Partners for Health Reform*plus*

Costing HIV/AIDS Services for Community Health Fund Members and Non-members in Hanang District, Tanzania

May 2005

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Abstract

This study analyzes the costs and use of HIV/AIDS services by people living with HIV/AIDS (PLWHA) who are members and non-members of the Community Health Fund (CHF), a prepaid health scheme in the Hanang district of Tanzania. The study comprised multi-facility, retrospective, and analytical analyses of HIV/AIDS services for the year 2002. Medical utilization data through a retrospective review of the facility records and 1,666 medical charts of 464 PLWHA were analyzed. The study collected data on the direct costs of providing HIV/AIDS services within the CHF package of benefits.

Members are 1.6 times more likely to access outpatient care than non-members. CHF members use outpatient services more regularly than non-members, with an average number of revisits per patient per year of 1.8 for members versus 1.6 for non-members. CHF members are 40 percent less likely to have inpatient care compared to non-members and require a shorter inpatient stay. Voluntary counseling and testing services are underused in the district.

Members consume 30 percent more outpatient resources per year but consume 40 percent less inpatient resources than non-members. There is no appreciable difference between the two populations for the cost of care per visit or admission. No major differences are found between services provided to the two groups. Major differences in costs exist with regards to the facility where the inpatient stay takes place. The total cost of care of PLWHA is on average Tanzanian shillings (TSh) 6,543 for members and TSh 5,960 for non-members. The total cost of care used by an individual PLWHA is on average 65 percent of the annual premium for a household.

Table of Contents

List of Tables

Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ALOS	Average Length of Stay
CHF	Community Health Fund
HC	Health Center
HIV	Human Immunodeficiency Virus
IEC	Information, Education and Communication
MOH	Ministry of Health
N/A	Non-applicable
NACP	National AIDS Control Program
OI	Opportunistic Infection
PHR*plus*	Partners for Health Reform*plus*
PLWHA	People Living with HIV/AIDS
PMO	Prime Minister's Office
STI	Sexually Transmitted Infections
TSh	Tanzanian Shillings
UNAIDS	Joint United Nations Programme on HIV/AIDS
USAID	United States Agency for International Development
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

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Executive Summary

The Community Health Fund (CHF) is Tanzania's voluntary beneficiary financing mechanism in the form of prepayments that entitle members to health care cover for a year, regardless of their health status. Because of the increasing prevalence of HIV, intensive use of services by a growing numbers of people living with HIV/AIDS (PLWHA) could ultimately exceed the utilization levels anticipated when the scheme was designed and annual premiums set, putting the scheme's financial underpinning at risk. In the Hanang district, the CHF scheme is currently delivering HIV-related health care while knowing very little about the HIV status of their membership pool due to the limited use of HIV testing services.

Information about the cost and use of HIV/AIDS services by CHF members in comparison to non-CHF members in poorly resourced regions generally are scarce, so the current effort sought to study this issue using data collected in the Hanang district.

The study was a multi-facility, retrospective, and analytical analysis of HIV/AIDS services for the year 2002. Medical utilization data through a retrospective review of the facility records and 1,666 charts medical charts of 464 PLWHA were analyzed. The report's findings and recommendations are summarized below:

How does service use by PLWHA vary between CHF members and non-members?

Use of outpatient services is on average 2.5 visits per year for CHF members compared to 2.1 visits for non-members. This difference shows that the use of outpatient services does not vary greatly with membership status. One explanation is that the CHF scheme only slightly improves access to outpatient care for PLWHA in the district because fee exemption mechanisms exist for those who are not able to pay the user fees. Another explanation is the seriousness of the HIV/AIDS-related conditions with which patients present. As this is a region where late HIV diagnosis is the norm, the study sample was made of individuals in the later stages of the disease (mostly AIDS stage), and they sought care whether they were CHF members or not because their condition required it. The study findings do not reveal significant over-utilization simply because of membership to the scheme, i.e., moral hazard, in the study population.

While number of outpatient visits does not vary greatly with CHF membership status, members and non-members use outpatient services differently: the average number of revisits is of 1.8 for members versus 1.6 for non-members. That is, CHF members use outpatient services more regularly than non-members. This could be confirmation of the anecdotal evidence from clinicians that CHF membership created a culture of seeking care, when health needs arise.

Members access inpatient services on average 0.17 times per year compared to 0.36 admissions for non-members. CHF members are 40 percent less likely to have inpatient care compared to non-members. The more closely the patient is managed by outpatient providers for HIV/AIDS conditions,

the broader is the range of alternative interventions to hospitalization. By using outpatient services more regularly than non-members, CHF members seem to lower the frequency of their inpatient care.

Not only are members less frequently hospitalized, they require shorter inpatient stays. CHF members have an average length of stay at the health center – where member inpatient admission are usually done – of 8.9 days compared to non-members' average stay of 10.5 days. Although it is difficult to draw conclusions given the limited diagnostic capability in the Hanang district to check for patient's health status, this finding may indicate good management of HIV conditions through the whole process of care (outpatient and inpatient services) for PLWHA who are CHF members, leading to a shorter impatient stay. With lower frequency of inpatient admissions and shorter length of stay by CHF members, it would appear that CHF membership has a beneficial impact on availability of hospital beds for other patients.

HIV voluntary counseling and testing (VCT) services were underused in the district. Sample characteristics with respect to the use of VCT services reveals that only 6 percent of the patients were pre-counseled, tested, and post-counseled. Judgments on patient status are still based on the provider's clinical diagnosis, using the WHO clinical AIDS definition. Moreover, in the study sample, findings underline the preference of the PLWHA to be tested outside their area of residence. Services were more focused on counseling services for PLWHA and their family than on testing. No major difference exists between counseling services provided to the two groups.

How does the cost of care vary between CHF members and non-members?

The annual total PLWHA cost of care is on average TSh 6,543 (65 percent of the annual CHF premium) per member and TSh 5,960 per non-member (60 percent of the annual CHF premium).

PLWHA who are members of the CHF consume 10 percent more total resources per year than non-members: Members consume 30 percent more outpatient's resources per year but 40 percent less inpatient resources. Membership to the CHF therefore has a beneficial impact on availability of inpatient care for non-AIDS patients.

There is no appreciable difference between the two populations for outpatient cost per visit, and inpatient cost per admission at the health center, where the majority of CHF members are hospitalized. Average cost of drugs per outpatient visit is similar for CHF and non-CHF patients, especially at the dispensary level. There is no evidence that CHF members receive preferential treatment in terms of time taken with staff.

Members and non-members receive outpatient care in a similar pattern at the dispensary, health center, and hospital. Costs, however, are lower at the health center than at the hospital. Major differences exist with regards to the facility where inpatient care takes place, and costs per inpatient day are more than 47 percent higher at the health center than at the hospital. One explanation of this could be that, at the time of the study, the district hospital was still in its launching phase. As a result, unequal technical competencies existed between the facilities, with greater expertise in the older health center. Moreover, the most serious conditions were still referred to the health center. Yet another explanation could be inefficient prescribing patterns at the health center.

