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Referral revisited: community financing schemes and emergency transport in rural Africa

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Abstract

Referral between first and second levels of care in rural African health systems is an extremely complex problem. Problems that have plagued the process of referral include poor service quality, low availability of trained personnel, inadequate supplies of drugs and medical diagnostic equipment and inadequate communication infrastructure. In this paper, the authors analyse the role of transport costs in the utilization of referral and how community health insurance schemes can help reduce the economic burden of transport costs, thereby improving referral utilization and health outcomes. Following the introduction, the authors provide a conceptual framework of the individual-, household- and community-level factors that affect referral in the rural African context, with particular emphasis on the role of the time and monetary costs of transport and the potential role of community risk-sharing schemes. The paper then presents a detailed case study from Kenya where a community has been experimenting with a health insurance scheme which provides emergency transport for emergency referral. Data from the past eight years of experience in northern Kenya suggests that support for the insurance scheme has depended on the reliability of the health system, as well as the seasons and various external problems, such as political interference, drought and insecurity. Conclusions drawn support the idea of community financing schemes for transport, not merely as a life-saving strategy in remote and resource-poor health infrastructures, but also as a means to help build trust in the health system itself and thus improve sustainability through local institutional support.

Keywords: Referral; Community health insurance; Transport costs; Rural Africa

Introduction

Since the Alma Ata Declaration (WHO/UNICEF, 1978) the professional health community has repeatedly asserted that referral is an important link in the primary health care (PHC) chain. For example, the Declaration emphasises "primary health care activities are supported by successive levels of referral facilities... and [well functioning referral systems are] essential to create confidence in the whole system". The Declaration continues by stating that "the transportation of patients to and from referral services has to be properly organized, making the most of available facilities". Thus the designers of the PHC paradigm fully accepted and expected, that

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referral between levels of care should be integral to a well-functioning health system. Yet, as all practitioners can attest, a functioning referral system assumes that treatment is given at the appropriate level of health care, i.e. that general primary care is given at the entry point and more specialized care is given further long the chain, according to appropriate referral from within the system. Two main problems immediately arise in connection to referral. First, there is inappropriate use of the more specialized institutions: persons seek care by self-referring themselves to a referral centre, as opposed to entering the system at the primary level and being referred onward only if necessary (Paine and Tjam, 1988; Sanders et al., 1998). The second problem arises when patients, who enter the system at the primary level, receive a referral notice to seek treatment from a specialist or secondary care institution, but then fail to access the appropriate care due to numerous barriers between first and second or third levels of care. The first problem plagues urban health systems in much of the developing world (Barnum and Kutzin, 1993). The second problem, which is the focus of this paper, is endemic to health systems in rural areas throughout the developing world (Paine and Tjam, 1988; Maine, 1997).

This study addresses the problem of referral between first- and second-level care in rural Africa. It does this by exploring one of several barriers to successful referral: the availability and financing of transport services for patients in need of emergency referral. By exploring the problems inherent in the sustainability and availability of transport in emergencies, this paper exposes a major challenge that faces health managers and communities throughout much of the developing world, but may be particularly severe in rural Africa.

Emergency transport is an obvious yet understudied factor that affects the efficiency of referral, as well as a determinant of the extent to which a community places trust in its health care providers in times of crisis. From the logistical aspects of availability and cost, willingness and ability of the patient to travel, to the

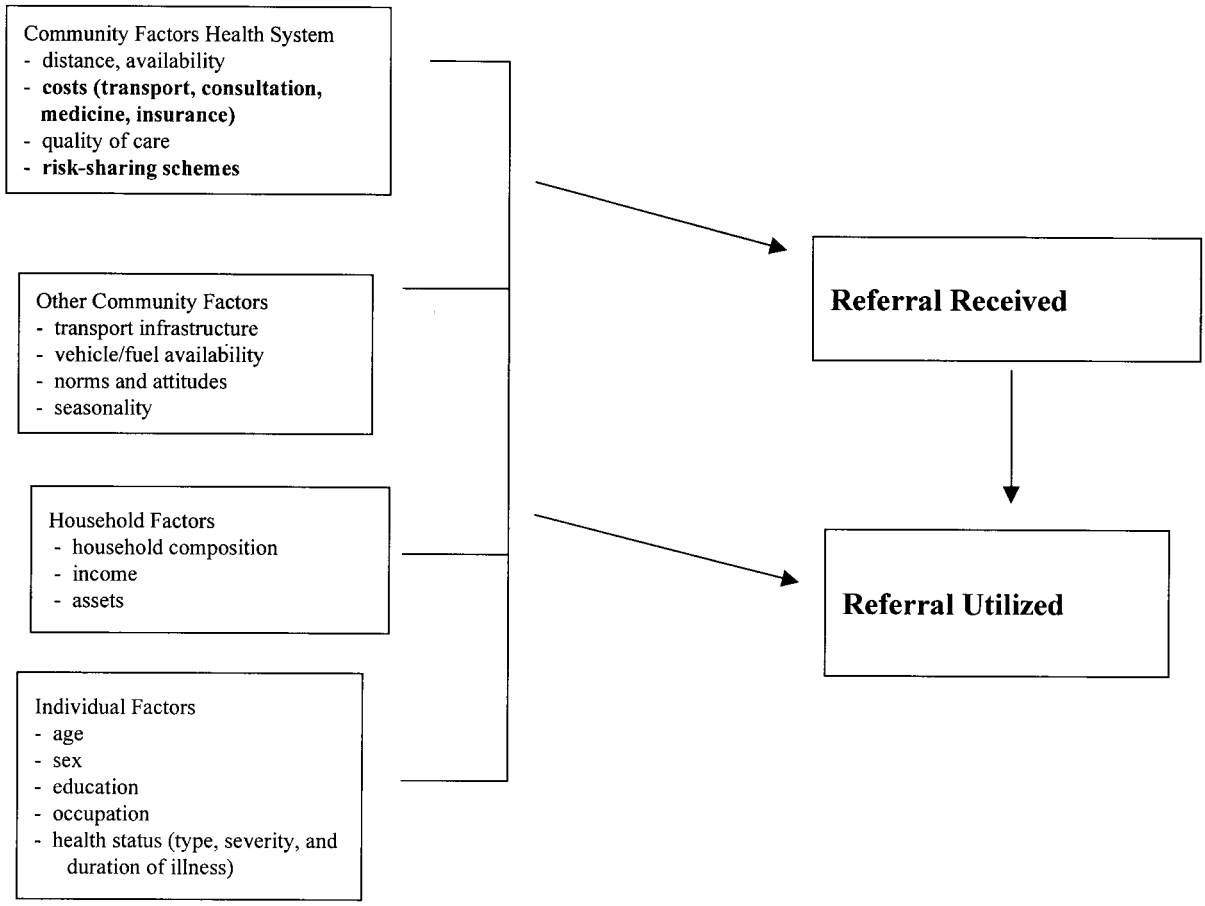

Fig. 1. Conceptual framework of the determinants of emergency referral between primary and secondary levels of care in rural Africa.

problems of measuring and evaluating outcomes of referral, this area is fraught with difficulties. Interventions designed to improve transport for emergency referral are important to individuals and communities for three main reasons. First, emergency referral can save lives and the consequences of delay in referral or failure to reach the point of referral may result in death or permanent disability. Second, community financing schemes that at least partially focus on providing and maintaining referral options in emergency situations can build trust between communities and the health systems that are intended to serve them. A health crisis that is solved, or at least dealt with, is obviously more likely to engender feelings of support for local health providers and reflect well on the system as a whole. Thirdly, this trust is, we believe, an essential component of the sustainability of health systems.

