A health insurance scheme for hospital care in Bwamanda district, Zaire: lessons and questions after 10 years of functioning

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Summary

A voluntary insurance scheme for hospital care was launched in 1986 in the Bwamanda district in North West Zaire. The paper briefly reviews the rationale, design and implementation of the scheme and discusses its results and performance over time. The scheme succeeded in generating stable revenue for the hospital in a context where government intervention was virtually absent and external subsidies were most uncertain. Hospital data indicate that hospital services were used by a significantly higher proportion of insured patients than uninsured people. The features of the environment in which the insurance scheme thrived are discussed and the conditions that facilitated its development reviewed. These conditions comprise organizational-managerial, economic-financial, social and political factors. The Bwamanda case study illustrates the feasibility of health insurance - at least for hospital-based inpatient care - at rural district level in sub-Saharan Africa, but also exemplifies the managerial and social complexity of such financing mechanisms.

Keywords voluntary health insurance, moral hazard, hospital care, district health systems, research, rural Zaire

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Introduction

Health insurance as a source of finance for health care is a system in which potential consumers of health care make an advance payment to an insurance scheme, which in the event of future health service utilization will pay the provider of care some or all of the direct expenses incurred (World Health Organization 1993a). The existence of risk is the fundamental rationale for insurance. The reasons for encouraging health insurance are its potential for raising additional and stable revenue to fund the cost of health care provision, its capacity to reduce financial barriers to health care utilization and its redistributive effects (Mills 1983). There is great interest in, and sometimes indeed strong advocacy of the introduction or expansion of insurance-based health care financing schemes in Africa (Abel-Smith 1986; Arhin 1992a; Vogel 1990a,b; World Bank 1987, 1993). Several international organizations consider the study of insurance systems in developing countries as the priority area in the field of health care financing (UNICEF 1992; WHO1993b; EU 1995). This plea for the development of health insurance in developing countries is in line with the shift towards private sources of finance for health care, the most notable change during the 1980s being the introduction and increase in user fees for government
services (Creese 1990; Van Lerberghe 1994). In this respect health insurance is a policy option which fits in with the current international trend towards the limitation of state activity and privatization (Criel et al. 1996).

The introduction of national compulsory health insurance schemes is being considered in some sub-Saharan African countries such as Ghana, Nigeria and Zimbabwe (WHO 1993a). This is unlikely to be an equitable and efficient financing option in a context where only a minority of the population would be covered, for instance only formal sector employees (Korte et al. 1992), and where the administrative capacity required for the adequate management of such schemes is limited. Vogel in his overview of formal health insurance systems, both publicly and privately organized, in 23 sub-Saharan countries concludes that the development of health insurance has neither promoted greater equity in access to health services by the poor nor has it permitted greater access (Gruat 1990; Vogel 1996b). The small middle class seems to have benefited most.

Locally developed and district-based insurance schemes targeting poor rural self-employed populations remain relatively rare in developing countries. These 'community-based' health insurance schemes are less common than formal social security systems despite their a priori attractiveness (Baza et al. 1993; Carrin 1987; Dumoulin & Kaddar 1993). Only within the last 10 or 15 years have experiments in rural health insurance catering for self-employed people been developed in sub-Saharan Africa (Shepard et al. 1990; Chabot et al. 1991). There is still little analytical information available about such health insurance schemes (Arhin 1995b), and further operational research on the design and organization of insurance schemes covering people in the informal sector is urgently needed (WHO 1993a; Noterman et al. 1995).

We discuss one of the few well-established experiments in health insurance at district level in sub-Saharan Africa: the insurance scheme for hospital care in the Bwamanda district in Zaire. Its origin, design and implementation have been documented (Moens 1990; Moens & Carrin 1992; Ilunga 1992). Our principal aim is to focus on the evaluation of this scheme, on the conditions for reproducibility, and on avenues for future research. Institutional features and the practical organizational details of the scheme will first be briefly presented. Bart Criel worked in the Bwamanda district from September 1986 to July 1990, initially as a general medical officer and later as district medical officer. The Bwamanda insurance scheme is still functioning to date. In our view, this case study illustrates the feasibility of health insurance at rural district level in sub-Saharan Africa, but also exemplifies its managerial complexity and difficulties encountered in its evaluation. The paper hopes to contribute to clarifying the many issues and questions district health planners face when considering health insurance in similar environments.

Some theoretical considerations relative to health insurance

What is health insurance about?

Insurance rests upon the principle of risk-sharing between many people. It reduces individual uncertainty concerning the timing and amount of future possible expenses that may be incurred and thus contributes to an increase in well-being (Dubuisson 1995). Insurance relies on the fact that what is unpredictable for an individual is highly predictable for a large number of individuals. The principle is one of insurance based on risks or probabilities and not one of prefinancing or prepayment for known future events (Mills 1981).

Premiums are paid to an institution which compensates – partly or totally – any insured victim of the event for the financial loss resulting from the event. In the case of health insurance this insurance institution may also be the health care provider. Such a situation is referred to as direct insurance (Kutzin & Barnum 1992), or a direct pattern of insurance (Roemer 1969).

Adverse selection and moral hazard: a brief overview

In voluntary health insurance schemes it is important to minimize the preferential selection of high-risk individuals, a phenomenon the insurance industry calls adverse selection. Adverse selection occurs when those who anticipate needing health care choose to buy insurance more often than others: for instance, in the case of health insurance, patients with chronic diseases or individuals with a high predictability of health service utilization (pregnant women for instance). It occurs when insurance suppliers lack full information about the risk of individual insured persons or when, on grounds...
of equity, they offer insurance policies based on community-rated premiums (Arhin 1995b). Community rating refers to a policy in which the premiums are related to the risk of the group in its totality; that is, all subscribers will pay similar premiums (except for adjustments for family size). The premiums will thus not vary according to age, sex, health risk, occupation, etc., as is the case with actuarially based premiums. Community rating discourages those of low risk from purchasing insurance while making it more attractive to high-risk individuals. The occurrence of adverse selection is a function of the nature of the subscription unit (individual or household) and also of the proportion of people who join the scheme. The former determinant can be controlled in the design of the scheme; the latter cannot, unless a minimum level of participation is imposed before the insurance scheme can function.

Moral hazard also has received considerable attention from the insurance industry. It is defined by Mills (1983) as ‘the tendency of individuals, once insured, to behave in such a way as to increase the likelihood or size of the risk against which they have insured’. Moral hazard thus results in an ‘over-consumption’ of health services for health problems that could find an adequate solution at lower levels of the system. Moral hazard can be induced by the patient himself, but also by the health care provider’s behaviour (Donaldson & Gerard 1993). It is likely to occur in a context where the organization of the health services system lacks basic rationalization: for instance, a situation where people insured for hospital care have unlimited access to hospital services in the absence of an effective referral system between the different levels of care. The well-documented case of health insurance under social security systems in industrialized countries is facing. It has contributed to an increase in unjustified consumption of health services at inappropriate levels of care in the health pyramid, and the achievement of an integrated health system, i.e. a system where the various tiers have a specific role and function in a complementary way (Unger & Criel 1995), may be jeopardized. The consequences are cost inflation, loss of individual and collective autonomy, excessive medicalization, etc. (WHO 1977). Hence one of the major challenges a district health planner in a developing country will face when implementing health insurance is the need to minimize the undesirable and potentially harmful effects of enhanced financial accessibility to health services.