How do the top HIV/AIDS related conditions vary between CHF members and non-members?

To account for differences in costs due to differences in heath conditions between the two groups of PLWHA, information on HIV-related illnesses diagnosed with the limited laboratory resource were collected for each of the study groups. The five major causes of HIV-related illnesses diagnosed for both groups were HIV wasting syndrome, HIV-related mucocutaneous illness, candidiasis, chronic diarrhea, and tuberculosis. There was no difference in the ranking of the health conditions affecting PLWHA between members and non-members. No data were consistently available with regards to the seriousness of conditions at the time of the consultation.

Which evidence-based policy recommendations could be made?

Based on the study findings as well as information collected during the two-day training course of health workers, the following recommendations can be made:

The total cost of care used by an individual PLWHA is on average 65 percent of the annual CHF premium for a household. Because PLWHA are in greater need of care, especially in the latest stage of the disease, they consume more health services than ordinary members. In countries like Tanzania, where the epidemic is at a generalized state – HIV is firmly established in the general population – the sustainability of a community health financing scheme may be compromised if an increasing number of PLWHA join the scheme. The tendency of people to join such community-based schemes because they know that they are likely to incur health costs (referred to as "adverse selection") is an issue for Tanzania's CHF scheme as membership is open to all irrespective of their current health status and there is no waiting period before one can begin to access services.

By creating a culture of seeking care regularly, CHF membership appears to lower hospitalization frequency, duration and costs due to HIV/AIDS conditions. Additional research is needed to confirm that the same finding will be made for PLWHA tested HIV positive and in earlier stage of disease progression. The earlier that patient follow up begins, the broader the range of alternative interventions available to manage HIV/AIDS conditions, and the less likelihood of hospitalization. In this sense, membership may lead to better case management of PLWHA, reserving hospital beds for the most severe conditions and resulting in a beneficial impact on availability of hospital beds for other patients.

Because knowing the magnitude and trends of the HIV/AIDS epidemic is a pre-requisite to scale up appropriate response, the under-reporting of AIDS cases in Hanang should be addressed. Reporting forms should be available at all facilities. Adequate training and supervision must be provided to health workers. Measures to guarantee the confidentiality of reported HIV status must be emphasized.

Inclusion of prevention activities within the CHF benefits package has the potential to be an appropriate strategy in a rural area. Using CHF as a tool to strengthen VCT as an entry point for HIV/AIDS care and support can be a policy option. However serious barriers to access to VCT remain in the Hanang district. Lack of referrals for testing between dispensaries/health centers and the district hospital, lack of knowledge of the AIDS reporting system among health workers, and health workers' fear that the patient would not be able to cope with the social sigma associated with AIDS were the main obstacles mentioned during the training session held with health workers. Training of health workers should focus on the necessity to disclose HIV status to their patients and develop

follow-up with the referral hospital where HIV testing is performed. Support groups or peers groups of health care workers must be established to assist health workers to cope with HIV/AIDS issues

1. Background

1.1 Introduction

Tanzania is located in sub-Saharan Africa, the region of the world worst affected by the HIV epidemic. At the end of 2003, Tanzania had an average adult HIV prevalence of 7.8 percent (UNAIDS 2003). The epidemic is challenging Tanzania's public health system and its capacity to address the needs of the increasing number of people living with HIV/AIDS (PLWHA). The scope of clinical care activities in Tanzania has been dramatically changed by the range of HIV/AIDS-related diseases to be treated since 1983, when AIDS cases were first reported.

The Community Health Fund (CHF) of Tanzania is a prepayment type of beneficiary financing mechanism that entitles members to health care coverage, regardless of their health status. The membership period is one year. Because of the increasing prevalence of HIV, intensive use of services by a growing number of PLWHA could ultimately exceed the utilization levels anticipated when the scheme was designed and annual premiums set, putting the financial sustainability of the scheme at risk. In the Hanang district, the CHF scheme is currently delivering HIV-related health care while knowing very little about the HIV status of their membership pool due to the limited availability of HIV testing services.

This study is a multi-facility, retrospective, and analytical study of HIV/AIDS services for the year 2002. Medical utilization data through a retrospective review of facility records and 1,666 medical charts of 465 patients living with HIV/AIDS are analyzed. The study collects data on the direct costs of providing HIV/AIDS services within the CHF package of benefits, such as personnel time and materials (drugs, laboratory and imaging tests, and other supplies) as well as indirect costs. Costs associated with major HIV-related diseases presented by AIDS patient are evaluated when diagnosed.

1.2 Purpose

The purpose of the study is to analyze the cost and use of HIV/AIDS services by PLWHA in the Hanang district who are scheme members in comparison to PLWHA who are non-members. The study aims at assessing if CHF membership allows PLWHA better access to health services, especially when HIV infection results in profound immunodeficiency that causes patients to present increasingly with AIDS-related diseases and opportunistic infections. By costing HIV/AIDS services both for individuals tested positive for HIV and individuals who fall (as identified by their health care physician or nurse) within the symptom-based World Health Organization (WHO) AIDS definition, the study aims at providing policymakers with the full picture of the cost of HIV/AIDS services provision for CHF members compared to non-members in a region where HIV testing is minimal.

The specific objectives of the study are to (1) identify service utilization for PLWHA who are CHF members compared to utilization by PLWHA who are non-members in outpatient and inpatient care settings; (2) estimate annual care cost, to the health facility, per PLWHA for CHF members and

non-members by level of care and care setting; and (3) identify differences in patterns of HIV/AIDS service provision to CHF members versus non-members.

1.3 Tanzania Country Profile

Tanzania is located in sub-Saharan Africa and remains one of the poorest countries in the world, heavily reliant on foreign aid. Tanzania basic indicators are presented in Table 1.

Table 1: Basic Indicators of Tanzania

Basic Indicators	
Net primary school enrollment/attendance (%) (1996-2003)	49
Total adult literacy rate, 2000	75
Life expectancy at birth (years), 2003	43
GNI per capita (US$), 2003	290
Annual no. of under-5 deaths (thousands), 2003	237
Annual no. of births (thousands), 2003	1,438
Total population (thousands), 2003	36,977
Maternal mortality rate reported (per 100,000 live births), 1985-2003	530
Infant mortality rate (per 100,000 live births), 2003	104
Under-5 mortality rate (per 100,000 live births), 2003	165

Source: UNICEF 2004.

1.4 Hanang District Profile

Hanang is one of five districts in the Manyara region of northeastern Tanzania. The district covers an area of 3.636 sq kms. Administratively, the district is divided into five divisions, 22 wards and 53 villages. According to the 2002 census, the district had a population of 205,133, consisting of 104,492 males and 100,641 females

The Hanang district was established by presidential decree in late 1985 and at that time was part of the Arusha region, which was later split in two to create a new Manyara region. Average per capita income is estimated at US$ 200. The lack of infrastructure, especially rural roads, compromises access to social services in many areas. The district's main economic activities include agriculture, livestock and bee keeping, and fishing. Agriculture, which represents about 65 percent of economic activity, consists of large-scale farms and small-scale peasant farming. Cash crops include wheat, pigeon peas, and safflower. The district also grows a small amount of coffee. Other crops produced for food and/or cash purposes are fruits, vegetable, cassava, sugar cane, and banana. Animal husbandry is practiced mainly by the nomadic Wabarbaig and to a small extent by the Iragw tribes; it represents about 25 percent of economic activity. Because these activities are so dependent upon annual rainfall, which is quite unreliable in some areas, production varies from year to year.