This paper is organized as follows. First, a conceptual framework introduces the main barriers to effective utilization of referral that are currently facing households in rural Africa. Second, through an analysis of research on transport, we highlight instances reported as being important in the reason for delay of care. Third, an overview is presented of risk-sharing strategies. We discuss both what they are and why they may, theoretically, be important in relieving some of the burden on households and health systems in the need for emergency transport. Finally, our empirical work includes findings from a rural health project in northern Kenya. This case provides evidence as to how a rural community prioritizes referral in emergency contexts and how this same community has attempted to overcome some of the barriers to referral in the past decade.

Conceptual framework and previous research

In this section, we review previous research on the referral process. Emphasis is placed on the role of transportation costs as an important barrier to utilization of referral and the potential role of community risk-sharing programs as a way to lessen the burden of transport costs, thereby strengthening the link between primary and secondary-level care[1]. We acknowledge that referral, which we define as the process of moving a patient from his or her home (or the site of an accident) through the health system in order to receive the appropriate type of care, involves a highly complex series of decisions made by both the health care manager and the patient or the patient's family.

As a point of departure for our framework, we assume that a person who is sick or injured has *already* chosen to seek treatment at the closest primary health care facility, either initially or after consulting with a traditional healer. The provider diagnoses the problem, gives an initial treatment and then makes the decision of whether to refer the patient to a more specialized facility. If a referral is provided, the patient and his or her household must decide whether or not to utilize the referral, which can result in substantial costs. As illustrated in Fig. 1, both the health care provider decision of whether to recommend referral and the individual/household decision of whether to utilize the referral are influenced by individual-, household- and community-level factors. While all of these factors are potentially important in explaining the referral-related behaviour, we concentrate on distance, transport-related costs, the availability of medical attention and the quality of care factors at both the referral-giving and referral-receiving centres. (For reviews of studies that investigate the effects of many of these factors on health care utilization: Akin et al. (1984); Kloos (1990); Shaw and Griffin (1995)).

Household transportation costs, referral and health outcomes

It is banal, yet true, that most of rural Africa has few roads and those that exist are, for the most part, in terrible shape. Indeed, Mahler used the significant and powerful metaphor of a 'road' in his article 'Road to maternal mortality' (Mahler, 1986). In this paper, a poor and pregnant woman in sub-Saharan Africa, who is moving down the road to death, is shown at various critical forks in the road where her life could and should, have been saved. Thaddeus and Maine (1994), continuing the metaphorical tradition, called their contextual piece on maternal mortality 'Too far to walk'. They describe distance and cost, as well as quality of care, as essential factors that affect the decision to seek help (or not) during a crisis. In addition, their title implies that transport itself is a fundamental barrier to saving lives in the context of maternal mortality.

As acknowledged by many researchers, the transportation-related costs of using modern health care services are substantial, particularly in emergency conditions in which local health care practitioners may recommend treatment in a distant hospital (Akin et al., 1984; Maine, 1997). The 'distance' and 'travel time' to a clinic or hospital have been used for decades in social and health sciences as variables to measure isolation and delay in health seeking behaviour (McGuirk and Porell, 1984; Campbell et al., 1995), yet still the

[1] We focus on the process of referring patients between first and second-levels of care, i.e. from the village-based dispensary or health center to the district level hospital. However, much of our research suggests the barriers between second and third-level care may be affected by similar determinants.

majority of Africans have few options other than to walk or be carried to the nearest health centre. Beyond the dispensary there may be horses, mules or donkeys available and rudimentary systems of buses (or taxis) are slowly being established in some areas. A few businesses or missionaries, or passing government vehicles can sometimes be relied on. But for the most part the problems of spare-part shortages, fuel expenses and availability of vehicles, as well as the condition of the roads, imply that the near future of African rural transport systems is not very hopeful.

The facets of transport that we consider below include the availability of vehicles within the community, the monetary costs of transport and the opportunity cost of time of family members who accompany the patient to the next level of care. Empirical evidence that quantifies the availability and costs of transport for health care utilization is surprisingly scarce. One of the few examples of research in this area is a study on the economic costs of illness for rural households in Burkino Faso. Sauerborn et al. (1994) estimate that 28% of the total financial costs of using hospital services were for transport, food and other living expenses paid in the process of seeking health care. However, for services from a provider at a modern dispensary or a traditional healer, transport-related costs made up only 17 and 9% of total cost, respectively. These figures most likely underestimate the total economic costs of transport because time costs are not included.

If one accepts that travel time is a good proxy for transport costs, there are a number of economic studies of the demand for health care in the region that show that, on average, the costs associated with transport play an important role in explaining whether modern health care services are used and which provider is chosen. For example, Mwabu (1989), Lavy and Germain (1993) and Mwabu et al., (1994) estimate that time has a large and statistically significant effect on health care utilization, particularly in the wet season when opportunity costs of using the health system are high. This implies that the costs of transport can deter households from seeking referral services that may be necessary for treating severely ill individuals. In addition to not adequately measuring the costs of transport, a weakness of the economic studies described above is that they only focus on the determinants of the choice of first provider and not on whether a referral *was* provided.

There are some studies in the African context that focus on the role of transportation on referral rates (Mwabu, 1989; Nordberg et al., 1996). Nordberg et al. (1996) in their discussion of the interface between first- and second-level care in rural Africa, cite one of the two major reasons for low rates of clinic-to-hospital referral as being: 'poor access to transport and patient inability to pay transport costs'. Thaddeus and Maine (1994) call transport the 'phase II delay' factor and describe this as major barrier for women having access to appropriate care at an adequate health facility. Other studies emphasize the difficulties of providing essential obstetrical care (EOC) through the primary care system when access to transport is such a major hindrance (Tinker and Koblinski, 1993; Campbell et al., 1995; Kelly, 1995; Kwast, 1995; Fawcus et al., 1996; Maine, 1997).

