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**Care and Support for Chronically Ill People in Rwanda and Côte d'Ivoire:
Evidence from National Household Surveys**

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August 2008

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Abstract

This paper analyzes the free care and support that households receive for a chronically ill person from sources outside of family, friends, and neighbors. The analysis is based on data from the 2005 Rwanda Demographic and Health Survey and the 2005 Côte d'Ivoire AIDS Indicator Survey. While household members and traditional community safety nets have provided much of the care and support for the chronically ill, government and non-government sources also can play important roles, especially in response to the AIDS epidemic. Governments in both Côte d'Ivoire and Rwanda, however, face challenges in providing care and support services to the chronically ill. The majority of sick people in the two countries do not receive any care and support from sources outside the household. Among those receiving external support, companionship/emotional/spiritual care is far more common than medical, material, or social support. Findings suggest the need for care and support programs particularly in the South and East of Rwanda, and the Centre and North of Côte d'Ivoire.

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Background

This paper analyses the free care and support received by households, from sources outside of family, friends and neighbors, for the chronically ill in Rwanda and Côte d'Ivoire using nationally-representative household survey data. Traditional community safety nets, such as extended family, friends and neighbors, have commonly provided much of the care and support for the chronically ill in sub-Saharan Africa. However, other sources, especially government and non-governmental organizations (NGOs), also can have an important role.

Traditional community safety nets are the primary source for care and support for sick people in sub-Saharan Africa. They can respond quickly to a crisis and provide a range of support, including financial and psychosocial support (Foster 2007). Home-based care from family is especially important in rural areas which often lack public health services, and it is often the primary source of care for people with HIV/AIDS (Kipp et al. 2006). For example, relatives are the major caregivers for AIDS patients in rural Malawi and in Kinshasa, Congo (Chimwaza & Watkins 2004; Kipp et al. 2006).

The challenges of caring for the chronically ill, especially AIDS patients, strain families and friends (Foster 2007). In rural Malawi, household caregivers report that their tasks are physically and emotionally demanding, even though kin and community members also provide support (Chimwaza & Watkins 2004). In Kinshasa female caregivers within the family have reported lack of support from other family members and friends (Kipp et al. 2006). Furthermore, families often have insufficient skills and

knowledge to provide appropriate care at home for the ill (Ndaba-Mbata & Seloilwe 2000).

Familial care and support is usually relied upon by the poor in developing countries because of the failure of public sector social safety nets to help people in need (Foster 2007). Where formal support exists, it can include employment creation, education, and healthcare, with NGOs and religious groups providing services such as child and home care (Foster 2007, Mutangadura et al. 1999). In Mozambique, for instance, religious organizations provide psychological and household help for those with AIDS (Agadjanian & Sen 2007). Formal support can have benefits compared with private assistance; in Kagera, Tanzania formal financial assistance following an adult death has been found to be more evenly distributed between rich and poor households than private transfers (Lundberg et al. 2000). The study also found that formal sources provided more than one-third of financial assistance received by a poor household in the month immediately following the death.

Even when there are other sources of care and support, family members remain the primary source of health care throughout sub-Saharan Africa. In Malawi, for example, health care for AIDS patients comes first from the family and traditional healers, while modern care at hospitals and clinics occurs only if their symptoms continue to worsen (Hatchett et al. 2004). In southeastern Tanzania the poor especially rely on financial support from relatives, neighbors and friends for health care (Muela et al. 2000).

Various studies have shown deficiencies in modern health care systems in many parts of sub-Saharan Africa, including understaffing, inadequate supplies, serious resource constraints, and high costs that limit service delivery, especially for HIV-positive patients (Hatchett et al. 2004, Ismail et al. 2003, Veenstra & Oyier 2006). In Uganda, for example, high costs often prevent services for monitoring viral loads and ARVs from being available (Ismail et al. 2003). Because AIDS patients typically remain chronically ill longer than patients suffering from other illnesses, the cost to families are relatively greater, as research in Tanzania and eastern Zimbabwe has shown (Gregson et al. 2007, Ngalula et al. 2002). Also, in Uganda patients often have to sell their assets to afford ARVs and cannot afford treatment beyond a few months (Ismail et al. 2003). In Côte d'Ivoire the least educated and poorest HIV-infected people were least likely to be treated with an ARV or in a Drug Access Initiative (Msellati et al. 2003).

Socio-economic status affects health care utilization. In a rural area in southern Tanzania, poorer families are less likely to seek health care than richer families (Schellenberg et al. 2003). In Côte d'Ivoire, the use of maternal health services is much higher amongst the rich than poor (Kone-Pefoyo & Rivard 2006). Geographic proximity to health services can also be important in determining utilization. For example, in Rwanda women who live at higher altitudes are less likely to respond actively to their child's diarrhea because of difficulty reaching the health center (Csete 1993).

Effective delivery of formal care and support is also reliant on a stable national political and administrative system. Côte d'Ivoire has experienced an armed conflict that

began in 2002 and has resulted in between 600,000 and 1,000,000 people being displaced (Guarcello et al. 2004). A study found that the conflict has had a significant negative effect on the health system, especially staffing, with negative implications for the care of HIV/AIDS patients (Betsi et al. 2006). The West region was particularly affected; between 2001 and 2004 55% of people were displaced and 90% of health facilities were abandoned (Betsi et al. 2006: 359-360).

In Rwanda, the genocide of 1994 killed an estimated 12% of the country's population, devastating the human capacity of the country (World Bank 2004: 2). This catastrophe made it difficult for families to support the chronically ill, as it left approximately one-third of households headed by women (World Bank 2004: 2). The genocide also disrupted government health care services and other infrastructure.