Poverty limits access of large segments of the population to accurate and up-to-date information and education about sexual health matters and medical services for treatment of sexually transmitted infections (STIs). The six top diagnoses reported in outpatient visits are malaria, pneumonia, acute respiratory infection, diarrheal disease, intestinal worms and skin diseases, four of which – pneumonia, acute respiratory infection, diarrheal disease, and skin diseases – could be HIV/AIDS symptoms or conditions.

1.5 Status and Trends of the HIV/AIDS Epidemic

Tanzania faces a serious HIV/AIDS epidemic and the negative impact on the development of the country is noticeable (Prime Minister's Office [PMO] 2003). According to UNAIDS, in the year 2001 the estimated HIV/AIDS prevalence among Tanzanian adults from 15 to 49 years of age was 7.8 percent and the estimated number of PLWHA was 1.5 million (UNAIDS 2002a). The main transmission mode is heterosexual sex, which accounts for 78 percent of all cases. Mother-to-child transmission ranks second at 5 percent (NAC 2002). As a result of the increased adult and child mortality, life expectancy at birth will be 10 years lower in 2010 than it would have been without the HIV/AIDS epidemic (UNDP 1998).

According to the 2001 HIV/AIDS/STI surveillance system report published by the National AIDS Control Program (NACP), the 20 regions of Tanzania reported a total of 14,112 AIDS cases to the NACP between January 1 and December 31 of that year. Forty-four percent of the cases reported in 2001 were male and 55 percent female. The highest numbers of reported cases by age group were the 30-49 group for males and 25-34 group for females. Reported case rates varied from 156.1 per 100,000 in the Mbeya region to 6.8 per 100,000 in the Kigoma region; the national average was 43 per 100,000 per region. The Arusha region, of which Hanang district was part in 2001, had an AIDS reported case rate of 23.6 per 100,000.

It is estimated that only one of every five AIDS cases in Tanzania was officially reported in 2001, so there were likely about 71,000 cases in 2001 (NACP 2002). Based on observations and focus groups in Hanang district, under-reporting of AIDS cases was due mainly to health workers' fear that the patient would not be able to cope with the social stigma of AIDS, were that his/her health status become known through a breach of confidentiality; lack of referrals for testing between dispensaries/health centers and the district hospital; and lack of interest by health workers.

The overall HIV prevalence among blood donors in 2001 was 11 percent, with a 13.7 percent female prevalence compared to 10.4 percent male prevalence. The Arusha region was the third most affected region, with HIV prevalence among blood donors of 17.8 percent. The Hanang district had the highest prevalence of the Arusha region, with 18 percent (40) of its 223 blood donors testing positive for HIV (NACP 2002).

The overall HIV prevalence among pregnant women was 16.7 percent in urban areas compared to 15.5 outside major urban areas (UNAIDS 2002a). No HIV prevalence data were available for the Arusha region.

Table 2 provides an overview of HIV/AIDS epidemic indicators available in Tanzania, the Arusha region, and Hanang district.

Table 2: Country, Region, and District HIV/AIDS Statistics, 2001

HIV/AIDS 2001 indicators	Tanzania	Arusha Region	Hanang District
HIV/AIDS estimates (UNAIDS 2002a):			
Est. number and adults and children living with HIV/AIDS	1.5 million	NA	NA
Adult HIV prevalence	7.8%	NA	NA
HIV/AIDS surveillance data (National AIDS Control Program 2002):			
AIDS case rate (per 100,000) 1999-2001	43	23.6	
AIDS reported cases for 2001	14,112	492	
HIV prevalence among blood donors	11.01%	17.8%	18%
HIV prevalence among males blood donors	13.7%	17.2%	
HIV prevalence among females blood donors	10.4%	20.4%	
HIV prevalence among pregnant women urban	16.7%	NA	
HIV prevalence among pregnant women rural	15.5%	NA	

1.6 National and Local Government Response to the HIV/AIDS Epidemic

1.6.1 National Response

The government of Tanzania has made the HIV/AIDS epidemic a top priority in its political agenda. In collaboration with all partners, the government's response through its national multi-sectoral strategic frameworks on HIV/AIDS for years 2001-03 and 2003-07 emphasizes "frankness and openness about HIV/AIDS, prevention through capacity building and empowering of communities, families and individuals to respond to the challenges and threats of the epidemic" (PMO 2003).

According to the national multi-sectoral framework, "significant achievements have been made in the areas of epidemiological surveillance; laboratory capacity for HIV testing; security of blood transfusion; control and management of Sexually Transmitted Infection (STI); counseling services; programs for children and young people in and out of school; interventions for specific vulnerable groups like commercial sex workers, long-distance truck drivers, and policemen; production of information, education and communication (IEC) campaigns; and research in intervention strategies." Nonetheless, those achievements were limited in scope and coverage (targeting only pilot areas or districts), in quality assurance, lacked coordination, dissemination and documentation (PMO 2003).

1.6.2 Response in Hanang District

Activities implemented to tackle the HIV/AIDS epidemic in the Hanang district in year 2002 focused on training of health workers; IEC and focus groups targeting youth; orientations and trainings of health workers on control and management of STIs and AIDS in patients; training of 100 peer health educators on HIV/AIDS issues in four (out of 53) villages, with follow-up activities in two of them; IEC events such as video shows and puppets on HIV/AIDS education in villages; and community meetings that include HIV/AIDS on their agendas. Voluntary counseling and testing (VCT) has been made available in the district capital of Katesh, with trained and certified HIV/AIDS counselors.

2. The Community Health Fund

2.1 History and Objectives of CHF

The Community Health Fund is a prepaid health scheme. Households voluntarily pay a premium that gives them membership in the fund for a defined period, usually a year. Individuals wishing to join the CHF may do so but would pay the same premium as a household. The CHF package of health services enables members and their families to use at no charge primary health care services from the local public dispensaries and health centers. Patients may also be referred to the district hospital and the CHF will cover the charges for treatment for its members. CHF is open to any person in the community regardless of their health status, including HIV/AIDS. There is no waiting period between joining CHF and eligibility for services.

In 2002, CHF was operating in 23 districts, with the goal of implementation in all districts by 2003. Districts are free to set their premiums at any level they wish given their socio-economic environment. The Ministry of Health (MOH) makes a matching grant for the premiums collected; it also coordinates all operations of the CHF countrywide through the CHF coordinator based at MOH headquarters.

The CHF Act governs the establishment of the CHF in any district. According to the Act, the objectives of the CHF are to mobilize financial resources from the community for provision of health care services to its members; to provide quality and affordable health care services through a sustainable financing mechanism; and to improve health care services management in the communities through decentralization by empowering the communities to make decisions affecting their health.