Given the above findings, one would expect that in emergency situations the lack and high cost of transport would adversely affect health care utilization and health outcomes. A number of studies that seem to confirm this. For example, results from the prevention of maternal mortality (PMM) network studies in West Africa suggest transport-related factors as leading causes of why families delay seeking care in emergency situations or arrive too late for help: poor roads, few vehicles and high transportation costs (Maine, 1997). For example, in Sierra Leone, an intervention, comprised of placing of an emergency vehicle in the local hospital and a system of communication (first with motorbikes, then radios) in the eight primary health units, resulted in an increase in the number of women with serious obstetrical complications from 0.9 to 2.6 per month and a decrease in case fatality from 20 to 10% (Samai and Sengeh, 1997).

In Zimbabwe, which has a relatively advanced transport system, researchers report that in the rural province of Masvingo, 50% of the maternal deaths from haemorrhage could be blamed on the absence of emergency transport at the community level (Fawcus et al., 1996). The same research team reports that, when looking at all maternal deaths in the same province, the lack of transportation was a major factor in the rural areas in 28% of the 105 maternal deaths studied (Fawcus et al., 1996).

Researchers in urban areas of Malawi conducted a brief study to record the types of transport used to bring patients to a referral hospital in Blantyre, the distance they travelled and how long it took them (Maher et al., 1995). They concluded that problems with transport to health facilities was an 'important factor in avoidable morbidity and mortality'. They do not discuss the situation for rural Malawi, which, almost certainly, can be described as worse.

Several other health system analysts have emphasized the importance of transport-related factors in the context of referral, but few have proposed interventions to overcome these problems in rural areas. Indeed, the dearth of attention to the issue of transportation-related barriers has led Campbell and her colleagues, in their review of the safe motherhood initiative, to emphasise the need for "innovative strategies...to enhance the referral system [in most countries]" (Campbell et al., 1995).

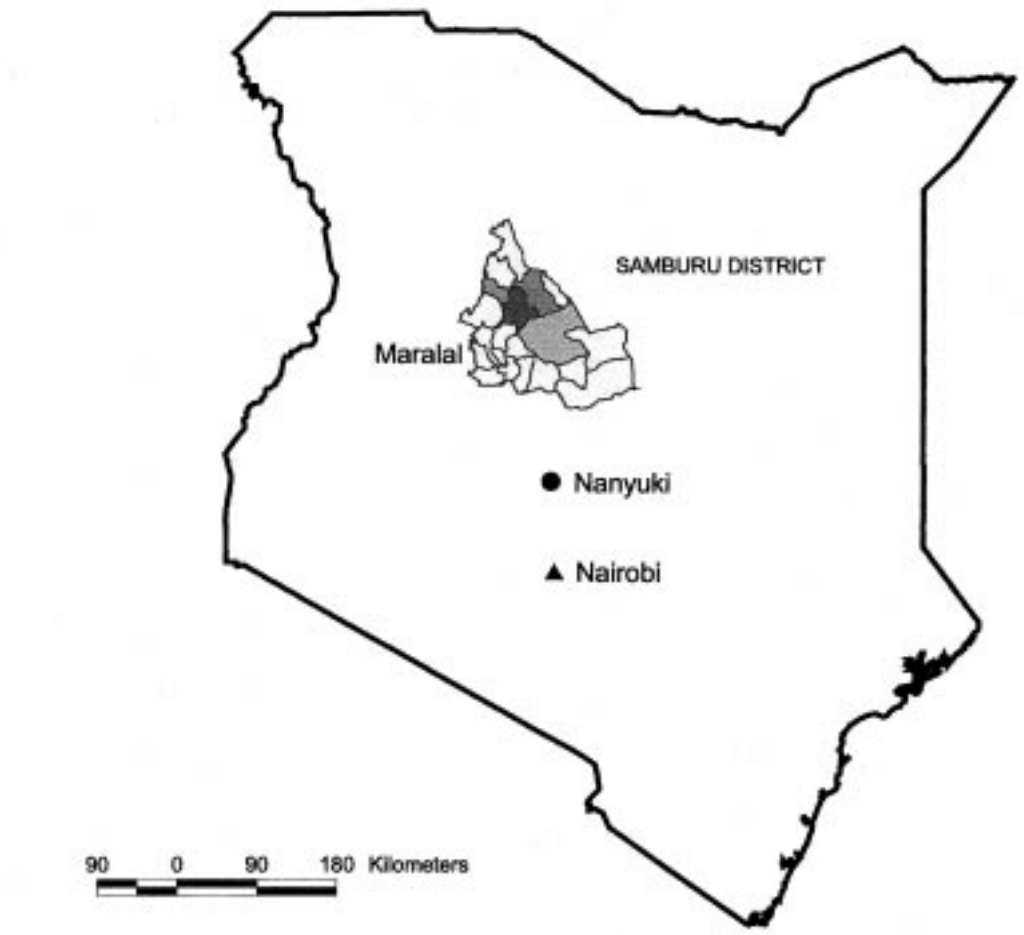

Fig. 2. Samburu district, Kenya. Shaded area shows catchment area.

Among the few innovative strategies that have been discussed are taxi subsidies and the provision of ambulance services (Tsui et al., 1997). Another strategy that was recently tested in Ekpoma, Nigeria is described in one of the PMM network studies. This intervention study used a system of mobilizing 'emergency loan funds' by communities in the area to provide money for women with obstetric complications (Essien et al., 1997). In the first year of operation the loans were used by 380 women and paid for transport, drugs, blood and hospital fees. Significantly the communities referred to these loans as 'transport loan funds', but unfortunately, the authors do not report how much was spent on transport, compared to the other items (drugs, blood, etc.). They do report that 93% of the loans, which ranged from US$7 to 15, were repaid in full. The decision to use loan schemes came from focus groups within the communities where priorities were identified and solutions proposed at the community level.

Community risk-sharing

Another innovative strategy that is intended to ease the financial burden of transport in remote rural areas is the implementation of community insurance schemes (Leonard, 1997). Insurance, or risk-sharing, involves the elimination of uncertain risk of an individual or household by combining a larger number of similarly exposed individuals or households into a risk pool. The idea of risk-sharing is not new in rural sub-Saharan Africa. Indeed, in many areas, risks are often shared between healer and patient. Traditional healers are frequently paid on a contingent-fee basis so that patients pay only if it is agreed that the recommended treatment has been successful (Leonard, 1997). Moreover, extended families, clans and tribal organizations have traditionally provided a system of mutual aid should catastrophic illness strike (Shaw and Griffin, 1995).

