few schemes only. For example, it was used in the ORT scheme to pre-pay a contracted private non-profit hospital for hospital-based services to ORT members. In the Rwanda Project, capitation was introduced as the payment method for health centre services in the 54 village schemes. It is also stated by that project that this should give health centre providers incentives to increase preventive care (Schneider *et al.* 2001a).

Yet another element in purchasing is setting referral rules across echelons of the health system so as to realize efficiency gains. From the WHO Study it appeared that many of the hospital-based CHIs ignored first-line health care, while first-line healthcare-based CHIs underestimated the costs of referrals for hospital care. In the WCA Study, only two of 15 schemes whose benefit packages contained both primary and hospital care had introduced mandatory referral for benefits beyond the primary care level (Atim 1998). The Bwamanda Scheme only covers insured patients for inpatient hospital care if they are referred by one of the health centres in the district. Also in the Rwandan Project, the district hospital services that are part of the benefit package are only covered after health centre referral (Schneider *et al.* 2001a).

Finally, the establishment of a waiting or qualifying period before one can make effective use of insurance, is a device to help contain the effects of adverse selection on the overall costs of a CHI. While it is certainly desirable when people have the possibility to enrol in a CHI throughout the year, some restraint on immediate use of health care may be introduced. In the WCA study, of the six CHIs for which information was available, five had established a waiting period of 2–3 months (Atim 1998). In the ORT scheme people can sign up at any time but the waiting period for inpatient care is 2 months (Ron 1999).

A remark is in order about administrative costs of CHI. These costs obviously matter as they have a direct influence on the financial resources that eventually are available to purchase health care. From a selected number of schemes

G. Carrin *et al.* **Community-based health insurance in developing countries**

in the WHO Study, the ratio of administrative costs to total scheme revenue varied from 5% to 17% (Bennett *et al.* 1998). These ratios varied between 11% and 44% in a selection of seven CHIs from the WCA Study (Atim 1998). In the Rwanda Project, administrative costs represent 7% of total annual expenditure (Schneider *et al.* 2001a). Compared with West European health insurance funds, where there are important economies of scale and where administrative costs are generally about 5% of fund revenue (Bennett *et al.* 1998), administrative costs in several of the documented CHIs certainly are on the high side. It can be expected that the relative importance of these costs will decrease when the size of the risk pool increases and/or when CHIs would enter into a federation.

### Conclusion

The performance of CHI, and its contribution to effective and equitable health systems, is modest, although many schemes are still relatively young and would need more time to develop. Among the main factors hampering people's enrolment in CHI in the developing world, there are the problems with the affordability of premiums, the trust in the integrity and competence of the managers, the attractiveness of the benefit package and the quality of care that is offered by the providers. The ratio of pre-paid contribution to healthcare costs is variable from scheme to scheme, but, interestingly, some CHI schemes seem to function as effective institutional entry points to larger pooling arrangements constituted by contributions coming from households but also from other sources (government and donor funding). In many instances, risk pooling remains limited because of the small size of the CHI member population and going to scale remains a huge challenge. In that respect, it is appropriate to further explore the feasibility of creating CHI federations in which funds get pooled. Strategic purchasing by the CHI schemes, finally, still remains rare although there is an increasing awareness among CHI promoters of its importance. Last but not least, the present article raises the crucial issue of the limitations of a management of CHI by volunteers.

The CHI thus still has a long way to go if it wants to strongly contribute to health system performance. Although there is need for more research on what would be the most appropriate design and management features of CHI in a variety of institutional environments, there are two research questions we wish to highlight more in particular. First, there is the need to acquire more evidence and insight on the adequacy of subsidy policies proposed by public authorities and donors. Subsidies should be such – in terms of volume, timing and destination – that they enhance CHI performance without jeopardizing the

local dynamics that steer and support these schemes. Secondly, there is the issue of strategic purchasing: we need to have more knowledge on what the policy instruments are for CHI management to effectively link demand-side financing to a range of outputs delivered by healthcare providers that is socially and technically acceptable.