The CHF supplements (and is additive to) the financing that is available to each facility through the district treasury, from "basket funds" that are centrally allocated through the annual budgets. People pay premiums and register for membership at their local participating health facility, usually a dispensary. The premiums collected by each facility are deposited in the district office and credited to an account that is earmarked for that facility. The money is used to pay for drugs and medical supplies as well as improvements to the facility. The CHF does not operate as a separate entity and does not reimburse facilities for the use of service by members since all the premiums collected are "owned" by the facility. When members receives services in a facility other than the one where they are registered, there is no mechanism for reimbursing the facility used; the Hanang District Health Management Team is working to rectify this.

2.2 CHF in Hanang District

The CHF scheme was initiated in Hanang district in 1998. Membership in 2003 was about 6,209 individuals, approximately 2.4 percent of the district population. Hanang was one of the first districts

to introduce the CHF after the concept was piloted in two districts, Igunga and Singida Rural. The annual premium for a household is TSh 10,000 ($US 11), payable in one or two installments[1]. Those who do not join the CHF have to pay user fees (TSh 1,000 at dispensaries and 1,500 at health centers for outpatient visits; TSh 3,000 per inpatient admission at hospital or health center) at the time of receiving health care from any of the government health facilities. Facilities are allowed to exempt the indigent from these fees.

Hanang district has 21 dispensaries, three health centers and one district hospital (Table 3). Among those 25 health facilities, 14 are public and 11 are private. All public facilities and one parastatal facility participated in the CHF program in year 2002.

Table 3: Hanang District Health Facilities enrolled in CHF program

Number of facilities	Number of facilities participating in the CHF	Type of facility	Level of facility
1	1	Government hospital	Secondary
1	1	Government health center	Primary
2	0	Private health centers	Primary
12	12	Government dispensary	Primary
8	1	Parastatal dispensary	Primary
1	0	Catholic dispensary	Primary
25	15	Total	

2.3 CHF and HIV/AIDS

The CHF in Hanang does not exclude any person from joining and receiving benefits. There are no exclusions for any disease condition or age, and no limits on the quantity of services a member can use in a year. In this respect, therefore, utilization of services may be affected by sick people self-selecting to join the scheme. Evaluations have shown that scheme members tend to consume a much higher volume of services than non-members. In 2003, CHF members constituted only 2.4 percent of the district population but accounted for 42 percent of outpatient visits (Musau 2004).

Given the absence of controls over adverse selection, it is likely that the sick will tend to join because they are sure they will make use of the premium they pay. This may be particularly true for HIV/AIDS patients, who often have opportunistic infections that require frequent medical attention.

The MOH contributes to short- to medium-term sustainability of the CHF through matching grants that it makes for all premiums received. The MOH also covers nearly all the costs of the health facilities. The CHF premium goes only towards filling the gap that is not funded by the ministry, particularly to medical supplies and building repair and maintenance. The facilities do not charge the CHF for services to members and there is therefore no monitoring of the scheme's financial status to evaluate the adequacy of premiums to cover the extra cost of services used by its members.

[1] Rate as of January 2002.

3. Study Methodology

3.1 Study Questions

The study's research questions are the following ones:

- How does the use of outpatient, inpatient and VCT services vary between PLWHA who are CHF members compared to PLWHA who are non-CHF members?
- What is the difference in costs of care between the two groups?
- Is there any difference in the services provided to the two groups?

3.2 Study Design

The current study was multi-facility, retrospective, and analytical analysis of HIV/AIDS services for the year 2002. Medical utilization data through a retrospective review of the facility records and 1,666 charts medical charts of 464 PLWHA aged 18 and older, regardless of CHF membership, were analyzed. Records and charts were from 14 facilities. Complementary data also used consisted of the direct costs of providing HIV/AIDS services within the CHF package of benefits, such as personnel time and materials (drugs, laboratory and imaging tests, and other supplies). Data were not available for capital costs.

3.3 Study Population and Site Selection

As noted above, the study population was PLWHA 18 and older in the Hanang district who attended the 14 facilities selected as study sites during year 2002. Data were collected from a total of 1,666 medical charts of 464 patients as well as cost data from each facility and from the district health offices. Forty-six percent of the study population (213 individuals) were CHF members, 64 percent (251 individuals) were not members.

Sites chosen met several criteria of the health service infrastructures available to CHF members, including level of care (explained below) and geographic location. Thirteen of the 14 government-owned facilities that participated in the CHF scheme were included in the sample. The only public facility excluded was a dispensary that did not report CHF activity. All the levels of health care services available to CHF members were included in the sample: government hospital, health center, and dispensaries. The study sites reflected various geographic locations in five divisions and ensured coverage of various subpopulations including the nomadic Wabarbaig and Iragw tribes. Table 4 lists the participating facilities by type. Annex A provides a detailed list of all health facilities in the Hanang district and indicates the ones selected as study sites.

Table 4: Study Sites' Facilities

Type of facility	Level of facility	Number of facilities that participated in CHF scheme	Number of facilities included as study sites
Government hospital	Secondary	1	1
Government health center	Primary	1	1
Private health centers	Primary	0	0
Government dispensary	Primary	12	11
Parastatal dispensary	Primary	1	1
Catholic dispensary	Primary	0	0
Total		15	14

3.4 Subject Eligibility

Records of patients meeting the following jointly applied criteria were eligible for inclusion in the study:

- Diagnosis of HIV/AIDS infection using test for antibodies or symptomatic AIDS (as identified by their health care physician, nurse or clinical officer) falling under the WHO Clinical AIDS Case Definition for Use in Africa (Annex B contains the definition.)
- Diagnosis of HIV infection
- Adults of 18 years of age or older at the time of first consultation
- At least one documented medical visit at a study site within the period January 1 to December 31, 2002.

Ideally, medical records eligible for inclusion would have only been those of patients who had been tested positive for HIV, with a confirmation test. However, such information was available for only 74 patients in 2002. Recognizing the lack of systematic testing in this district, the WHO Clinical AIDS Case Definition, which is used for surveillance in Tanzania, was used to identify individuals living with HIV/AIDS. Type-with-type comparisons were made during the data analysis to ensure no significant difference exists between the two groups.

3.5 Sampling Framework

The patient selection was done using a non-probability sample. Because of the low number of PLWHA tested or clinically diagnosed and the low enrollment rate of the district population in the CHF scheme, selecting a probability sample of records of patients living with HIV/AIDS in each study site would have entailed screening a large number of files, an option that was not feasible due to the study's budget constraints. Data were captured from a total of 1,666 medical charts of 465 individuals living with HIV/AIDS – mostly in the AIDS stage. In sample selection, records were selected to ensure equal sex distribution. The total number of adult patients who have been tested positive for HIV/AIDS using a test for antibodies or/and identified as having AIDS by their health care physician was estimated to be 742 using facility records keeping and CHF Status Report for year

2001.The cost of care and utilization of services were compared between PLWHA who were enrolled in the CHF scheme versus PLWHA who were not enrolled. Forty-six percent of the studied individuals (213) were CHF members versus 64 percent (252 individuals) who were not members. The characteristics of the study sample are summarized in Table 5.