In order to improve the financial sustainability of

the health sector, formal community risk-sharing plans have become increasingly prevalent in the region. Of the 36 rural schemes that were evaluated in a recent review of rural risk-sharing strategies by Creese and Bennett (1997), eleven were from sub-Saharan Africa. These include schemes that were owned by health facilities, communities, cooperatives, governments and NGOs. The majority of the schemes were voluntary. They include schemes that cover high-cost, low-probability events in which the premium is set on an actuarial basis or based on variable costs, as well as schemes that cover low-cost, high-probability events where the premium is set according to ability to pay.

While the benefits package is poorly defined in most rural risk-sharing schemes, the schemes tend to cover all of the services available at the participating facilities. We are not aware of any rural risk-sharing scheme that explicitly covers the transport costs of emergency referral. This is surprising. One would expect that the demand for insurance against high-cost, low-probability events such as illnesses and injuries that result in emergency referral and hence need immediate transport, would be high in many rural areas of sub-Saharan Africa. If individuals are risk averse, then it would be rational for households to pay a small premium with certainty rather than take on the risk of incurring a large expense of transporting a sick patient in emergency.

However, the prospects of introducing community-based health insurance against emergency referral are determined by supply- as well as demand-side factors. Barriers to providing insurance can be potentially prohibitive because of high administrative or overhead costs, as well as capital costs. Administrative costs are likely to be high in rural areas, particularly in the absence of formal employment and good communication infrastructure. For example, membership renewal is a complex business in the absence of administrative infrastructure and in the context of a largely illiterate population. In addition, providing emergency transport as an insurance benefit requires substantial capital investment in vehicles. If funds are not available to cover the initial operating costs, then insurance is not a feasible option. Some of these factors are discussed below in relation to a case study from northern Kenya.

Risk-sharing for emergency transport in Samburu: a case study

Geographic context

Samburu district, in Rift Valley province, Kenya (20,808 km^2), lies 350 km north of Nairobi (see Fig. 2). This is a semi-arid region of flat savannah plains (altitude 500 m), broken by mountain ranges rising to about 1400 m above sea level. The population is mainly Samburu, with some communities of Turkana, Rendille, Ariaal and Somali, interspersed across the district: all of these ethnic groups are pastoralists and most live as semi-nomads in small, scattered communities. The most recent census reports 108,884 people living in the district (census of 1989; Government of Kenya, 1989), which is an almost 50% increase from about 79,000 in the previous census (1979). Outside the main towns, the population is highly dispersed with an average density across the district of 5 people per sq km. The Samburu communities consist of settlements which comprise collections of households or 'manyattas' usually concentrated near permanent water points. Each manyatta can range in size between 4 and 30 people, but on average contains 12 people. As the Samburu are polygynous, a household can contain one male head with up to 4 wives and their children (Spenser, 1974).

Samburu district lies within the intertropical convergence zone: this means it has generally low amounts of rain, concentrated in two seasons (April/May and October) ranging from 1000 mm in the highland areas to 400 mm on the arid plains. However, the actual rainfall varies enormously from year to year and is generally sporadic even during the so-called rainy seasons. Since 1985 there have been three official drought periods, of which two were termed crises (1985 and 1992/93) and required supplementary feeding in the communities (SAIDIA, 1988–1996). The third was in 1996/97 which was followed by El Nino-affected rains that caused massive and prolonged flooding throughout the northern region of Kenya. Most of Samburu district's roads were badly damaged during this period.

Modern communication systems are rare in Samburu. Telephones are available in the major centres of Maralal, Baragoi and Wamba, though only a very small percentage of individuals currently own telephones. Two-way radios are more common among development programs and missionary centres, as described below. There are a few airstrips, but these are mainly used for military exercises and tourists and are rarely used for health purposes. There are no tarmac-surfaced roads in the district: the main roads through the area being 'murram', or gravel, which require (but rarely receive) annual grading. Much of the road network, apart from the main roads, have been built by local communities in an explicit effort to connect themselves to services such as health and education. Although basic public transport (a daily bus) runs between the major centres (Maralal, Baragoi and Wamba), there is no transport, apart from private vehicles, that reach other communities where the majority of Samburu live. If individuals need to reach the towns, they walk, or occasionally find lifts with local