Rationale, design and implementation of the Bwamanda hospital insurance scheme

Bwamanda district

Bwamanda district is located in the north-west of Zaire. It covers an area of 3000 km² and had a population of about 158,000 in 1994. About 90% of the population are farmers. Their annual per capita income is about US$ 75. The health services in this district are based on a two-tier system: a network of 23 health centres scattered throughout the district and a 138-bed referral hospital. The diocese is the formal owner of the hospital but in functional terms the Bwamanda hospital fully acts as a referral hospital for the Bwamanda area in accordance with prevailing national health policies.

The development of the health services in Bwamanda was one of the activities of a larger integrated development project, the CDI Bwamanda (Centre de Développement Intégral). The CDI Bwamanda is a Zairian non-profit organization; it was established at the end of the sixties and gradually developed a wide range of activities in other fields than health care, such as agriculture, communications infrastructure, primary education and rural development. It received considerable external support in terms both of finance and of human resources. Government subsidies always remained very limited.

By the mid-eighties the district health system had reached a relatively high level of functioning. Quality health care was accessible to the vast majority of the population through the establishment of an integrated...
district health system. Most of the population had reasonable access to a health centre (95% lived within 7 km of a health centre). The population covered by a health centre ranged between 3000 and 13,000 inhabitants. The villages in the area of responsibility of each health centre were organized in rural committees for integrated development (Comités Ruraux de Développement Intégral or CRDI), which met monthly to discuss health issues as well as other problems related to development. In 1986, the average utilization rate for the curative clinics at health centre level was 0.6 new cases/inhabitant/year; coverage for antenatal care was 84%; coverage for measles vaccination was 90%. The annual hospital admission rate was about 50/1000. Referral and counter-referral systems functioned reasonably well.

In the mid-eighties many of the health centres in the district succeeded in recovering their recurrent costs through community financing mechanisms. These costs related to staff salaries (on average three staff members in each centre: a nurse, a nursing aid and a general hand), drugs, medical and other minor supplies. They did not include depreciation costs, nor the cost of the monthly supervision visits. The method of payment was a flat fee per episode of illness and episode of risk. In 1987 for instance, 9 of the 21 health centres in the district managed to recover these recurrent costs; the 12 other centres reached levels of cost recovery ranging between 73% and 98% (Bwamanda Health District 1987). Such high levels of cost recovery were certainly not exceptional in Zaire and are confirmed by the results of a large study by USAID on the financing of 10 effectively functioning health districts in Zaire (Resources for Child Health Project 1986). Other data pertaining to Zaire have indicated an average cost-recovery rate for health centres of almost 50% (Pangu 1988). The USAID study also indicated that the salaries of hospital and health centre staff constituted, respectively, 50% and 35% of the recurrent expenditure of these health institutions. These salaries always remained very poor.

In the case of a hospital admission a flat fee per type of admission was paid, with 5 possible fees according to the type of care required. In practice this amounts to a simplified diagnosis-related groups system: one fee for admission in pediatrics, internal medicine or gynaecology, and 4 progressively higher fees for surgical interventions categorized from minor to major (Table 1). In 1985 revenue from patients in the Bwamanda hospital constituted 40% of the total hospital revenue (Ilunga 1992). The remaining 60% came from subsidies from the mother organization, i.e. the CDI Bwamanda, from external funds of the Belgian bilateral aid agency and from various NGOs.

The fee schedule presented in Table 1 clearly indicates that the functioning of the Bwamanda hospital was largely subsidized. For instance, the total fee charged for a Caesarean section in 1985 (category surgery IV) was US$ 5, which is obviously inadequate to cover actual costs. Surveys of hospital recurrent cost analysis carried out in relatively similar settings support this statement. A recurrent cost analysis of an effectively functioning rural district hospital in Uganda showed that the average cost of a single major surgical operation was US$ 17 in 1992. If the cost of 10 inpatient days (an average length of stay in hospital for a patient receiving major surgery) is added to this figure, then the total cost was US$ 30 (unpublished data). A study of unit costs for in-patient services carried out in 3 Zimbabwean hospitals identified an average cost for major surgery of approximately US$ 35 (UNICEF 1996); another study in 6 Malawi hospitals identified a cost per single inpatient (all services together) ranging from US$ 20 to $ 30 (Mills et al. 1993); and a Medicus Mundi International (MMI) survey of 59 non-governmental hospitals in sub-Saharan Africa identified a median cost per inpatient of US$ 33 (Van Lerberghe et al. 1992).

<table>
<thead>
<tr>
<th></th>
<th>Paediatrics</th>
<th>intern. med</th>
<th>Surgery I</th>
<th>Surgery II</th>
<th>Surgery III</th>
<th>Surgery IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>30 Z</td>
<td>100 Z</td>
<td>150 Z</td>
<td>200 Z</td>
<td>250 Z</td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>120 Z</td>
<td>100 Z</td>
<td>150 Z</td>
<td>200 Z</td>
<td>250 Z</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 1985 fee structure before the introduction of the health insurance system (in 1985, 50 zaires = 1 US$).
A health insurance scheme for hospital care

Problem definition
In the eighties the Bwamanda hospital faced a steadily increasing cost of medical care due to inflation, and hospital charges had to be raised several times a year. At the same time increasing reluctance of external donors to subsidize the hospital’s recurrent costs and virtual non-existence of government funding led the health district managers to identify other stable sources of funds. In addition there was a problem of financial accessibility to hospital care, at least during certain periods of the year, and payment of hospital fees became an increasing problem for the poor rural population of Bwamanda district because of fluctuating availability of cash income due to seasonality of crops. Some patients referred from the health centre only arrived at the hospital after several days due to the time needed to find the necessary funds. Hence the challenge for the district management team was to design a financing strategy with improved access to hospital care for all people in need while maintaining the hospital’s financial viability.

Design and organization of a hospital insurance plan
The district management team discussed and compared various possible financing alternatives. The following criteria were used: political and social acceptability, ability to pay, risk-sharing potential, likely effect on the financial viability of the hospital and likely effect on the hospital’s financial accessibility. An insurance scheme was considered superior to the current system of fees per type of hospital service. The team identified the main variables relevant to a health insurance scheme about which a decision needed to be taken: What nature of insurance premium payments? What time and frequency of payments? Which unit of membership? Which services covered by the insurance scheme? Should co-payments or deductibles be considered?, etc. The discussion was pursued with the nurses heading the health centres during one of the regular workshops organized for them in Bwamanda. The various options concerning the above-mentioned variables were analysed and compared. Eventually a consensus was reached on the following features of the scheme:

- one annual subscription period at a time coinciding with the purchase of the coffee and soy bean crops (months of March and April);
- the family as subscription unit, with individual premiums;
- risk coverage limited to hospital care, with a 20% co-payment rate;
- decentralized collection of premiums at health centre level;
- implementation in the whole district at the same time, and only for the district population;
- management by the district management team.