The World Development Report 2004 (World Bank 2003) clearly highlights the need to empower 'clients' in their interaction with providers if the poor are to benefit from social services. As is shown, CHI is not a magic bullet. However, we submit that CHI, under certain circumstances, can well be an attractive strategy to improve people's access to health care. In addition, we formulate the hypothesis that CHI can also be a means to empower clients and to give them levers to improve the quality of the supply.

### References

- Atim C (1998) *Contribution of Mutual Health Organisations to Financing, Delivery, and Access to Health Care*. Partnerships for health reform, Technical report no. 18. Abt Associates, Bethesda, MD.
- Atim C (1999) Social movements and health insurance: a critical evaluation of voluntary, non-profit insurance schemes with case studies from Ghana and Cameroon. *Social Science and Medicine* 48, 881–886.
- Baeza C, Montenegro F & Nuñez M (2002) *Extending Social Protection in Health Through Community Based Health Organizations. Evidence and Challenges*. International Labour Organization, Geneva.
- Bennett S (2004) The role of community-based health insurance within the health care financing system: a framework for analysis. *Health Policy and Planning* 19, 147–158.
- Bennett S, Creese A & Monasch R (1998) *Health Insurance Schemes for People Outside Formal Sector Employment*. (WHO/ARA/CC/98.1) World Health Organisation, Geneva.
- Bose A & Desai PB (1983) *Studies in Social Dynamics of Primary Health Care*. Hindustan Publishing Company, Delhi, India.
- Carrin G (2003) *Community-Based Health Insurance Schemes in Developing Countries: Facts, Problems and Perspectives*. Discussion Paper no.1. World Health Organization, Department Health System Financing, Expenditure and Resource Allocation (FER), Geneva.
- Carrin G, Ron A, Yang H *et al.* (1999) The reform of the rural cooperative medical system in the People's Republic of China: interim experience in 14 pilot countries. *Social Science and Medicine* 48, 961–972.
- Carrin G, Desmet M & Basaza R (2001) Social health insurance development in low-income developing countries: new roles for government and non-profit health insurance organizations. In: *Building Social Security: the Challenge of Privatization*, Ch. 10 (ed. X Scheil-Adlung) Transaction Publishers, London, 125–153.
- Criel B (1998) *District-Based Health Insurance in Sub-Saharan Africa*. *Studies in Health Services Organisation and Policy*, no. 10. Institute of Tropical Medicine, Antwerp.