Table 5: Characteristics of Study Sample

Sample characteristics		CHF members N = 213	Non-CHF members N= 252	Totals N=465
Average age		34.8 years	34.4 years	34.6 years
Sex	Female	62%	67%	64%
	Male	38%	33%	36%
House location	Urban	21%	17%	19%
	Rural	78%	82%	80%
	Unknown	1%	1%	1%
Marital status	Single	15%	25%	20%
	Married	57%	40%	48%
	Widowed	2%	2%	2%
	Divorced	3%	3%	3%
	Cohabitant	2%	0%	1%
	Not-declared	21%	30%	26%

No statistically significant difference in the basic characteristics of adult patients who have been tested positive for HIV and adults identified as having AIDS using the WHO symptoms-based definition were found in the study sample. Because of the late testing phenomenon common in that region of the world, the limited number of people using HIV/AIDS testing, and the use of clinical diagnosis to report AIDS cases, our study population was mostly in the AIDS stage, The sample characteristics are in line with the data in respect to characteristics of people living with HIV/AIDS in the most advanced stage of the disease in Tanzania. In Table 6, the characteristics of the total sample of PLWHA in the study with available characteristics of AIDS cases reported for 2001 in Tanzania are compared. Similarities of the characteristics of the study sample and characteristics of AIDS cases in Tanzania validate the sample used for the study. This indicates that the selected sample is likely to be representative of the population from which it was selected.

Table 6: Comparison of Sample Characteristics with AIDS Cases Characteristics in Tanzania

Sample characteristics		Cases in the study sample N= 465	AIDS cases (2001 surveillance report) N= 14112
Average age		34.6 years	
Sex	Female	64%	55%
	Male	36%	44%
Marital status	Single	20%	24.2%
	Married	48%	44.2 %
	Widowed	2%	1.3%
	Divorced	3%	10.8%
	Cohabitant	1%	1.9%
	Not-declared	26%	17.6%

3.6 Costing Approach

The cost estimation procedures used the "ingredients" approach to compute direct costs per visit for outpatient care and per admission for inpatient care. Direct costs included staff costs, medical supplies, and food. Indirect costs (facility overheads) such as electricity, telephone, maintenance, and administrative staff costs were allocated to each outpatient or inpatient unit cost using an overhead recovery rate. This rate was determined from the facility's cost profile by comparing direct costs (primarily staff costs and medical supplies) to indirect costs (overheads). The overhead recovery rate is the percentage of indirect costs to direct costs. This rate is multiplied by the unit cost (based on direct costs only) to obtain the share of indirect costs that should be added to the direct unit cost to arrive at a full cost per unit. The study did not attempt to calculate costs to the patient. Resources were valued at their financial cost except where it was considered necessary to adjust to their economic cost, for example, to impute a value on donated medical supplies and equipment.

3.7 Data Collection

Twenty-eight data collectors captured the data in the 14 study sites under the supervision of the district HIV/AIDS coordinator with technical assistance from the Partners for Health Reform*plus* (PHR*plus*) project. The team of data collectors was composed of clinical staff from each of the study facilities. The team included the district clinical/medical officer (DMO) in charge of the facility. Data collectors were trained prior to fieldwork, so as to ensure their conceptual understanding of the project and their familiarity with the data collection instruments. The PHR*plus* project assisted the DMO in running a two-day training course focusing on data collection plan, questionnaire administration, supervisor's duties, supervision calendar, and logistical arrangements of field teams. The training also included a refresher session on the use of HIV/AIDS surveillance definitions used to report AIDS cases to the National AIDS Control Program as well as health management information system (HMIS) tools used in the district.

Reliability and validity of data collected was ensured by (1) pre-testing of questionnaires before the training, redesign, and testing after the training to reflect data collectors' feedback, (2) questionnaires designed to maximize the use of the MOH routine HMIS reports, (3) HIV/AIDS data collectors' knowledge of the HIV/AIDS condition, refreshed prior to data collection, and (4) quality

control during fieldwork done by the HIV/AIDS district coordinator with the assistance of the PHR*plus* project to ensure that questionnaires were thoroughly checked and edited.

Each data collector completed the questionnaires taking information from either patient cards or the patient registration book. Each patient card was coded with a patient number and applied to the questionnaires. Facilities maintained their patient cards quite well, recording symptoms in detail and prescriptions legibly. In some facilities, a patient registration book was used to maintain medical records and the questionnaires were completed from this source. This book includes the following information: full name, address, sex, age, symptoms, diagnosis, CHF membership identification number (if any), and treatment provided. Whether through the use of patient cards or a patient registration book, there were no concerns with the questionnaires from the data collectors.

3.8 Study Instruments

Comprehensive data on patient clinical events, use of outpatient, inpatient, and laboratory services, use of medical supplies was captured from patient charts and facility records. Data on costs of outpatient, inpatient, and laboratory services and medications was gathered from each facility and where necessary from the district accountant as well. Only recurrent (routine operating) costs were available and so data on capital costs (equipment, vehicles, and buildings) was not collected. Data on capital expenditure is not normally kept especially when the items were not purchased directly by the facility or the district, as it is the case in Hanang.

Data was input into Microsoft Access and exported into Microsoft Excel for cleaning and analysis. Data was imported into Microsoft Excel for structuring and initial cleaning of costing information. Subsequently, data were exported to Stata for final cleaning and analysis. Descriptive statistics were generated to check for data errors. Frequencies were also examined to detect problems with data distribution. Local and global consistency checks were completed as well. One hundred percent of the raw data (1,666 medical charts of 464 patients patient records) was checked to verify data had been entered correctly. Analysis was conducted in Stata through examinations of descriptive statistics and cross tabulations. Finally, a variety of tests of association were executed to determine the level of statistical significance of the results.

3.9 Ethical Considerations in Study Implementation

Due to the confidential nature of the data collected, the DMO and PHR*plus* team sought and obtained the approval of the National Ethical Review Committee of Tanzania. The primary ethical concern in this study was related to possible loss of confidentiality of information collected for the purpose of the study from medical records of PLWHA. The PHR*plus* team emphasized measures to guarantee the confidentiality of data included in the research by training data collectors to be fully aware of the damage that would be caused by a breach of confidentiality regarding HIV status in a region where HIV is stigmatized.

Data collectors were health workers who work in Hanang district and are subject to professional confidentiality. They were required to maintain strict confidentiality concerning all personal information collected. To protect the individual's privacy, the data were collected anonymously; no names were recorded on the questionnaires, and medical records were not removed from the health facility.

In accordance with international recommendations (UNAIDS 1996, Wolf and Lo 2001, CIONS 1993) individual informed consent is not required when the data source is medical records. Medical records can be used without the patient's consent on the condition that the patients did not expressly refuse or show reluctance to participate in biomedical research in the past.