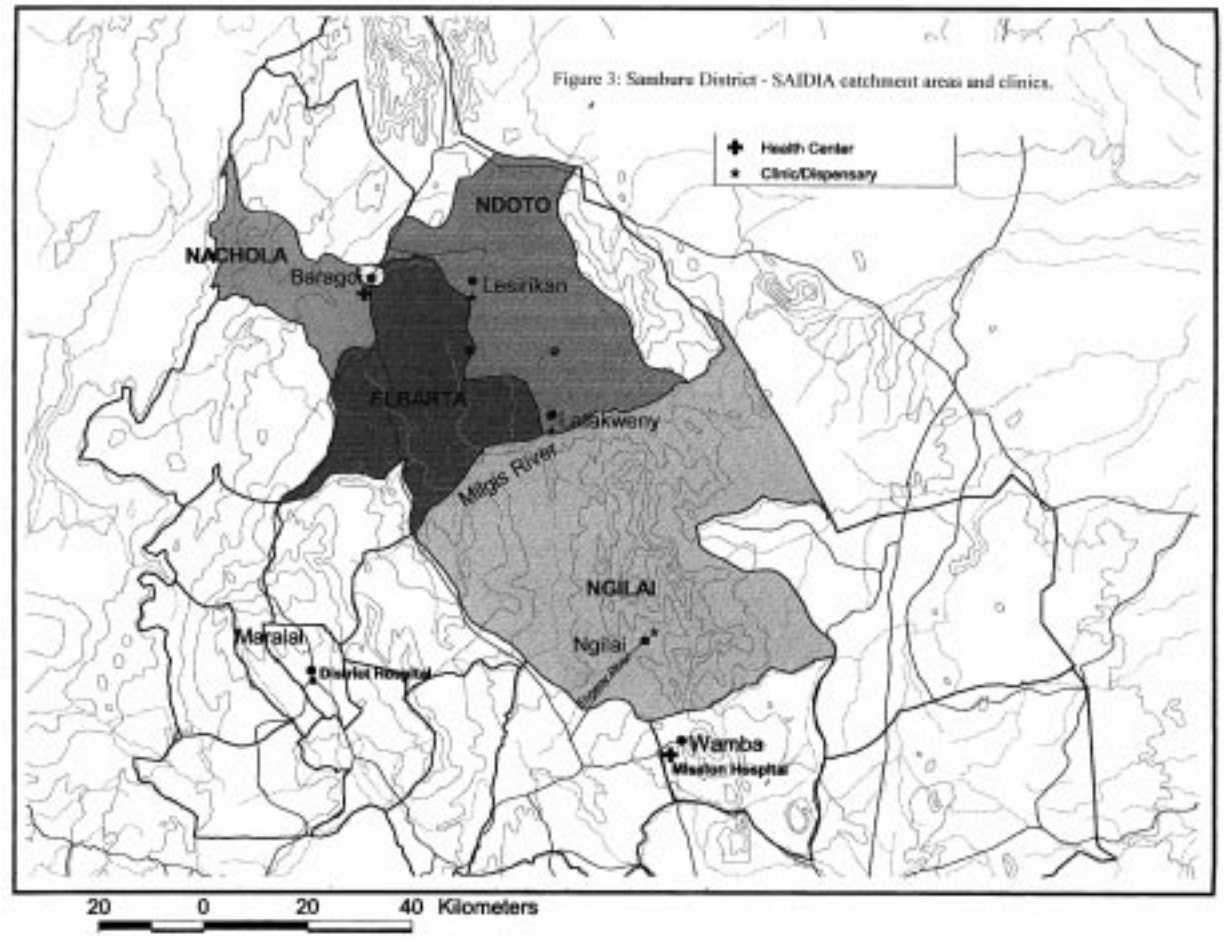

Fig. 3. Samburu district — SAIDIA catchment areas and clinics.

businessmen, priests, tourists or development agents. During the rainy seasons the roads often become impassable.

Health care environment

As with all African pastoralist societies, the Samburu have a rich and complex traditional medical system (Fratkin, 1996). Many, if not most individuals, prefer to go to a traditional healer first and then, if that prescription fails, they try western medicine. Several surveys (e.g. SAIDIA/KAP Survey, 1991) have shown that western medicine remains, for the majority, the last choice. This tendency is due in part to its cost, but also to custom and comfort (Fratkin, 1996; Nordberg et al. 1996). It is also probably a reflection of the varied quality of care received at the hands of nonlocal healers, specifically western trained nurses and doctors. (For a recent review of the common diseases of the Samburu and neighbouring groups: Nathan et al., 1996.)

Western-type health care services in the district are not plentiful and those that exist appear to offer a variety of quality in the care they give patients and the costs they charge. According to recent reports there are two doctors (1:54,000 doctor:population ratio) and 98 nurses (1:1102 nurse:population ratio) in the whole district (Karuoya, 1999). The government funds some services in the district and these include the district hospital in Maralal, health centres in Maralal, Baragoi and Wamba and some dispensaries in scattered communities outside these main centres. Until 1989, government services were, nominally, provided free (though there were considerable costs relating to the erratic supply of drugs). Services are now charged for using a basic pricing structure and a sliding scale (Mwabu, 1995).

The Catholic Diocese funds a mission hospital in Wamba and several mobile clinics are run on a regular

Table 1
Visits and referrals to Government or Mission Hospitals in Samburu district, between 1989 and 1996

Year	Patient visits	New patient visits	Total number of referrals/year	Referral rate as percentage of all visits	Referrals rate as percentage of new patient visits
1989	10,351	6178	64	0.6	1.0
1990	8136	5327	93	1.2	1.8
1991	8360	4898	78	0.9	1.6
1992	6795	4460	77	1.1	1.6
1993	8703	6086	86	1.0	1.4
1994	10,723	7983	80	0.8	1.0
1995	8494	8004	76	0.9	0.8
1996	6502	5114	58	0.9	1.1
1997	4788	4101	43	0.9	1.0

basis from here. The quality of care at the these facilities is good and the services popular, compared with the government services, despite the relative high costs. In contrast, the government health facilities do not have a good reputation and are generally very run-down, with the infrastructure in poor condition, staff demoralized, little or no extra equipment, broken-down vehicles and major drug and supply shortages. In short, the ministry's facilities in Samburu district are probably typical of much of Africa's under-funded, over-burdened public health structures (Barnum and Kutzin, 1993; Van Bergen, 1995). In addition to these facilities, some nongovernmental organizations provide some health care, which is varied both in cost and quality. The rest of this paper focuses on an indigenous NGO, Samburu Aid in Africa (SAIDIA), operating in the northern half of the district, which has provided basic preventive and curative health services to the communities since 1986.

Data and methods

Data for this study have been provided by SAIDIA's archives. This database consists of monthly reports of the number of referrals from the clinics and the numbers of families enrolled in the membership scheme (described below). Regular reporting, on a monthly basis, was instituted in 1987, but complete reports are only available from January 1989 to December 1997. The monthly data were compiled and entered by SAIDIA staff and the primary author, who has been involved in the project since its inception in 1985. Other sources consulted include the published annual reports from the project (1988–1996) and unpublished quarterly or program reports. Population-level data for the district and locations studied in detail come from the 1989 census. In addition to this quantitative data, information from interviews with three community leaders and semi-structured interviews with four key informants (i.e. from two of the current project management and two of the medical staff), have provided details for a more qualitative interpretation of the case. The taped interviews were conducted on a range of topics, including the community membership scheme described below. All comments related to the scheme were abstracted and are incorporated into the description and analysis. The combination of the quantitative data and the qualitative data is designed to present a more holistic approach to understanding the problem of referral in this community.

Background to SAIDIA

SAIDIA was begun in 1985 as a community-based NGO to provide basic health care in the north and northeast of the district. SAIDIA's activities covers Ndoto, Elbata and Ngilai Locations, approximately 6700 km^2, or about a fifth of the district (Fig. 3). According to the census, 18,555 people inhabited these locations and should be considered the population that SAIDIA currently serves. In reality, however, the clinics may serve more people as the patient records show residential addresses from further afield. The project currently estimates that the medical services are provided to approximately 20,000 people in a catchment area of 6000–8000 km^2.

During the late 1980s, SAIDIA established two clinics in the villages of Lesirikan and Ngilai. Both of these sites had been selected several years earlier as target communities for government-run dispensaries. However, due to lack of resources, the government had not been able to provide services and the community expressed great desire to start their own project. From these base clinics the project began to operate mobile clinics first on a monthly and then a weekly basis to reach the scattered population. SAIDIA's objectives, in terms of the health care it delivered, were designed very much along Alma Ata guidelines: to provide basic health care with a primary focus on preventive care through community outreach.

SAIDIA's medical staff, which include nurses trained to the level of KECN (Kenya Enrolled Community Nurse), with some midwifery training as an additional certificate, treat between 200 and 300 patients per month per clinic and approximately 15–30 per day, though this greatly varies by season. But there are also occasions when patients require more help than the staff can provide and in these cases patients are given referral notice to either Wamba Mission Hospital or Baragoi Health Centre. They are usually transported in one of SAIDIA's vehicles.