Finally, the basic elements of the concept of insurance were presented to community representatives of each health centre. They expressed a preference for a scheme without co-payments, but the district management team thought it wise to have a 20% co-payment, which constituted a financial security margin in a context of high inflation and could act as a deterrent to unnecessary hospital utilization. At the specific request of the nurse in charge of the maternity department, an exception was made and no co-payment was charged for insured patients using maternity services. The rationale of this request was the concern to increase the workload at the maternity unit for the training of the local midwifery students. Women who had not attended antenatal care during their pregnancy, however, were not covered by the insurance and had to pay the full fee.

Questions were also raised concerning the possible situation of families who joined the scheme but did not undergo any hospitalization. Would they then get a refund? This concern is not surprising. Indeed, the widespread local mutual help mechanisms, such as traditional solidarity mechanisms within the extended family and mutual aid associations (tontines in francophone Africa, or ROSCAs, Rotating Savings and Credit Associations, in the anglophone literature) are very often based on a principle of voluntary balanced reciprocity (Dubuisson 1995) rather than on a principle of solidarity. Eventually, however, the majority of the community representatives agreed with the launching of this innovative financing scheme in 1986.

The first subscription period was the month of March 1986. During this one-time annual enrolment period of one month, membership premiums were collected by the...
staff of each health centre and representatives of the village committees. The level of the premium was empirically set at 20 Zaires, which approximately corresponded to US$0.3. This amount was deemed affordable: it was less than half the flat fee charged for an outpatient consultation at health centre level. Twenty Zaires was also the equivalent of the price paid to Bwamanda farmers for 2 kg of soy beans, a common crop in the area. As proof of payment of the premium, a stamp was affixed to the family record kept for each family at the health centre. A census of the district population had been carried out in 1985 and 1986, and on that occasion a family file had been opened for each household. In addition a membership register was opened at each health centre. The nurses in charge of the health centres eventually handed in the collected monies to the district health services administrator, who deposited the funds in a separate health plan account.

The health insurance scheme was not run by a separate ‘third party’ institution; it was managed by the district health authorities themselves and can thus be described as a direct pattern of insurance. On the whole, the administrative costs incurred for the practical organization and management of the insurance scheme remained relatively low. These costs covered transport and stationery expenses, staff bonus payments, and salaries of the scheme’s administrating and clerical staff. Data for the period 1987–89 indicated total administrative costs ranging between US$ 510 and 1800, i.e. between 4 and 6% of total expenses (Shepard et al. 1990). Recent data for the 5-year period 1990–95 reveal that the yearly cost of administering the scheme ranged between c. US$ 1000 and $ 3500, i.e. between 5% and 10% of the total expenses (These costs have been calculated through a conversion of Zaires into US$ at the exchange rates prevailing at that time. The skyrocketing inflation rates, especially in the 1990s, make cost estimates in foreign currency a perilous exercise. This may contribute to the explanation for the variation in administration costs identified in the period 1990–1995).

The routine functioning of the insurance plan can be summarized in a decision tree in which administrative and managerial procedures are presented in a sequential way (Figure 1). It is important to stress that members of the scheme who used the hospital outpatient department without being referred by their health centre could not benefit from the insurance, except in emergencies.

Referral from health centre to hospital was mandatory if the insurance was to take effect. Table 2 presents an overview of the hospital fee structure for the month of September 1986.

Results

Financial impact

The interest shown by the Bwamanda community in this voluntary insurance scheme for hospital care was overwhelming and beyond most expectations. In 1986, 32600 people – i.e. 28% of the district population – joined the scheme within 4 weeks. The financial balance after the first year of operation was positive, with a small surplus of approximately US$1300. In the following years the membership rates steadily increased, indicating a high degree of social acceptability (Figure 2). In 1987, 60000 people joined the scheme, and in 1988, 80000. The membership rate tended to stabilize around 60–65%. Each year the subscription charge was adjusted in line with inflation. The value of the charge remained approximately equivalent to the purchasing price of 2 kg of soy beans – approximately one-third of a US dollar – though with small variations over the years.

It is striking that this interest remained even during the dramatic social and political turmoil which Zaire has been experiencing since the beginning of the nineties. This is somewhat surprising, since one would expect expenditure for a hospital insurance scheme to drop on people’s priority list when the daily search for food becomes a major challenge. However, membership

Table 2 Hospital fees in September 1986 (in Zaires) (in 1986, the average annual exchange rate was 63 Zaires for 1 US$)

<table>
<thead>
<tr>
<th>Type of admission</th>
<th>Fee for uninsured patients</th>
<th>Fee for insured patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paediatrics</td>
<td>125</td>
<td>25</td>
</tr>
<tr>
<td>Internal medicine</td>
<td>500</td>
<td>100</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>500</td>
<td>100</td>
</tr>
<tr>
<td>Maternity</td>
<td>500</td>
<td>-</td>
</tr>
<tr>
<td>Surgery I</td>
<td>350</td>
<td>70</td>
</tr>
<tr>
<td>Surgery II</td>
<td>500</td>
<td>100</td>
</tr>
<tr>
<td>Surgery III</td>
<td>700</td>
<td>140</td>
</tr>
<tr>
<td>Surgery IV</td>
<td>900</td>
<td>180</td>
</tr>
</tbody>
</table>

*the use of the maternity services was free of charge for insured patients only if they had attended antenatal care.
B. Criel and G. Kegels  

Health insurance scheme for hospital care in Zaire

<table>
<thead>
<tr>
<th>Level in the District Health Services System</th>
<th>Managerial and accounting procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient at the health centre's out-patient department: consultation by nurse</strong></td>
<td>In case of referral to the hospital, check for subscription proof on family file (stamp + subscription number):</td>
</tr>
<tr>
<td>If member: the subscription number is notified on the referral ticket</td>
<td>If not member: 'ordinary' referral</td>
</tr>
<tr>
<td><strong>Arrival at hospital's out-patient department: consultation by medical doctor</strong></td>
<td>In case of doctor's decision to admit the patient:</td>
</tr>
<tr>
<td>Hospital's accounting department</td>
<td>If member: cross-check for subscription number in hospital-based register*</td>
</tr>
<tr>
<td>If member: cross-check for subscription number in hospital-based register*</td>
<td>If not member: payment of regular hospital fee (100%)</td>
</tr>
<tr>
<td>If cross-check positive: admit patient at reduced fee (20% of regular fee) and transfer of 80% of regular fee from health insurance fund to the hospital accounts</td>
<td>If cross-check negative: further investigate the patient's subscription status</td>
</tr>
</tbody>
</table>

*Each individual health centre team notifies names and subscription numbers of all people who joined the scheme in a register which is transferred to the hospital's accounting department at the end of the enrolment period.