G. Carrin *et al.* **Community-based health insurance in developing countries**

- Criel B & Kegels G (1997) A health insurance scheme for hospital care in Bwamanda district, Zaire: lessons and questions after 10 years of functioning. *Tropical Medicine and International Health* 2, 654–672.
- Criel B & Van Dormael M (1999) Mutual Health Organizations in Africa and social health insurance systems: will European History repeat itself? *Tropical Medicine and International Health* 4, 155–159.
- Criel B & Waelkens MP (2003) Declining subscriptions to the Maliando Mutual Health Organisation in Guinea-Conakry (West Africa): what is going wrong? *Social Science and Medicine* 57, 1205–1219.
- Cutler DM & Zeckhauser RJ (2000) *The Anatomy of Health Insurance*. *Handbook of Health Economics*, Article 11, Vol. 1a. North Holland, Amsterdam.
- Davies P & Carrin G (2001) Risk-pooling: necessary but not sufficient. *Bulletin of the World Health Organization* 79, 587.
- De Weerd J (2002) *Social networks, transfers and insurance in developing countries*, no. 159. PhD Thesis, Katholieke Universiteit Leuven, Leuven.
- Desmet M, Chowdury AQ & Islam MdK (1999) The potential for social mobilisation in Bangladesh: the organisation and functioning of two health insurance schemes. *Social Science and Medicine* 48, 925–938.
- Dror DM (2001) Reinsurance of health insurance for the informal sector. *Bulletin of the World Health Organization* 79, 672–678.
- Dror D & Jacquier C (1999) *Micro-Insurance: Extending Health Insurance to the Excluded*. International Labour Organisation, Geneva.
- Ekman B (2004) Community-based health insurance in low-income countries: a systematic review of the evidence. *Health Policy and Planning* 19, 249–270.
- van Ginneken W (1999a) Social security for the informal sector: a new challenge for the developing countries. *International Social Security Review* 52, 49–69.
- van Ginneken W (ed.) (1999b) *Social Security for the Excluded Majority – Case Studies of Developing Countries*. International Labour Office, Geneva.
- Harding R (1996) *Latitpur Medical Insurance Scheme. A Status Report After Eighteen Years*. Unpublished article. United Mission to Nepal, Kathmandu, Nepal.
- van den Heever A (1997) Regulating the funding of private health care: the South African experience. In: *Private Health Providers in Developing Countries*, Ch. 10 (eds S Bennett, B McPake & A Mills) Zed Books, London, 158–173.
- ILO (2001) *Social Security: a New Consensus*. International Labour Office, Geneva.
- Jakab M, Preker A, Krishnan C *et al.* (2001) *Social inclusion and financial protection through community financing: Initial Results from Five Household Surveys*. World Health Organisation, Commission on Macroeconomics and Health, Geneva.
- Jütting J (2001) *The Impact of Health Insurance on the Access to Health Care and Financial Protection in Rural Developing Countries. The Example of Senegal*. HNP Discussion Article. World Bank, Washington, DC.
- Kawabata K, Xu K & Carrin G (2002) Preventing impoverishment through protection against catastrophic health expenditure. *Bulletin of the World Health Organization* 80, 612.
- Krause P (2000) *Non-profit Insurance Schemes for the Unorganised Sector in India*. GTZ Article no. 24/e. Deutsche Gesellschaft für Technische Zusammenarbeit, Eschborn, Germany.
- Lautier B (2003) Mutual and universal social protection: the condition for effectiveness in the struggle against poverty in Latin America. *International Symposium on Solidarity and Social Protection in Developing Countries*, Turin, Italy, 23–25 April 2003.
- Lichtenberger J (2003) Essai de création d'un fonds de solidarité spécifique VIH/SIDA au sein d'une population de mutualistes d'entreprises en Côte d'Ivoire. *International Symposium on Solidarity and Social Protection in Developing Countries*, Turin, Italy, 23–25 April 2003.
- McCord M & Osinde S (2003) *Reducing Vulnerability: the Supply of Health Microinsurance in East Africa. A Synthesis Report*. MicroSave-Africa, Nairobi. <http://www.MicroSave-Africa.com>.
- McPake B (1993) User charges for health services in developing countries. *Social Science and Medicine* 36, 1397–1405.
- Meessen B, Criel B & Kegels G (2002) Formal pooling of health risks in sub-Saharan Africa: reflections on the obstacles encountered. *International Social Security Review* 55, 71–93.
- Mills A (1998) The route to universal coverage. In: *Achieving Universal Coverage of Health Care*, Ch. 11 (eds S Nityarumphong and A Mills) Office of Health Care Reform, Ministry of Public Health, Nontaburi, Thailand, 283–299.
- Moens F (1990) Design, implementation, and evaluation of a community financing scheme for hospital care in developing countries: a prepaid health plan in the Bwamanda Health Zone, Zaire. *Social Science and Medicine* 30, 1319–1327.
- Musau S (1999) *Community Based Health Insurance: Experiences and Lessons Learned from East and Southern Africa*. Partnerships for Health Reform Technical Report no.34. Abt Associates, Bethesda, MD.
- Ouattara O (2002) Assurance-maladie volontaire. Bilan technique et financier 2001. *Forum 2002 de la Concertation*, Dakar, 16–18 septembre 2002.
- Palmer N, Mueller D H, Gilson L, Mills A & Haines A (2004) Health financing to promote access in low income settings – how much do we know? *The Lancet* 364, 1365–1370.
- Perrot J (2002) *Analysis of Allocation of Financial Resources within Health Systems*. WHO, Department of Health Financing and Stewardship, Health Financing Technical Brief, Geneva.
- Perrot J & Adams O (2000) *Applying the Contractual Approach to Health Service Delivery in Developing Countries*. Discussion article. WHO, Department of the Organisation of Health Services Delivery, Geneva.
- RAHA (1990) Financing health projects with people's participation: experience of RAHA. In: *Health Financing in the Voluntary Sector. A Report on the National Workshop* (ed. D Priti) Voluntary Health Association of India, New Delhi, 8–15.
- Ranson MK (2002) Reduction of catastrophic health care expenditures by a community based health insurance scheme