Between 1989 and 1997, SAIDIA staff referred 655 patients, which, on average, means about 6 patients per month or 73 per year have been transported from the two clinics to a secondary level of health care. This figure is higher than that found for other primary care facilities in similar geographic contexts. Nordberg et al. (1996) estimates approximately 2 per month is the average in the catchment area of Chogoria Hospital, Meru district, Kenya. Table 1 presents referrals as a percent age of total all patient visits and by new patient visits by year. The referrals as a percentage of all patient visits ranges between 0.6 and 1.2% and as a percent age of new patient visits range between 0.8 and 1.8%. These are only crude calculations and hide many variations in the health care environment, treatment practices and administrative hitches. The percentages for the new patient rates may be particularly rough as the numbers of new patient visits are often not tallied correctly on the month report forms. The decline in total number of referred patients in 1997 can be explained by the fact that SAIDIA hired a Clinical Officer in November 1996. This man's training enables him to treat many cases which were previously referred. Simultaneously to the hiring of the Clinical Officer, SAIDIA's clinic at Lesirikan formally upgraded to a Health Centre by the Ministry of Health and has recently opened its inpatient ward, thereby reducing even further the likelihood of referral. A more in-depth analysis of this communities experience with referral can be found elsewhere (Macintyre and Letipila, 1998).

Further breakdown of the causes of referral shows that the four most common ailments for which patients have been referred during this period are trauma (including lion, snake, dog and donkey bites, as well as wounds and broken bones from accidents and fights), malaria, pregnancy-related problems and diarrhea. Other problems such as chronic eye problems, measles, rabies, tuberculosis, severe anaemia, epilepsy and STDs that are unresponsive to treatment have also been referred over the years with reasonable frequency.

All of these cases are considered emergency referrals. The process of referral works in the following way. A nurse first screens each patient in one of SAIDIA's facilities. If the nurse is unable to treat the patient either through their training limitations, or because they lack supplies or equipment, the patient is referred to the closest facility where there is the appropriate medical personnel or services to deal with the problem. This is no different from any other primary health care provider service in sub-Saharan Africa. However, the method that SAIDIA has chosen to involve the community in the funding of the transport for referral is unusual and possibly unique. The rest of this paper presents details of the community risk-sharing scheme that helps insure paid members against the cost of transport in the event of an emergency.

Financing of emergency medical referral

In 1987, SAIDIA launched a community financing scheme which was designed to partially cover costs of health delivery. The Kenyan government at the time was in the planning stage of implementing a cost-recovery scheme, which was put into effect in 1989. SAIDIA's scheme was, therefore, part of a general trend among health providers who were searching for ways to share the burden of health care costs with the communities they served.

SAIDIA's cost recovery scheme consists of two parts. The first part adopts a basic user fee for all visits to the clinics. Initially each illness episode was charged a nominal amount, though this has since changed as the level of cost-recovery of this was not deemed reasonable. Since 1993, all nonmembers have paid service-specific fees that are based on the costs of providing treatment. The second aspect of the financing scheme consists of a risk-sharing plan designed to cover the costs of referral in the case of an emergency. Before the introduction of this scheme, persons in need of emergency referral would incur a substantial financial cost (Ksh 400–1200 or about US$20–60 at the time) of hiring a vehicle to reach the closest referral centre: Baragoi Health Centre, Wamba Mission Hospital or Maralal district Hospital. The only vehicles available in the clinics' immediate area belong to private individuals, missionaries or government officials who were frequently absent, thereby muting the problem of cost. But undoubtedly the high cost of transport, which can financially devastate many households, created a strong incentive to join the newly developed insurance scheme. It is still the case that nonmembers must pay the full cost of hire (about Ksh 800) for a referral. This risk-sharing scheme was designed by one of the founders of SAIDIA, Mohamed Gabriel Lochgan.

Lochgan, a Samburu who was influenced by his training in cooperative societies, suggested that the success of any health programme in Samburu was going to need the full support of the community and that referral during crisis was one of the most important

Table 2
Membership scheme for SAIDIA, 1988-1996

Membership totals/year	Cost per manyatta (Ksh)	Total membership	Revenue from scheme (Ksh)	Total reported income from membership and user fees[b]
1988	100	39	3900	–[c]
1989	100	261	26,100	–[c]
1990[a]	100	505	50,500	76,345
1991	100	369	36,900	42,882
1992 (drought)	100	195	39,000	19,500
1993	400	408	163,200	148,239
1994	400	544	217,600	114,630
1995	400	384	153,600	235,252
1996 (drought)	800	232	185,600	188,209

[b] Auditors always provide a combined item for both membership receipts and user fees.
[c] itemized data on membership scheme not available.
[a] Year that SAIDIA began charging user fees for nonmembers.

avenues for creating this confidence, as well as an important service in and of itself. This scheme became known as the membership scheme. The purpose of this scheme was two-fold. First, the increased discussion of the need for financial and organizational sustainability in health systems meant that all new projects in the mid-1980s were searching for ways to ensure partial contribution from the communities to help finance the project (or at least to persuade the donors that there was good intent). Second, the scheme also gave the communities a financial stake in the project, which, in turn, was designed to improve their cooperation in helping themselves toward better health and an improved standard of living.

The membership scheme was (and remains) voluntary and the annual premium was designed to be small. The premium was calculated based on population estimates from the 1979 census for the locations where SAIDIA was operating and Lochgan calculated a rate that would, he hoped, cover 50% or so of SAIDIA's vehicle (fuel and maintenance) costs. The amount chosen was Ksh 100 per year (about US$5.00 at the time) per manyatta. This membership confers insurance against referral in the case of an emergency and those current members were to be able to summon a nurse and a vehicle at all times.

The scheme's unit of membership is the manyatta[2]. If a manyatta joins the scheme then all individuals within that manyatta (sometimes as many as 30 individuals) are entitled to emergency referral and free medication. This plan is designed to minimize the problem of adverse selection that frequently plagues the implementation of health insurance in the region. Under the SAIDIA plan, member households usually include persons relatively more likely (i.e. the elderly, women of child-bearing age and young children) as well as those relatively less likely to be in need of emergency referral (i.e. older children and young men)[3]. However, this may also have, unintentionally, biased the plan in favour of large households.

There is no doubt that this was an ambitious scheme and several advisors at the time voiced skepticism that (a) the community leaders would not support this project, (b) that the community would be unable or unwilling to pay this money and (c) that vehicles would not be kept in the communities to provide the service whenever necessary, as this was assuming each community would have an ambulance stationed there permanently. The skeptics have been proved both wrong and right as discussed below.