**Figure 1** Managerial flow-chart for referred and admitted patients (adapted from Moens & Carrin 1992).

dropped significantly from 66% in 1991 to about 40% in 1992, and from 66% in 1993 to 41% in 1994. In 1992 severe ethnic tensions in the Bwamanda area, with a climate of social unrest, were probably responsible for the fall in subscriptions. In 1994 the enrolment period was preceded by the nationwide change in currency from anciens to nouveaux Zaires, limiting cash availability for many people.

The size of the population joining the scheme made genuine risk-sharing arrangements possible. High membership rates, together with the option to have the household as subscription unit, greatly reduced the risk of a preferential selection of high-risk cases (i.e. adverse selection). These membership rates are in fact a slight underestimate of the real subscription rates, since a sub-population of a few thousand people in the Bwamanda health district – most of them employees of the different CDI project services – are covered by mandatory

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employer-organized health insurance schemes which provide them and their families with free health care. They did not have an immediate incentive to join the scheme. If some of them paid the insurance premium out of their own pocket, it was with the objective of being insured if they lost their job and thus the benefit of free care.

The evolution and the sources of Bwamanda hospital revenue for the period 1985–89 are presented in Table 3. Revenue raised from payments for hospital care ('internal' or locally generated revenue) doubled from US$ 21,180 in 1985, the year before the start of the insurance plan, to US$ 44,475 in 1989. Internal revenue is made up of direct payments by non-insured patients, prepayment of employer-organized health care schemes, reimbursements to the hospital by the insurance fund.


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<tbody>
<tr>
<td>A. Internal revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.1. Refunding by insurance fund for insured: i.e. 80% of regular hospital fees</td>
<td>—</td>
<td>10,670</td>
<td>8,620</td>
<td>14,700</td>
<td>19,630</td>
</tr>
<tr>
<td>A.2. Co-payment by insured: i.e. 20% of regular hospital fees</td>
<td>—</td>
<td>2,670</td>
<td>2,155</td>
<td>3,675</td>
<td>4,900</td>
</tr>
<tr>
<td>A.3. Prepayment by employers for health care of employees and their families</td>
<td>—</td>
<td>6,665</td>
<td>10,990</td>
<td>9,635</td>
<td>13,810</td>
</tr>
<tr>
<td>A.4. Direct revenue from patients*</td>
<td>21,180</td>
<td>31,460</td>
<td>32,635</td>
<td>35,020</td>
<td>44,475</td>
</tr>
<tr>
<td>Total internal revenue (% of total hospital revenue)</td>
<td>(41%)</td>
<td>(61%)</td>
<td>(81%)</td>
<td>(73%)</td>
<td>(79%)</td>
</tr>
<tr>
<td>B. Subsidies** and gifts (% of total hospital revenue)</td>
<td>30,615</td>
<td>20,040</td>
<td>7,200</td>
<td>11,515</td>
<td>11,910</td>
</tr>
<tr>
<td>(59%)</td>
<td>(39%)</td>
<td>(18%)</td>
<td>(25%)</td>
<td>(21%)</td>
<td></td>
</tr>
<tr>
<td>Total hospital revenue (A + B)</td>
<td>51,815</td>
<td>51,500</td>
<td>39,835</td>
<td>46,535</td>
<td>56,385</td>
</tr>
<tr>
<td>(100%)</td>
<td>(100%)</td>
<td>(100%)</td>
<td>(100%)</td>
<td>(100%)</td>
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</tbody>
</table>

*Non-insured self-employed patients.
**The last government subsidies for the Bwamanda hospital were in 1984. Since then the only external hospital funding came through the CDI project.
and co-payments by insured patients themselves. Between 1986 and 1989 there was a clear trend for the revenue from the insurance scheme (reimbursements and co-payments) to increase. The insurance ensures the hospital a source of income which is stable because the number of non-paying patients is much reduced.

Direct payments by non-insured persons decreased by almost half from US$11,655 in 1986 (when 72% of the district population was not insured) to US$6,135 in 1989 (when only 39% of the population was not insured). An *a posteriori* analysis of the evolution in hospital fees indicated that the fee levels for non-insured persons and at the same time the 20% co-payments for the insured – had in fact dramatically increased over the same period. A Caesarean section, for instance, was charged at approximately US$5 in 1985, US$15 in 1986, US$14 in 1987, US$19 in 1988 and US$28 in 1989 (see Figure 3). On the other hand, subsidies (external revenue) to the hospital decreased in 1989 to about one-third of the 1985 level (from US$30,635 to US$11,910), whereas total hospital revenue increased from US$51,815 in 1985 to US$56,385 in 1989. Table 3 shows clearly that the relative proportion of internal revenue in total hospital income increased dramatically from 41% in 1985 to 79% in 1989.

**Hospital utilization data**

In 1986 hospital admission rates for the insured and non-insured population were 36.2 and 24.8 per thousand, respectively. In 1988 these rates were 35.6 and 24.6 per thousand, respectively (see Table 4). These differences are statistically highly significant. Hospital data for the year 1989, based on a one-in-ten sample from the hospital register, showed that insured patients had specific hospital service admission rates 1.9–6.7 times higher than non-insured patients not covered by employer-organized schemes (Shepard *et al.* 1990). More recent data for the 12-month period April 1993–March 1994 revealed admission rates of 49 per thousand for the insured and 24.9 per thousand for the uninsured. The latter figure can be further split into 17 per thousand for uninsured self-
Table 4 Hospital admission rates in insured and non-insured populations of the Bwamanda district (years 1986 and 1988).

<table>
<thead>
<tr>
<th>Year</th>
<th>Admissions/insured population (in per thousand)*</th>
<th>Admissions/non-insured population (in per thousand)*</th>
<th>$\chi^2$ and P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>1,181/32,614 (36.2 %)</td>
<td>2,132/85,996 (24.8 %)</td>
<td>$\chi^2 = 115$; $p &lt; 0.001$</td>
</tr>
<tr>
<td>1988</td>
<td>2,863/80,495 (35.6 %)</td>
<td>1,200/48,749 (24.6 %)</td>
<td>$\chi^2 = 119$; $p &lt; 0.001$</td>
</tr>
</tbody>
</table>

*These ratios are considered to be true proportions, which in reality they are not since the numerator may contain several admissions for one same individual.

**The data concerning the non-insured population also include admissions of patients covered by employer-organized schemes.

employed persons and an estimated 184 per thousand for people covered by an employer-organized scheme (Table 5). During the last 3 or 4 years people from outside the district frequently claimed to live within the district boundaries to be eligible for subscription to the insurance plan during the enrolment period. They had their names added on the family file of a ‘host’ family (which was often composed of relatives). This happened mainly in the areas of the two Bwamanda town health centres and in the areas of two health centres situated at the edges of the district. Hence the figure of 49 per thousand admission rate for insured persons from the district is probably a slight overestimate.