3.10 Study Strengths and Limitations

As stated earlier, the sample was not a random sample of patient records. However, this fact in itself will not invalidate the results. The large sample size in the study and the similarity of characteristics found between the study groups and total AIDS cases declared in the country in FY 2001 point to the validity of the sample.

People included in our sample are individuals in the latest stage of the disease – mostly the AIDS stage – and the majority of them have been clinically diagnosed by their physician. The sample is not representative of the total population of the Hanang district living with HIV, because it does not reflect the appropriate mix of patients living at the various stages of the HIV disease progression. A broader sample of PLWHA, with people diagnosed HIV positive at an earlier stage of the infection's course, would give a more general picture of cost and use of HIV/AIDS services in the district.

The study looked retrospectively at patient records, increasing the risk of bias in the way information is abstracted from medical records. Those records were generated for clinical purposes. Information retrieval was dependent on the health practitioner's capacity to keep information in medical records. However, facilities maintained their patient records quite well, recording symptoms in detail and prescriptions legibly. No major obstacles were reported during data collection supervised by both members of the Hanang District Health Management Team and PHR*plus* team.

Selecting data collectors from among health workers made sure that they had the necessary skills to review patient data and understand confidentiality issues. However, selecting health workers as data collectors may induce reporting bias because of the intimate knowledge they have about specific PLWHA.

4. Key Findings

4.1 Use of Services

4.1.1 Use of Inpatient and Outpatient Services

As Table 7 indicates, CHF members access outpatient services on average 2.5 times per year and non-members 2.1 times. CHF members use outpatient services 19 percent more than non-members. This difference in utilization is statistically significant. Members are 1.6 times more likely to make a higher number of outpatient visits than non-members (p-value >.004 calculated with ordinal logistic regression).

CHF and non-CHF members also use outpatient services differently: the average number of revisits is 1.8 for members versus 1.6 for non-member. This could be confirmation of the anecdotal evidence from clinicians that CHF membership created a culture of seeking care on a regular basis, i.e. seeking care as soon as symptoms arise.

Non-members consume more inpatient care than members, being admitted on average 0.36 times per year compared to 0.17 for members. This difference is statistically significant. Members are 40 percent less likely to have inpatient care compared to non-members (p>.04-Calculated with ordinal logistic regression). Place of admission seems to be influenced by CHF membership: most CHF members receive care at the health center because the CHF was first established at the health center, and most members continue to receive care at their primary provider even though they are free to go to any facility. When members are admitted at the health center the average length of stay (ALOS) is 8.9 days compared to 10.5 days for non-members. It is difficult to draw conclusion for ALOS at the hospital as only three CHF members were hospitalized there.

Table 7. Per Patient Service Utilization for Outpatient and Inpatient Care by CHF Membership Status

Annual number	CHF members N = 213	Non-CHF members N = 252	Total N = 465
No. of outpatient visits per person	2.5 visits	2.1 visits	2.3 visits
No of outpatients revisits	1.8	1.6	1.68
No. of inpatient admissions per person	0.17	0.36	0.27
Average length of stay			
Hospital	3.7 days	3.6 days	3.6 days
Health center	8.9 days	10.5 days	9.8 days

As seen above, CHF members who are living with HIV/AIDS use outpatient services more often than non-members. This finding corroborates anecdotal evidence from clinicians that CHF

membership creates a culture of seeking care when health needs arise. Nonetheless, the use of services by CHF members diagnosed with HIV/AIDS does not reflect the overuse of services by CHF members identified in previous evaluations of CHF (Musau 2004). In this previous assessment, CHF members had about four visits per year versus 0.1 visits per year for non-members (Musau 2004). The fact that the use of outpatient services does not vary greatly with membership status for those **who are living with HIV/AIDS** may be explained by the seriousness of HIV/AIDS-related conditions that individuals included in our study sample experienced. Patients included in our study sample were mostly in the later stage of the disease (AIDS stage) and sought care whether they are CHF members or not because their condition required it. Moreover, financial constraints were not a barrier to access to care in a district where fee exemption mechanisms for those who are not able to pay the user fees exists.

Members were less frequently hospitalized, and their conditions at the time of hospitalization required a shorter inpatient stay. This finding may be an indicator of good case management of HIV conditions for PLWHA through the whole process of care: outpatient visits and inpatient stay.

There was no statistically significant difference in utilization of inpatient or outpatient services between males and females.

4.1.2 Use of Testing Services

HIV/AIDS tests were available in the Hanang district only in the district capital, Katesh, during the study year. The total of HIV tests (including screening of blood donors for HIV infection initiated for surveillance purposes) performed in 2002 was 705, 74 of which were positive for HIV (Hanang District Medical Office, Tanzania 2001).

VCT services were available to PLWHA in Hanang district in 2002. According to WHO, VCT services include paramedical services and laboratory tests and the provision of HIV/AIDS-related information (WHO 2003). Trained counselors in the Katesh City were available to provide counseling services. This activity was integrated into outpatient consultations of the hospital. Patients can choose to "stop by" at the hospital and talk about HIV/AIDS issues with counselors. As it is very often the case in high-prevalence countries, services in Hanang are more focused on counseling services for people with symptomatic HIV and their families rather than on promoting testing (UNAIDS 2002b).

During the two-day training course done with health workers, the under-use of HIV testing services by patients suspected to be HIV positive was reported to be due mainly to lack of referrals for testing between dispensaries/health centers and the district hospital, lack of knowledge of the AIDS reporting system among health workers, and health workers' fear that the patient would not be able to cope with the social sigma associated with AIDS if status were disclosed. Overall, the benefits of HIV/AIDS testing were not considered superior to the potential harm for an individual living with HIV/AIDS in a highly stigmatized setting with no ART treatment available. Some PLWHA were known to have sought HIV testing outside their area of residence, for fear of stigmatization that could result from a breach of confidentiality regarding their HIV status.

Sample characteristics of VCT services reveal that the number of patients pre-counseled, tested, and post-counseled through VCT services is low: 10 patients were tested for HIV among CHF members versus 21 for non-members. The fact that 52 percent of counseling and testing was done outside the Hanang district underlines the preference of PLWHA to be tested outside their area of residence. Services in Hanang were focused more on counseling than on testing, with 146 counseling consultations made for CHF members versus175 for non-CHF.

Table 8. Sample Characteristics of HIV/AIDS Counseling and Testing Services

Sample characteristics	CHF members N = 213	Non-CHF members N = 252	Total
Use of HIV/AIDS VCT services (pre-counseled, tested, and post-counseled)	10	21	31
Location of HIV test: 1. At Katesh Health Center 2. At Tumaini Hospital 3. Outside Hanang district	 40% 10% 50%	 43% 5% 52%	 42% 6% 52%
No. of HIV counseling consultations	146	175	321

Note: N = treatment episode, either as outpatient visit or inpatient admission)

4.2 Cost of Care

The study found that the average per patient total annual cost of care of PLWHA is TSh 6,543 ($US 7.2) for members and TSh 5,960 ($US 6.6) for non-members.[2]

4.2.1 Annual Costs of Care for PLWHA by CHF Membership Status

Table 9 details the findings with regards to annual costs of care per visit and per admission for PLWHA by CHF membership status. PLWHA who are CHF members consume 10 percent more total resources per year than non-members. Members consume 30 percent more outpatient resources per year but 40 percent less inpatient resources.