The membership premium has been kept low in order to attract as many families as possible into the scheme. Within two years of the official launch (1987), the scheme had 228 members from the Ndoto location and 33 from the Ngilai location (SAIDIA, 1989). Since then the membership tally (Table 2) has demonstrated two distinct peaks of membership and maintained an average enrollment of 324 members per year since the first complete year of operation (1988). Based on our interviews with the project leaders, the reasons for the

[2] Although manyatta is treated synonymously with 'household' it should be remembered that as Samburus are polygynous many manyattas will typically have one senior male household-head and several 'sub-households' where each of his wives lives with their children.

[3] On the other hand, the plan does not restrict enrollment to one designated period during the year. This is likely to accentuate the problem of adverse selection, because it allows households to enroll in the plan as a response to the occurrence of a household member's illness.

variation in total membership across the years are: first, the droughts during the years 1991/92 and 1996/97 led to many families moving away from the locations and there was generally high levels of disruption in many communities. This was exacerbated in 1996 and 1997 by insecurity following cattle raids and general banditry in the region. Second, local enthusiasm for the project requires constant encouragement and education from the leadership. In 1990 and 1994 the project leaders led village-to-village campaigns to raise awareness of the need for self-sufficiency and the justification for the membership scheme itself. The increased totals for these years probably reflect this advocacy.

What proportion of all the households that could be served by SAIDIA are actually members of the scheme? This is estimated based entirely on the 1989 census figure for the two sub-locations where SAIDIA conducts mobiles, has two dispensaries and clinics and can reach the households within approximately 5 h. Coverage proportions are also presented with a moving average for peak and trough years of the membership scheme. There have been, on average, 324 members per year since 1989, this means that only about 25% of all households in Lesirikan and Ngilai sublocations[4] are covered by the scheme. If one looks at peak and trough years for the membership, there has been a range from a coverage rate of only 15% (in 1992) to greater than 40% (in 1994). It should be remembered that during 1992 many households had moved from the catchment area because of the drought and thus shouldn't be part of the calculation at all. Such is the danger of using single census estimates for a semi-nomadic population. The other factor is that in crisis years the community members are focusing on other priorities, namely survival.

Initially, there was no provision to target poor households who couldn't pay the premium. However, since 1995, the administrators have set the premium according to the socio-economic status of the manyatta and have adjusted payments on a sliding scale and have provided opportunities for payments to be made in-kind (for example one goat is worth approximately Ksh 300, so that a poor, usually female-headed family, may currently exchange two goats for a years membership). The 'sliding scale' is based on discussions between the managers of SAIDIA, community leaders and the local women's groups who decide who deserves to pay a lower premium and who doesn't. In practice this mainly favours widows and widowers who receive permission to pay the lower premium. Everyone else pays the standard amount, which is now set at Ksh 800 (US$16.00) per annum. This risk-sharing scheme is entirely owned by SAIDIA, though village health committees are responsible for setting the amount and advertising the benefits. All monies collected from the insurance premiums are transferred into a fund administered by SAIDIA officials.

In terms of cost recovery, the SAIDIA financing program has been only relatively successful. In any year for which audited reports were available for analysis, the community contributions (membership scheme and user fees) account for only about 2% of SAIDIA's total expenditure. However, this includes all the programmes carried by SAIDIA (such as educational bursaries, water projects, training exercises and environmental programmes and income generation projects). If only the costs of running the health program are included, the community contributions may cover between 5 and 8% of total recurrent health program costs. And if the vehicle line item is used as the base (which in any year is usually at least 25% of expenditures for SAIDIA), the community pays for approximately 12 to 15% of this part of the budget. Though it should be noted that these vehicles are used for multiple purposes as well as emergency referral — for example, for transporting staff, building materials, drugs and supplies from the SAIDIA headquarters to the field, or between centres in the field. Finally, membership not only means access to referral in crisis, but it also means no user fee is paid at point of service. Given this, it is certainly not true that the membership scheme is a major source of cost-recovery for the project, though it does probably cover the costs of referral.

Recent discussions with SAIDIA's leadership regarding the scheme's financial goals concluded that the plan does cover basic costs of fuel and a small proportion of the driver's salary for the few emergency referrals that occur each month. However, they reported that since it does not cover any administrative overhead and that each year there are problems associated with who renews their membership and who doesn't, more work needs to be done to increase the community's financial contribution and to improve the mechanisms for collecting the annual dues. There is also an acknowledged problem with this scheme in terms of its equity. Its benefits are clearly biased towards larger families since membership confers protection on all members of the manyatta. Manyattas can range from 3 persons to 30, or even larger among some of the ethnic groups that live close by (the Ariaal

[4] We used estimates from the sub-locations around the two clinics as our baseline for catchment areas for the membership scheme, as communities living further afield, who may occasionally use SAIDIA's services, would not reasonably be expected to join the scheme due to distance form the project base. If the wider scale of the Location (i.e. Ndoto and Ngilai locations) are used then the coverage rates are much lower.

and Rendille), which would heavily weight the benefits of the membership towards the larger households.

Discussion

The data used in this analysis is unusual for several reasons. First, we know very little about referral rates or their determinants in rural Africa. The limited literature on this subject most often focuses on the problem of unnecessary self-referrals at referral-receiving sites, or the problem of transport as a delay factor in maternal health. Second, there is little formal presentation of referral data over time, even in the existing literature on this subject. Third, the unusualness of the membership scheme and the potential for learning something about what communities do to share the risk of health crises is exciting. We also believe the combination of quantitative and qualitative data provides a rich opportunity to understand this scheme in the context in which it was planned and implemented.

However, the strengths of this study must not overshadow some typical and perhaps hidden flaws. The quantitative data come from monthly report data that has been transferred three times: from patient register to hand-written monthly report, from this to type-written monthly report and from this to a computerized spreadsheet. This process could yield three different data-entry errors for each entry. This error load may not be inconsiderable, despite efforts by the researchers to cheque back over a sample of hand-written reports. There are many other possible errors in facility level data and the already mentioned problem of the census data for a nomadic population means that all the coverage estimates post-1989 may be flawed. In addition, the criteria for the accounting data may vary from year to year. For example, some of the increases in the premium took place half way through the year, though this is not reflected in balance sheets presented in the annual reports, nor in Table 2. This may explain some of the discrepancy between the expected amounts and those reported. Finally, the interviews were conducted with project leaders and the medical staff who may present a positive bias towards the scheme. The few interviews the primary author had with members of the community did little to contradict the main messages of this paper. Nevertheless, it may be as well to reserve some skepticism since the time available for these interviews was not extensive and there was almost certainly a reluctance to speak negatively about the scheme to a former project director!

The question of whether SAIDIA's membership scheme has been successful is an important one. It may be appropriate here, though, to speak in terms that go beyond mere the financial measures of success. In general, the evidence suggests that this scheme has been marginally successful in financial terms and has remained popular enough among the families that benefit from it to merit continuity. However, there remains several debatable issues regarding the efficiency of such schemes and how to improve them. To explore these issues briefly we first identify exactly what we mean by 'successful' in the context of this case study.