Table 5 also shows that in the period 1993–94 about 15% of all admissions (1078 out of 7362) were patients living in neighbouring districts. This is not a new finding: Bwamanda hospital has always been a facility with a substantial proportion of users from other districts. Data for the year 1987 indicate that 17% of admissions (691 out of 4090) were patients from outside the district (Bwamanda Health District 1987). In 1995 this figure increased to 20.4% (1599 out of 7843) (Bwamanda Health District 1995).

Table 5 Hospital admission data for the period 1/4/93–31/3/94

<table>
<thead>
<tr>
<th>Hospital service</th>
<th>Insured from district</th>
<th>Non-insured from district</th>
<th>Employer organized schemes in district</th>
<th>Out of district</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paediatrics</td>
<td>1,267</td>
<td>168</td>
<td>221</td>
<td>132</td>
<td>1,788</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>278</td>
<td>39</td>
<td>21</td>
<td>68</td>
<td>406</td>
</tr>
<tr>
<td>Internal medicine</td>
<td>547</td>
<td>201</td>
<td>42</td>
<td>356</td>
<td>1,146</td>
</tr>
<tr>
<td>(male + female)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery men</td>
<td>452</td>
<td>20</td>
<td>17</td>
<td>78</td>
<td>567</td>
</tr>
<tr>
<td>Surgery women</td>
<td>370</td>
<td>35</td>
<td>32</td>
<td>87</td>
<td>504</td>
</tr>
<tr>
<td>Maternity</td>
<td>1,119</td>
<td>82</td>
<td>29</td>
<td>35</td>
<td>1,265</td>
</tr>
<tr>
<td>Intensive care</td>
<td>939</td>
<td>326</td>
<td>99</td>
<td>122</td>
<td>1,686</td>
</tr>
<tr>
<td>Total admissions</td>
<td>4,972</td>
<td>857</td>
<td>461</td>
<td>1,078</td>
<td>7,362</td>
</tr>
</tbody>
</table>

Denominator: 101,353

Admission rate: 49 per thousand

*This figure is an estimate.

Notes:
- Patients from the trypanosomiasis ward are not included in this table.
- Most of the patients admitted in the intensive care ward are transferred to other wards after a few days; these admissions are thus counted twice and the real number of admissions is therefore lower.
B. Criel and C. Kegels  Health insurance scheme for hospital care in Zaire

This pattern of higher hospital admission rates for the insured population may, generally speaking, be due to a combination of moral hazard and better access for those who need it. Within the limits of the available information it is difficult to assess the relative importance of each single possible cause. The fact that insured patients can benefit from the insurance scheme only when referred by a health centre and the system of co-payment at hospital level are factors which a priori tend to counteract any substantial degree of inappropriate hospital utilization.

It is important to acknowledge the fact that the increment in hospital utilization by the insured population seems to be highly variable. The data in Table 6 indicate that excess use is particularly high for surgical services, both female and male, but that it is hardly apparent for internal medicine services. The very high admission rates for the (small) population covered by employer-organized prepaid health care schemes are not surprising, for these patients – the majority of whom live in and around Bwamanda township – have no financial cost to bear in case of hospital admission.

Discussion: What lessons can we learn from the Bwamanda experience?

Can we regard the Bwamanda insurance scheme as a success?

A recent WHO study group acknowledged the fact that many different criteria for the evaluation of financing systems exist. The group proposed a framework for the evaluation of financing schemes based on the following criteria (WHO 1993a): the level and reliability of resources raised; the efficiency and the equity of the scheme; its viability in terms of social acceptability; and finally its health impact. The group recognized that currently information is least available for the last area of evaluation of health gains.

The social acceptability of the Bwamanda scheme seems beyond dispute given the high subscription rates. The other evaluation questions relating to the scheme’s financial performance, to its effectiveness, efficiency and equity are discussed in more detail in this section. The initial objectives set forth by the district managers were as follows: on the one hand there was the need for a stable source of local revenue allowing the hospital to function properly without government funding and with most uncertain future levels of external subsidies. On the other hand, there was the concern to keep hospital fees at an affordable level for the population of the district so that financial accessibility was maintained.

Financial performance: attraction of additional resources?

The Bwamanda scheme evidently succeeded in generating reliable and stable resources for the functioning of the hospital. Locally raised revenue virtually doubled between 1985 and 1989, even though total revenue remained more or less the same around

Table 6 Hospital admission rates for the period 1/4/93-31/3/94

<table>
<thead>
<tr>
<th>Admission rates in per thousand</th>
<th>Insured population</th>
<th>Uninsured population</th>
<th>Population covered by employer-organized pre-paid schemes</th>
<th>Ratio admission rate insured/admission rate non-insured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paediatrics¹</td>
<td>12.5 per thousand</td>
<td>3.3 per thousand</td>
<td>88.4 per thousand</td>
<td>3.8</td>
</tr>
<tr>
<td>Gynaecology¹</td>
<td>2.7</td>
<td>0.8</td>
<td>8.4</td>
<td>1.35</td>
</tr>
<tr>
<td>Internal medicine¹</td>
<td>5.4</td>
<td>4</td>
<td>16.8</td>
<td>11</td>
</tr>
<tr>
<td>Surgery men¹</td>
<td>4.4</td>
<td>0.4</td>
<td>6.8</td>
<td>12</td>
</tr>
<tr>
<td>Surgery women¹</td>
<td>3.6</td>
<td>0.3</td>
<td>12.8</td>
<td>12</td>
</tr>
<tr>
<td>Maternity¹</td>
<td>11</td>
<td>1.6</td>
<td>11.6</td>
<td>6.9</td>
</tr>
<tr>
<td>Maternity²</td>
<td>27.6 per hundred expected deliveries</td>
<td>4.1 per hundred expected deliveries</td>
<td>29 per hundred expected deliveries</td>
<td></td>
</tr>
</tbody>
</table>

¹The denominator is the general population.
²The denominator is the number of expected deliveries (birth rate is 40 per thousand).
approximately US$50 000 a year. The precise amount of subsidies allocated to the hospital was in fact never decided on a predetermined basis – at the start of every new budgetary year for instance. The hospital thus had no real budget. The policy of the CDI project was to systematically cover the hospital's deficit as long as the project had the necessary financial means to do so and as long as this deficit remained within reasonable limits. Obviously the room for financial manoeuvre shrank continuously in the second half of the eighties and the first half of the nineties, due to the steep deterioration in the socio-economic situation (the decrease in prices paid for locally grown coffee, traded on the international market, meant a serious reduction in income for the project) and to the reluctance of donors to fund operating costs. Nevertheless it seems possible that the Bwamanda insurance scheme actually relieved the CDI project from subsidizing the hospital to the same extent as in the past. This may have led to displacement effects where other activities within the CDI project, more in need of financial resources, would have benefited from higher financial support. But as Zschock (1979) argues, displacement is not necessarily a negative feature.