Table 9: Annual Costs of Care per Visit and per Admission for PLWHA by CHF Membership Status, in TSh

	CHF members	Non-CHF members
Outpatient cost per visit	2,193	2,009
No. of visits per year	2.5	2.1
Total cost per year	5,490	4,219
Inpatient cost per admission	6,197	4,858
No. of admissions per year	0.17	0.36
Total cost per year	1,053	1,741
Total cost of all care per year	6,543	5,960

Table 10 shows the average total cost of care for PLWHA per visit and per admission by care setting and membership status.

2 With rate as of January 2002

Table 10: Average Total Cost of Care for PLWHA per Visit and per Admission, by Care Setting and CHF Membership Status

Care setting	CHF members		Non-members	
	TSh	N	TSh	N
Outpatient costs per visit				
Dispensary	1,835	323	1,900	309
Health center	2,680	215	2,116	207
Hospital	7,714	2	2,525	22
Average total cost per visit	2,193	540	2,009	538
Inpatient cost per admission				
Dispensary	N/A		N/A	
Health center	6,348	33	6,399	39
Hospital	4,530	3	3,655	50
Average total cost per admission	6,197	36	4,858	89

Though there is no appreciable difference between the two populations for outpatient cost per visit, differences are noticed for average inpatient cost per admission: on average CHF members incur a higher cost per admission than non-members. Nonetheless, it is difficult to draw conclusions about average inpatient cost per admission that includes hospital admissions as only three CHF members were hospitalized. Inpatient cost per admission at the health center does not reflect any appreciable differences between the two study populations.

Major cost differences exist with regard to the facility where the inpatient care was delivered. Inpatient cost per admission was higher at the Katesh Health Center than at the district hospital. The reverse is true for outpatient care – the health center spends less per patient visit than the hospital. One explanation of the inpatient cost difference is that, at the time of the study, the district hospital was still in its launching phase, and the more experienced, and more costly, staff worked in the older facility. Likewise, the most serious, and again more costly, conditions were still handled at the health center. As for the difference in outpatient costs, most CHF members (60 percent in the study) received outpatient care at dispensaries, where the costs are lower; 40 percent received care at the health center and an insignificant number (only two of 540) received care at the hospital. Non-members receive outpatient care at facilities in similar proportions: 57 percent at dispensaries; 39 percent at the health center; and 4 percent at the hospital. Average total cost per visit and per admission presented in section 4.2.2 already includes costs of drugs.

Table 11 shows the average cost of drugs per outpatient visit by care setting and membership status. Average cost of drugs per outpatient visit per care setting are similar for CHF and non-CHF patients, especially at the dispensary level where the cost of drugs per visit is about 7 percent less for CHF patients compared to non-CHF patients. The cost of drugs per visit is higher at both the health center and hospital, for CHF members by 10 percent and 23 percent respectively. This could indicate over-prescribing by clinicians; the available data did not permit further analysis.

The average cost per admission is very similar between members and non-members at the health center but significantly different at the hospital. As noted elsewhere, most CHF members receive care at the health center (33 compared to three at the hospital) because the CHF was first established at the health center and most members continue to seek care there even though they are entitled to go to any facility. The cost of drugs prescribed to inpatients at the health center appears to be a key contributor

to the higher cost per admission there (Table 10). These findings reflect that no preferential treatments are provided to one group versus another.

Table 11: Average Total Cost of Drugs per Outpatient Visit by Care Setting and Membership Status

	Dispensary		Health center		Hospital	
Drug cost/visit	TSh	N	TSh	N	TSh	N
CHF members	1,024	323	797	215	1,465	2
Non-CHF members	1,098	309	723	207	1,193	22

Table 12 shows average cost of drugs per admission and per patient day by care setting and by membership status. Costs of drugs per admission are only slightly lower for CHF members at both the health center and hospital. The average length of stay for CHF members at the health center was 8.9 days compared to 10.5 for non-members and this is contributing to the lower consumption of drugs; it therefore would appear that CHF members require fewer drugs than non-members. This could be confirmation of the anecdotal evidence from clinicians that CHF members tend to receive care much earlier than non-members and therefore require less expensive interventions and shorter hospitalization. This is a good sign that membership to the CHF allows AIDS patients earlier treatment of opportunistic infections and can lead to lower spending by the district on the care of AIDS patients.

Table 12: Average Cost of Drugs per Admission and per Patient Day by Care Setting and Membership Status

	Health center		Hospital	
	TSh	ALOS (days)	TSh	ALOS (days)
Drug costs/admission				
CHF members	2,113	8.9	1,293	3.7
Non-CHF members	2,170	10.5	1,333	3.6
Drug costs/patient day				
CHF members	237	8.9	349	3.7
Non-CHF members	207	10.5	370	3.6

4.2.2 Staff Time per Visit or Admission of PLWHA

Staff time per visit or admission is not significantly different for CHF members and non-members at each type of facility (Table 13). It should be noted, however, that these data came from estimates made by health workers while considering patient's charts at the time of data collection. The data show no evidence that CHF members receive preferential treatment in terms of time spent with staff.

Table 13: Treatment Time in Minutes, by Care Setting and Membership Status

	Dispensary	Health center	Hospital
Outpatient care (per visit)			
CHF members	15	22	40
Non-members	14	26	19
Inpatient care (per admission)			
CHF members	N/A	39	60
Non-CHF members	N/A	39	53

Note: Staff time with outpatients at the hospital is based on only three patients, too small a sample from which to draw conclusions.

4.3 Major Causes of HIV-related Illness among PLWHA by CHF Membership Status

In order to take into account the cost impact of differences in heath conditions between the two groups of PLWHA, information on HIV-related illnesses diagnosed with the limited laboratory resources available were collected in each of the study groups.

HIV infection is characterized by a gradual deterioration of immune functions of the people infected. Illnesses caused by various organisms, some of which usually do not cause disease in persons with healthy immune systems, increasingly affect the PLWHA. Persons living with advanced HIV infection suffer opportunistic infections of the lungs, brain, eyes, and other organs. Opportunistic infections common in persons diagnosed with AIDS include Pneumocystis carinii pneumonia; Kaposi's sarcoma; cryptosporidiosis; histoplasmosis; other parasitic, viral and fungal infections; and some types of cancer. HIV/AIDS-related illnesses, including opportunistic infections, are major components of HIV/AIDS clinical care. Table 14 presents the major causes of HIV-related illness episodes that were diagnosed in Hanang district.