In many ways it is remarkable that the membership scheme has lasted this long. In the early years, the project leaders had to proceed carefully because of profound distrust of anything new by the political leaders both at the local and district levels. This was especially the case for a scheme that required financial contributions. In addition, community support was generally low due to suspicions that the money would not directly help all the communities in question and that they, the communities, had witnessed many development projects in the recent past that had not helped. Thus, there seemed little reason to think this would be different. Skepticism and something just shy of disapproval was also voiced by leaders of other health projects in the region. However, these suspicions have largely been assuaged and higher levels of support are now guaranteed. For example, Lochgan reported, in 1996, that he was no longer required to justify the membership scheme in the areas where SAIDIA works and that everyone now understood the benefits and objective of the scheme. But the process of gaining the community's support took several years of steady advocacy by individuals in the community, as well as by the project leadership. Community support was enhanced through consistent and dependable provision of health services, especially during emergency situations; and by the conscious effort to maintain drug supplies as reliably as possible given the constraints that surround the project. Many families can now cite critical occasions when a member of their household has been taken to hospital in a SAIDIA vehicle. Indeed, a number of children have been named 'Landrover', 'Toyota' or 'Saidia' because they were born after an emergency journey to hospital.

The question of how to evaluate the scheme's financial sustainability cannot be answered in any precise way. And from the existing data it is impossible to evaluate how well the membership scheme contributes to paying for the entire costs of emergency referral from the villages of Lesirikan and Ngilai to the centres of referral. However, despite the low level of the individual contributions for each 'membership' and for each patient visit to the clinics, it is possible to argue that cost recovery has been a qualified success in that it contributes between 5 and 8% towards the total health budget. In the latest annual report (SAIDIA, 1996), consultations between SAIDIA and the commu-

nities have resulted in the decision that this proportion should be increased to 20% within three years.

In terms of organizational development and the goal of helping the sustainability of the project, SAIDIA's managers and several community leaders believe that the membership scheme has been integral to the project's popularity and ongoing sustainability. Anecdotal evidence of this popularity include songs that have been sung about SAIDIA staff, particularly its drivers and numerous reports that the community generally identify the vehicles as 'our's'. In addition, many manyattas, throughout the locations, are now connected to the main roads by short connector tracks or paths sufficiently wide enough for vehicles to pass through the bush. These paths have been constructed by households for the express purpose of providing SAIDIA's vehicles access during emergencies.

Several problems need to be overcome if SAIDIA's membership scheme is to improve the level of its financial sustainability, as well as enhance its efficiency. These include the need for a better monitoring of the current membership levels, as this relies entirely on the nurses knowing who is insured and who isn't when they walk into the clinic for treatment. When a membership expires it is the responsibility of the nurse to identify, notify and collect the dues for the next year. This adds considerably to the nurses' work load and is consequently often not done or delayed. Various options have been proposed for changing this administrative system, such as having all dues payable on the first day of the calender year or payable on a biannual basis.

It is certainly true that an improved monitoring of the cost-recovery element to the scheme would guide the project's leaders in setting appropriate levels for insurance premiums. The current sliding scale is thought to be relatively ineffective (i.e., too expensive for the poorer members of society and extremely cheap for the richer families in the area) and proposals to steepen the gradient often meet with hostility. It is hoped that improved monitoring by the community would enable leaders to set more appropriate levels for cost-recovery for the referral system. Setting appropriate premiums which are both equitable and financially sound is a delicate and political task. It must, however, be done: for the sake of equity, for the financial sustainability, for efficiency in emergency referral and finally for the organizational sustainability of the health care system.

Conclusion

As quoted at the beginning, referral has been the long regarded as an area vital to the health of the health system. In a report of a WHO Expert Committee (WHO, 1987), the problems of referral are outlined as follows:

> Referral systems are easy to design but extremely difficult to put into practice. The effectiveness of a referral system will depend on the patients' confidence in the different levels of the health system; the trust they have in the personnel; the effectiveness of the information system; the ease or difficulty of transport and the time spent travelling; the costs of care at different levels; and so on (Paine and Tjam, 1988).

Despite many years of experience and numerous 'lessons' from the primary health care movement, most rural Africans are caught in a trap when it comes to the need for emergency health care. In this paper, we have revisited the problems of referral by offering a conceptual framework of referral utilization and have discussed this framework using a case study from rural Kenya. As a starting point, we assume an ill or injured person seeks care from the closest modern facility, but we acknowledge that many rural Africans do not sufficiently trust the modern health care system to utilize its facility services. For those that do, the modern health care provider may not be adequately trained nor have the right supplies or drugs to treat the individual and as a result, he or she may try to refer the patient to a more specialized facility.

While there are many factors that influence whether a patient carries through with the referral, a review of the literature indicates that transportation-related barriers are substantial in rural Africa. For individuals who are in need of emergency care, prohibitive transport costs in rural areas can have adverse and often tragic, consequences. First, previous research indicates that transport costs have a large, negative effect on health care utilization, after controlling for other factors and that many patients and their family may be unable to afford the monetary costs of transport, if indeed there are available vehicles in the community (Shaw and Griffin, 1995). Next, even if they can find transport, many drivers in Africa are reluctant to take a severely ill person due to the possibility that the patient may die en route (Essien et al., 1997). And third, if the transport is slow or suffers a breakdown, the road bad, the season rainy and the distance long, many patients who attempt to utilize a referral may not reach the point of referral in time.

These various scenarios are a reality for the majority of African families. It is vital that the health policy makers and health care professionals listen and react to these problems despite their seeming insurmountability. These decisions are critical in the lives of many Africans and it behoves the research community to understand the full nature of the decisions and learn

how best we may proceed to answer the many questions they raise.

We suggest the following areas for future research that aims to improve the flow of patients through the health system. First, almost no research has attempted to track patients who receive referrals in order to investigate the relative importance of the constraints they face. We suggest research into the relative factors that help African families succeed in using a referral system to their benefit. Second, research is needed on the necessary conditions for the success of community risk-sharing interventions, such as the strategy attempted in Samburu. Such an analysis would address a number of questions regarding the financial viability of community-based interventions. For example, who are most likely to pay this membership and why? More important, perhaps, who refuses to join and why? Are women-headed households more likely to join, as early reports of SAIDIA's scheme indicate? How does the quality of the referral facility influence membership? Should membership be mandatory? How can the poor be included? What are the recurrent and capital costs of implementing this scheme? Answers to these questions would greatly help policy makers decide on priorities in the constant struggle to improve basic health care in resource-poor environments.

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