The financial data presented in the previous section support the conclusion that Bwamanda hospital has become less dependent on external funding sources. This trend is clear, even though there probably are problems with the accuracy and completeness of the financial data because of the complex accounting procedures and mingling of funds within the Bwamanda district, and because of the difficulty to convert local into foreign currency values. It is reasonable to assume that this trend was maintained in the early nineties, since many fund-providers and aid organizations decided in the period 1990–91, for political reasons, to reduce or even to stop altogether any further aid to Zaire.

Finally, it must be acknowledged that an annual hospital recurrent expenditure of US$ 50 000, i.e. a mean expenditure of US$ 370 per inpatient bed, is very low compared to similar hospitals in sub-Saharan Africa. In the 130-bed hospital in Hoima district in Uganda, the mean expenditure per inpatient bed was US$ 830 (unpublished data) and the Medicus Mundi International survey of 59 NGO hospitals in sub-Saharan Africa indicated an average figure of approximately US$ 1 000 (Van Lerberghe et al. 1992). One explanation for this low figure may be the extreme level of rationalization of resource use in the Bwamanda hospital. For example, the trainees of the local nursing school were involved in routine hospital work from the very beginning of their 4-year training curriculum.

Effectiveness and efficiency of the scheme: does it facilitate access to the hospital for those patients who need it?

The answer to this question is less clear-cut. It appears that insured persons have used the hospital services at a significantly higher rate than the uninsured. The admission rates in the insured population increased from 35.6 per thousand in 1988 to 49 per thousand in the period April 1993 to March 1994 ($\chi^2 = 198; P < 0.001$) whereas these rates hardly changed for uninsured persons: 24.6 per thousand in 1988 and 24.9 per thousand in 1993–94 ($\chi^2 = 0.1; P = 0.75$). In 1988 the ratio of hospital admission rates for insured compared with non-insured patients was almost 1.5; in 1993–94 this figure increased to a ratio of about 2. This ratio was 2.9 in the period 1993–94 when non-insured admissions excluding patients covered by employer-organized insurance schemes are concerned. If we consider higher admission rates as an indicator of better accessibility to the hospital, then the answer seems straightforward, even though the scheme may have selected precisely those families who were the higher hospital users even before the insurance scheme was implemented.

Hospital utilization is not, however, a goal in itself: an increase in hospital utilization is a positive phenomenon if it reflects the treatment of problems where the hospital's know-how and technology are needed. To what extent is this excess in hospital utilization explained by an increase in 'appropriate' hospital utilization? Some of the arguments supporting the hypothesis that it is not due to a phenomenon of moral hazard have already been pointed out. Firstly there is the mandatory referral of the patient by his health centre (except for emergency situations), and secondly there is the system of small co-payments. It is possible that health centre nurses may now and then have been put under pressure by the patient to be referred. If this did occur, however, there was a further control: on arrival at the hospital the patient would first be seen by the medical officer at the referral consultation, who would decide whether admission was appropriate or not.
However, the fact that the excess in hospital utilization by the insured population varies considerably from one hospital department to the other indicates that moral hazard is not by any means a homogenous phenomenon. It may exist for some health problems and less so, perhaps not at all, for others. The level of predictability of some health problems or events requiring intervention at the hospital may be one of the explanations. The distinction between predictable and unpredictable as a tool for assessing moral hazard has been applied in the evaluation of the Masisi hospital insurance scheme in eastern Zaire (Noterman et al. 1995). The predictability hypothesis may constitute a plausible explanation for the considerable increase in utilization of the hospital's maternity services, and perhaps even for the striking increase in utilization of surgical services. The latter could be explained by a high proportion in this incremental utilization of non-urgent surgery for abdominal and inguinal hernias which are very prevalent health problems in the Bwamanda area. Our data neither confirm nor disprove this hypothesis. Further investigation is needed to elucidate this phenomenon of differences in hospital utilization.

The administrative costs of the scheme in the nineties were between 5% and 10%, suggesting a relatively satisfactory level of administrative efficiency. These costs are indeed far below the operating costs of social insurance funds in other African countries (ILO 1988; Grut 1990; Shaw & Griffin 1995). It is not surprising to find the highest proportion of administrative costs (about 10%) in the years 1992 and 1994, when subscription rates were lowest.

The data do not provide information on the effect of the health insurance scheme on patients' delay in seeking treatment. Comparison of admission rates between insured and uninsured patients shows that insured individuals use the hospital more often, but does not indicate whether patients actually come more timely. This is clearly one of the priorities for further study, since the problem of patient delay was one of the reasons which led to the development of hospital insurance in the first place.

**Equity of the scheme?**

In Bwamanda all families subscribing to the insurance scheme pay the same premium per individual household member, and all enjoy the same benefits in the event of hospital admission, independently of the family's socio-economic status and the other costs to the family of an admission. These other costs are often substantial: indirect costs such as transport expenses, expenses for food, expenses for the lodging of family members in Bwamanda town, etc. are often higher than the direct costs, i.e. the fee to be paid to the health care institution. Two things need to be acknowledged at this stage: firstly the fact that in a rural environment like Bwamanda, the farther people live from the hospital, the higher are these indirect costs and the higher the opportunity cost of an admission, and secondly the fact that the farther people live from the hospital the lower their hospital utilization (King 1966; Kloos 1990). Hence members of the insurance scheme who live far from the hospital, but pay the same premium as members living close to it, actually subsidize the scheme. The premiums in the Bwamanda scheme are *de facto* regressive.

There is a need to study the design of systems which aim to increase the solidarity basis of similar schemes. Such systems must not only be technically feasible, but financially affordable and socially acceptable (Gilson et al. 1995) as well. A system of sliding scales according to distance from health centre to hospital was tried out in Bwamanda in 1988 with the objective of tackling this problem. It was designed to channel benefits to a well-defined target population, in this case people living far from the hospital. This is what Glewwe & van der Gaag (1988) call *characteristic* targeting, in case according to the geographical area where people live. In Bwamanda the district team divided the health centre network into 3 subgroups: a first group of health centres (n = 7) located less than 25 km from the hospital, a second group (n = 8) 25-45 km away and a third group (n = 7) more than 45 km from the hospital. The greater the distance from health centre to hospital, the lower the co-payment to be paid by the members when admitted to hospital (see Table 7). This system of characteristic targeting did not have a positive impact on the hospital admission rates of the more remote insured populations. A comparison of 1987 (without targeting) and 1988 (with targeting) revealed that the rates remained similar for groups 1 and 2, and that the rate for group 3 actually fell in 1988 (see Figure 4).