G. Carrin *et al.* **Community-based health insurance in developing countries**

- in Gujarat, India. *Bulletin of the World Health Organization* 80, 613–621.
- Ray D (1998) *Development Economics*. Princeton University Press, Princeton, NJ.
- Ron A (1999) NGOs in community health insurance schemes: examples from Guatemala and the Philippines. *Social Science and Medicine* 48, 939–950.
- Schneider P & Diop F (2001) *Impact of Prepayment Pilot on Health Care Utilization and Financing in Rwanda: Findings from Household Survey*. Partners for Health Reformplus Technical article. Abt Associates, Bethesda, MD.
- Schneider P, Diop F & Bucyana S (2000) *Development and Implementation of Prepayment Schemes in Rwanda*. Partners for Health Reform Technical article no. 45. Abt Associates, Bethesda, MD.
- Schneider P, Diop F & Leighton C (2001a) *Pilot Testing Prepayment for Health Services in Rwanda: Results and Recommendations for Policy Directions and Implementation*. Partners for Health Reform Technical article no. 66. Abt Associates, Bethesda, MD.
- Schneider P, Schott W, Bhawalkar M, Nandakumar AK, Diop F & Butera D (2001b) *Paying for HIV/AIDS Services. Lessons from National Health Accounts and Community-Based Health Insurance in Rwanda 1998–1999*. UNAIDS case study. UNAIDS, Geneva.
- Soeters R & Griffiths F (2003) Improving government health services through contract management: a case from Cambodia. *Health Policy and Planning* 18, 74–83.
- Steinwachs L (2002) *Extending health protection in Tanzania – networking between health financing mechanisms*, ESS article no.7. ILO, Social Security Policy and Development Branch, Geneva.
- Waelkens MP & Criel B (2004) *Les mutuelles de santé en Afrique sub-Saharienne. Etats des lieux et réflexions sur un agenda de recherche*. Health, Nutrition and Population Discussion Paper, March 2004. World Bank, Washington, DC, 99 pp.
- Walford V, Basaza R, Magezi A *et al.* (2000) *Uganda Community Health Financing Project – Output to Purpose Review*. DFID, London.
- WHO (2000) *Health Systems: Improving Performance*. The World Health Report 2000. WHO, Geneva.
- World Bank (2003) *The World Development Report 2004. Making Services Work for Poor People*. World Bank, Washington, DC.
- Zett J (2001) *Actualisation de l'inventaire des mutuelles de santé au Burkina Faso. Banque de données sur les mutuelles de santé et leurs structures d'appui*. La Concertation, Dakar.

**Authors**

**Bart Criel** (corresponding author) and **Maria-Pia Waelkens**, Public Health Department, Institute of Tropical Medicine, 155, Nationalestraat 2000 Antwerp, Belgium. Tel.: +32 3 247 62 88; Fax: +32 3 247 62 58; E-mail: bcriel@itg.be; mpwaelkens@itg.be  
**Guy Carrin**, Department of Health Financing, Expenditure and Resource Allocation, World Health Organisation, 1211 Geneva 27, Switzerland. E-mail: carrin@who.int