Table 14: Major Causes of HIV-related Illness Episodes, by CHF Membership Status

Annual number of HIV-related illness episodes	CHF members N= 576	Non-members N= 627	Total N=1201
HIV wasting syndrome	51%	55%	53%
HIV-related mucocutaneous illness*	30%	30%	30%
Candidiasis	21%	24%	23%
Chronic diarrhea	19%	24%	21%
Tuberculosis	15%	15%	15%
Pneumocystis carnii	11%	9%	10%
Herpes zoster	10%	10%	10%
Bacteremia	11%	7%	9%
Herpes vsrus Simplex	10%	6%	8%
Cryptococus	5%	2%	3.5%
Kaposi sarcoma	2%	2%	2%
Cytomegalovirus	0.9%	0.2%	0.5%

* Defined as angular stomatis, seborrhoeic dermatis, prurigo, fungal nail, recurrent oral ulcerations

The top five major causes of HIV-related illnesses diagnosed for members and non-members are HIV wasting syndrome, HIV-related mucocutaneous illness, candidiasis, chronic diarrhea, and tuberculosis. There is no difference in the ranking of the health conditions affecting PLWHA between members and non-members. No indications were consistently available with regards to the seriousness of conditions at the time of the consultations.

In the *American Journal of Tropical Medicine and Hygiene*, Grant, Kaplan and DeCock (2001) studied major causes of HIV-related illnesses in Cote d'Ivoire, South Africa, Kenya, and Ethiopia. For comparison purposes, Annex C summarizes their results and compares them to the study findings.

5. Conclusions and Recommendations

Based on the study findings as well as information collected during the two-day training course of health workers, the following recommendations can be made:

The total cost of care used by an individual PLWHA is on average 65 percent of the annual CHF premium for a household. Because PLWHA are in greater need of care, especially in the latest stage of the disease, they consume more health services than ordinary members. In countries like Tanzania, where the epidemic is at a generalized state – HIV is firmly established in the general population – the sustainability of a community health financing scheme may be compromised if an increasing number of PLWHA join the scheme. The tendency of people to join such community-based schemes because they know that they are likely to incur health costs (referred to as "adverse selection") is an issue for Tanzania's CHF scheme as membership is open to all irrespective of their current health status and there is no waiting period before one can begin to access services.

By creating a culture of seeking care regularly, CHF membership appears to lower hospitalization frequency, duration and costs due to HIV/AIDS conditions. Additional research is needed to confirm that the same finding will be made for PLWHA tested HIV positive and in earlier stage of disease progression. The earlier that patient follow up begins, the broader the range of alternative interventions available to manage HIV/AIDS conditions, and the less likelihood of hospitalization. In this sense, membership may lead to better case management of PLWHA, reserving hospital beds for the most severe conditions and resulting in a beneficial impact on availability of hospital beds for other patients.

Because knowing the magnitude and trends of the HIV/AIDS epidemic is a pre-requisite to scale up appropriate response, the under-reporting of AIDS cases in Hanang should be addressed. Reporting forms should be available at all facilities. Adequate training and supervision must be provided to health workers. Measures to guarantee the confidentiality of reported HIV status must be emphasized.

Inclusion of prevention activities within the CHF benefits package has the potential to be an appropriate strategy in a rural area. Using CHF as a tool to strengthen VCT as an entry point for HIV/AIDS care and support can be a policy option. However serious barriers to access to VCT remain in the Hanang district. Lack of referrals for testing between dispensaries/health centers and the district hospital, lack of knowledge of the AIDS reporting system among health workers, and health workers' fear that the patient would not be able to cope with the social sigma associated with AIDS were the main obstacles mentioned during the training session held with health workers. Training of health workers should focus on the necessity to disclose HIV status to their patients and develop follow-up with the referral hospital where HIV testing is performed. Support groups or peers groups of health care workers must be established to assist health workers to cope with HIV/AIDS issues.

Annex A: Study Sites

Hanang District Health Facilities					
Health facility	**Study sites**	**Gov**	**Parastatal CHF**	**Parastatal/private non-CHF**	**Code**
Balangdalalu Luth. H.C.				1	027001
Bassodesh Disp	yes	1			027002
Bassotu Plantation				1	027003
Bassotu Ziwani disp	yes	1			027004
CMSC Nafco Disp				1	027005
Dawar disp	yes	1			027006
Dirma disp	yes	1			027007
Endasak Pentecoste disp				1	027008
Endasak disp	yes	1			027009
Gendabi Luth H.C.				1	027011
Gidagamowd	yes	1			027012
Gidahababieg disp	yes	1			027013
Gitting disp	yes	1			027014
Katesh H.C.	yes	1			027015
Murjanda Nafco disp	yes		1		027020
Murumba disp		1			027021
Nangwa catho disp				1	027022
Sirop disp	yes	1			027023
Warret Nafco disp				1	027024
Masakta disp	yes	1			027025
Serchet disp				1	027027
Tumaini hosp	yes	1			027030
Getanuwas disp	yes	1			027031
Gehandu RC disp				1	026032
Waama RC disp				1	026033
Total	14	14	1	10	

Annex B: WHO Clinical AIDS Case Definition

The World Health Organization Clinical AIDS Case Definition for Use in Africa has been widely used for surveillance purpose in countries facing problem in providing HIV testing. An individual is considered to have AIDS when at least two major signs and one minor sign are present in the absence of known causes of immunosuppression. When generalized Kaposi's sarcoma or cryptococcal meningitis is recorded, a diagnosis of AIDS can be reported without the presence of other signs.

World Health Organization Clinical AIDS Case Definition for Use in Africa

- **Major signs**
  - Weight loss > 10% body weight
  - Chronic diarrhea > 1 month
  - Prolonged fever > 1 month (intermittent or constant)
- **Minor signs**
  - Persistent cough > 1 month
  - Generalized purity dermatitis
  - Recurrent herpes zoster
  - Oropharyngeal candidiasis
  - Chronic progressive and disseminated herpes simplex infection

Source: HIV InSite Knowledge Base Chapter, June 1998

Annex C: Major Causes of HIV-related Illnesses in Cote d'Ivoire, South Africa, Kenya, Ethiopia, and Hanang District

	Cote D'Ivoire	South Africa	Kenya	Ethiopia	Hanang District, Tanzania
Populations	**HIV hospitalized patients (No=349)**	**HIV-positive clinic attendees, WHO Stage IV N=342**	**HIV-positive admissions N=95**	**Hospitalized patients with suspected AIDS N=79**	**Study sample of AIDS patients**
HIV wasting	11%	11%		34%	53%
Esophageal candidiasis	3%	17%		10%	23%
Nonspecific diarrhoea	5%		15%		21%
Tuberculosis	28%	30% (Extrapulmonary)	18%	51%	15%
Pneumocystis carinii	0	22%		1%	10%
Bacteremia	18%		26%		9%
Chronic herpes simplex	0	13%		3%	8%
Cryptococcus	2%	9%	1%		3.5%
Kaposi's sarcoma	1%	18%	2%		2%
Cytomegalovirus	0	9%			0.5%
Meningitis	10%				Not identified
Isosporiasis	7%				Not identified
Bacteria pneumonia	6%		16%	13%	Not identified
Cerebral toxoplasmosis	6%	3%		6%	Not identified
Bacterial enteritis	5%				Not identified
HIV encephalopathy	0	14%		8%	Not identified

Source: Adapted from Grant, Kaplan, and DeCock (2001).

Annex D: Bibliography

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