In the following year it was decided to discontinue this experiment with sliding scales because of the absence of effect in terms of equity and to a lesser extent
B. Criel and G. Kegels  Health insurance scheme for hospital care in Zaire

Table 7 Hospital fees in 1988 (Zaires). Sliding scales according to distance. (In 1988, the average annual exchange rate was 187 Zaires for 1 US$)

| Type of admission | Fee for uninsured patients | Co-payment for insured patients from group 1 | Co-payment for insured patients from group 2 | Co-payment for insured patients from group 3
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Paediatrics</td>
<td>600</td>
<td>120</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>Internal medicine</td>
<td>1800</td>
<td>350</td>
<td>180</td>
<td>100</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>1800</td>
<td>330</td>
<td>180</td>
<td>100</td>
</tr>
<tr>
<td>Maternity</td>
<td>1800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery I</td>
<td>1000</td>
<td>200</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Surgery II</td>
<td>2500</td>
<td>500</td>
<td>250</td>
<td>120</td>
</tr>
<tr>
<td>Surgery III</td>
<td>3000</td>
<td>600</td>
<td>300</td>
<td>50</td>
</tr>
<tr>
<td>Surgery IV</td>
<td>3500</td>
<td>700</td>
<td>350</td>
<td>180</td>
</tr>
</tbody>
</table>

Patients living in the catchment area of health centres situated at less then 25 km from the hospital, between 25 and 45 km from the hospital, at more than 45 km from the hospital.

because of the more complex management and control procedures required (for instance, the origin of the admitted patients had to be systematically checked). However, some members of the district management team argued that the considerable social acceptability the proposal had achieved among all population groups constituted a strong enough case for continuing the experiment. Moreover, the data did not permit breaking down the number of admissions according to the nature and severity of the health problems for which people were admitted.

The membership rate never exceeded two thirds of the total district population. A survey carried out in 1987 indicated that the very poor were represented to a higher degree in the non-member population (Moens 1990). Differential premiums and fees for the poor, perhaps even exemption of payment, could be considered. Such a policy is called direct targeting, i.e. a system where the provision of benefits is limited to individuals or households identified as belonging to the target group (Glewwe & van der Gaag 1988). Direct targeting, in contrast to characteristic targeting, requires means-testing, i.e. a process where specific individuals are classified as eligible or ineligible for benefits (Willis & Leighton 1995). Means-testing procedures could be tested in Bwamanda within the framework of the hospital insurance scheme.

Description of the environment in which the Bwamanda scheme thrived

The authors' hypothesis is that the relatively successful development of the Bwamanda scheme, as well as its viability, was possible because it took place in a specific environment. However, the various constitutive features of the Bwamanda environment in which the scheme was conceived and in which it thrived cannot, strictly speaking, be considered conditions. The identification of conditions for a successful development would imply a more formal research perspective in which different conditions, or a set of conditions, were tested with the object of assessing whether and to what extent they were necessary for a satisfactory development. This was not the case in Bwamanda. Hence caution is needed in the interpretation of the relative importance of each factor.

Figure 4 Effect of sliding scale of co-payments for patients living at different distances from the hospital (see Table 7). Admission rates for 1987 and 1988.
in the development of the Bwamanda scheme. The features of the Bwamanda environment are tentatively classified in four categories:

Organizational managerial factors
The insurance scheme was launched in a context in which the district health service system had reached a relatively high level of operational efficiency. In the mid-eighties Bwamanda district was considered one of the best-functioning health districts in the country. It was headed by a strong district management team of medical doctors, senior nursing staff and health service administrators. From the early seventies on it had enjoyed continuous external support, especially from Belgian bilateral aid. On average, two expatriate Belgian doctors and two Dutch nurses (sisters of the Medical Mission) were working in the Bwamanda hospital from 1970 to 1990. In 1986 the district health system functioned as an integrated two-tier system, i.e. a system in which health centres and hospital fulfil their specific roles in a complementary way (Unger & Criel 1995). Use of resources was highly rationalized. The referral and counter-referral system functioned well and contributed to the effective and efficient functioning of the health services. Particularly important was the fact that mechanisms of control to secure rational utilization of the health services were in place: the network of health centres covered the whole of the district area; direct hospital utilization – bypassing the first line – was virtually non-existent; a hospital admission was decided on by the hospital doctor after the patient’s referral by the health centre nurse, etc. In such circumstances it was feasible to keep moral hazard within reasonable proportions.

The hospital offered relatively high standards of care and there were no social or cultural barriers to its utilization. Moreover, as the only hospital in the district, it occupied a virtual monopoly position for most people in the district although people living in the southwest of the district had easy access to the hospital in the neighbouring Tandala district. Hence people’s willingness to subscribe to a hospital insurance scheme was high.

The scheme’s design represented a direct pattern of insurance: the insurers were also the health care providers. In an environment in which rational resource use was a strong tradition such a direct insurance system fostered efficiency.

Preparation of the scheme took more than a year, and both health centre staff and community representatives were closely involved in the initial process of planning and in the implementation of the scheme. There was a huge effort of communication and mobilization every year in the weeks preceding the enrolment period. Staff from other sectors (for instance rural development and agriculture) also contributed to the effort.

Economic/financial factors
The district management team received substantial support from the CDI’s general infrastructure and administration facilities. For example, value-maintaining mechanisms for the collected funds were developed in a context of high inflation. Initially the premiums collected were deposited in a special fund at the CDI, which then paid interest rates of 3% per month. Later the collected premiums were invested in the purchase of drugs by the CDI-supported inter-diocesan pharmacy. In the 1990s, when inflation became very high, the revenue from the insurance plan was immediately introduced into the local and regional economic circuit via the CDI’s economic activities.

The CDI agreed at the start of the scheme to act as financial guarantor. This back-up was of crucial importance in case the scheme turned out not to be financially viable. Financial viability was unpredictable at the time when the scheme was launched in 1986. The CDI committed itself to cover a financial deficit which could jeopardize the credibility of the insurance scheme. In the period 1990–95, for instance, a deficit occurred twice: on the first occasion the deficit was met by a gift from a donor, and on the second the CDI lent the necessary funds.

The Bwamanda area is typical of a rural context where the availability of ready money is irregular. It was for that reason that the enrolment period was fixed at the time of year when the CDI buys the coffee and soy bean crop in the Bwamanda area.

Social factors
The CDI project initiated its economic and social activities in the economically much disadvantaged Bwamanda area around 1969–70. Initially the Catholic mission in Bwamanda was the structure around which the project’s activities were organized and expanded. Gradually a certain number of social services were developed in a spirit of ‘integrated’ development: the
health infrastructure was upgraded and extended, and the health care delivery system in the district was organized; the local primary and secondary education systems received support; activities in the field of rural development were launched; local communications and transport infrastructures were rehabilitated, etc. Gradually a relationship of trust grew up between the CDI and the population in general and between the health services and the population in particular. This confidence certainly influenced the community representatives in their decision in 1985–86 to join in a hospital insurance scheme even though not all the issues involved were clearly understood at the time. There was also faith in the district management team’s ability and trustworthiness to manage efficiently the financial aspects of the insurance scheme.

Political factors
Under the Zairian decentralization policy health districts were to be largely self-financed. Consequently the Bwamanda district management team had sufficient autonomy to allow them to experiment with innovative financing schemes. The overall environment in which the initiative took place was characterized by the virtually total absence of the state, both in terms of resource allocation and in terms of planning, regulation, control, etc. This de facto vacuum left district teams with almost total autonomy to manage (or not to manage) the health systems for which they were and are responsible. The lack of government support for the district health services was a general trend in Zaire for many years: the last subsidy from the government to the Bwamanda health services was in 1984. In fact in the case of Bwamanda the absence of government funding of the hospital’s recurrent costs was at the core of the problems which led the district team to consider an insurance scheme in the first place.

Policy conclusions
Replicability of the Bwamanda scheme?
As argued in the previous section, the Bwamanda experiment was launched at a time when the overall performance of the district health services system had reached a high standard and local managerial capacity was strong. These features were not, however, specific to the Bwamanda setting alone. During the seventies and eighties many other districts in Zaire developed, often with substantial donor support, highly effective district health services. What was specific to Bwamanda was the existence of the CDI project and its financial, logistical, technical and institutional support. The CDI increasingly took over some of the basic responsibilities that would normally fall on the state. Indeed, the project’s activities partly filled the vacuum created by the virtually complete withdrawal of the Zairian state from the public service arena. The reproducibility of the Bwamanda scheme in other parts of the country – and perhaps in other parts of the region – seems therefore largely dependent on the presence of support by a public interest-orientated body or institution. As the state of Zaire has effectively collapsed and is not capable of performing this supportive role it is probable that such an enabling environment can be created only through effective and sustained NGO-supported development projects.

Avenues for further research
Several areas for investigation and study were identified in the previous sections: the need for tools and methods for the identification of moral hazard; the need for research on the impact of health insurance on patient delay; the need to design and test mechanisms increasing the solidarity basis and equity of the scheme. Research on these managerial issues would contribute to a better understanding of the Bwamanda scheme and to more appropriate design and organization procedures.

Health insurance is, however, socially not a neutral phenomenon. In his analysis of the social functions of health insurance in both modern and traditional societies Rushing (1986a, b) argues that the introduction of insurance leads to qualitative transformations in terms of social relations, that health insurance may also bring important non-medical benefits, and that it may exert substantial influence on social integration and cohesion in the community. An evaluation which limits itself to the more quantitative aspects of the scheme would necessarily remain incomplete. Hence it would also be interesting to study in more detail the social perception and the social impact of the Bwamanda scheme after 10 years of operation. For instance, is there in the community a feeling of ‘collective ownership’ of the scheme? Or is it (still?) considered a ‘foreign’ initiative taken by the health service? How do people perceive the social concern of risk-sharing which guided
the district team in its decision to consider health insurance rather than other hospital financing methods? What are the reasons motivating people to join (or not to join) the scheme? Has the insurance scheme had any influence on existing social organization patterns, more particularly on the very many small-scale family and group mutual aid mechanisms, etc. Obviously more qualitative research methods would need to be used.

**Conclusion**

Notwithstanding the specific features of the environment in which the Bwamanda experiment took place, this case study illustrates the feasibility of health insurance—at least for hospital-based inpatient care—at rural district level in sub-Saharan Africa. It provides evidence supporting Arhin’s position not to dismiss rural health insurance in Africa as impractical or unfeasible (Arhin 1995a). But at the same time it clearly illustrates the managerial and social complexity of such financing mechanisms. The need to proceed with caution is thus apparent. In Bwamanda there was enough time and room for manoeuvre to do so. In many other places the (financial) situation may be much more acute and may require quicker—but less well prepared—decisions.

Experience in Bwamanda also highlights the fact that locally developed health insurance schemes, in addition to their financial and social objectives, may constitute an opportunity to improve the overall coherence of district health service systems. The Bwamanda scheme contributed to strengthening the local referral system; it made the different roles of health centre and hospital explicit; it triggered discussions within the management team on important issues like the adequacy of health services utilization, equity, social perception of community financing schemes, etc.

The district is the most appropriate level in the health system for top-down and bottom-up planning to meet. It is sufficiently small to allow management teams to be familiar with the specific features of the setting and to acquire a thorough knowledge of the community, while being sufficiently large to allow for economies of scale. There is a case for considering this balance as a major asset in the specific processes of the planning, design, implementation and evaluation of health insurance schemes. The district team’s knowledge of the community—as long as the team is sufficiently competent and stable—is important and valuable because it permits adaptations of general guidelines to local constraints, and the smallness of the district facilitates people’s understanding and endorsement of the potential benefits of health insurance schemes. This social proximity may facilitate accountability from district team to community; trigger the establishment of local mechanisms of social control over the insurance scheme; and perhaps promote the gradual development of a feeling of collective ownership of the scheme. At the same time the population of the district is large enough to enable substantial pooling of funds and to make risk-sharing arrangements possible.

The district level—rather than the provincial or central level—appears to be most promising in the health system for the implementation of health insurance schemes. There are still few documented case studies of health insurance schemes managed at the local level in sub-Saharan Africa, and thus hard evidence supporting this hypothesis is lacking. There is, however, evidence that health insurance schemes which are managed at the national level in sub-Saharan Africa remain inadequate (Vogel 1990b). Studies of the Burundi health card insurance scheme indicate that this national insurance scheme would benefit from more managerial autonomy at the peripheral levels of the health system (McPake et al. 1993; Baza et al. 1993; Arhin 1994).

The role of district teams as key actors in the management of insurance systems does not mean that there would be no further role for the central level. Decentralization should not be reduced merely to privatization and limitations on the role of the state (Collins & Green 1994). In the present discussion on health insurance systems the role of the central level would not lie primarily in actually organizing these systems but rather in designing a framework for their organization, in providing district teams with the necessary assistance in design, training and information services (WHO 1996) and—last but not least—in compensating for the differences between districts in their ability to raise local revenue. Some degree of centralization thus remains necessary if these differences are to be compensated for through national financing reallocation mechanisms (Collins & Green 1994). In Zaire these corrective mechanisms have, unfortunately, not worked for many years. The consequence is that a relatively successful hospital insurance system within an
effectively functioning and externally supported district system co-exists with very poor health service systems in the neighbouring districts. The substantial proportion of Bwamanda hospital users coming from neighbouring districts (20% in 1995) illustrates Bwamanda’s attractiveness in terms of quality of care offered; it also indicates the poor performance of the hospitals in the surrounding districts. Support to these districts – in terms of staff, finances and logistics – is crucial if a balanced development of all the health services in this part of Zaire is to be achieved.

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Tropical Medicine and International Health

Volume 2, No 7, pp 654–672, July 1997


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