Rwanda and Côte d'Ivoire have not escaped the HIV/AIDS epidemic. Table 1 shows that Côte d'Ivoire has an HIV prevalence rate of 2.9% for men and 6.4% for women, and Rwanda a rate of 2.2% for men and 3.6% for women. As in most sub-Saharan countries, HIV prevalence is higher for women than men; in Côte d'Ivoire it is almost double. The prevalence rates peak above age 30 in each country. The HIV/AIDS epidemic is strong enough to place considerable stress on the health care burden of houses and external sources.

Table 1: HIV Prevalence (%) by sex and age, Rwanda and Côte d'Ivoire, 2005 Rwanda DHS, 2005 Côte d'Ivoire AIS

Age group	Rwanda		Côte d'Ivoire	
	Male	Female	Male	Female
15-19	0.4	0.6	0.2	0.4
20-24	0.5	2.5	0.3	4.5
25-29	2.1	3.4	3.1	7.5
30-34	4.2	5.9	5.6	14.9
35-39	2.3	6.9	5.0	8.4
40-44	7.1	6.3	7.0	8.6
45-49	5.3	4.1	4.7	10.2
50-54	1.7	-	-	-
55-59	0.8	-	-	-
Total	2.2	3.6	2.9	6.4
Number	4,763	5,656	4,023	4,413

Source: INS et al. (2006), INSR & ORC Macro (2006)

Methods

The study uses the 2005 Rwanda Demographic and Health Survey (DHS) and the 2005 Côte d'Ivoire AIDS Indicator Survey (AIS) to analyze care and support received by households with a chronically ill person (INS et al. 2006, INSR & ORC Macro 2006). The DHS and AIS are cross-sectional surveys that have been conducted in a number of developing countries and that provide a wide range of comparable population and health data.

Each of the two surveys being examined in this paper was conducted using a multi-stage sample design and is nationally representative. This provides an advantage over other studies that have only focused on a small area and are therefore not nationally representative. The 2005 Rwanda DHS surveyed 10,272 households and the 2005 Côte

d'Ivoire AIS surveyed 4,998 households. These surveys allow for analysis of how the receipt of care and support varies by a number of factors both within each country and between the two countries.

The questions on care and support are in the household questionnaire in each survey. In the Rwanda DHS and Côte d'Ivoire AIS the household questionnaire respondent is asked to identify any household members age 18-59 years who were sick for at least three months in the past 12 months, and also any household members age 18-59 years who died in the past 12 months and were sick for at least three months before dying. For each of these chronically ill people, the household questionnaire respondent is asked if, in the last 12 months, the household received any medical care, material support, companionship/emotional/spiritual support, or social support for which they did not pay and was received from sources other than relatives, friends or neighbors.

The outcome variable in the multivariate analysis is whether any care and support was received for free from sources other than relatives, friends or neighbors (from here on referred to as "outside care and support"). The number of cases is too small to analyze each type of care and support individually in the multivariate analysis. The study examines several individual, household, and geographic variables. The individual level variables include age, sex, highest education level, and whether the chronically ill person is reported to have eventually died. The household-level variables include household

wealth quintile², whether a household member reached at least secondary school level of education, and the number of usual household members. The geographic level variables are urban or rural residence, and region of residence within the country.

The multivariate models to analyze the factors associated with a chronically ill person receiving any outside care and support are conducted with logistic regression models using Stata 8.1 (Stata Corp 2003). Sample weights are applied in the regression and standard errors are adjusted for the cluster design of the sample. The odds ratio, or exponential of the coefficient in the model, is presented. Because of small sample size, the individual education variable cannot be included in the Côte d'Ivoire analysis.

The analysis first examines how the percentage of people reported as chronically ill differs across a number of variables. Next, the type of outside care and support used is presented. A bivariate analysis is then conducted of the relationship of the receipt of any outside care and support with the explanatory variables included in the multivariate models, with a chi-square conducted to test if the association is statistically significant. Following this, the multivariate analysis is conducted.

Results

Table 2 presents the univariate and bivariate statistics of the chronically ill, both those alive and those who eventually died, for Rwanda and Côte d'Ivoire. In Rwanda, 5.3 per cent of those still alive were chronically ill, while 56.2 per cent of those who

² Household wealth quintile is computed from a wealth index that measures a household's ownership of durable assets. Rutstein & Johnson (2004) describe the methodology for calculating the index.

eventually died were chronically ill. In Côte d'Ivoire, 2.0 per cent of those alive were chronically ill, as were 63.5 per cent of those who died.

Table 2: Univariate and bivariate statistics of whether sick (%) by whether died, people age 15-59 years, Rwanda and Côte d'Ivoire, 2005 Rwanda DHS, 2005 Côte d'Ivoire AIS

	Rwanda				Côte d'Ivoire			
	Alive		Died		Alive		Died	
	Univ (%)	Sick (%)	Univ (%)	Sick (%)	Univ (%)	Sick (%)	Univ (%)	Sick (%)
Place of residence						**		
Urban	17.1	5.8	15.2	65.2	46.4	1.7	36.4	60.4
Rural	82.9	5.2	84.8	54.3	53.6	2.3	63.6	65.5
Age		***				***		**
18-24	31.1	2.9	29.4	44.4	30.7	0.7	9.6	30.0
25-34	29.3	4.4	20.3	51.6	32.1	2.2	27.9	79.3
35-44	20.7	6.3	20.9	65.6	19.8	1.9	24.0	76.0
45-59	19.0	9.2	29.4	66.0	17.3	4.2	38.5	55.0
Sex		***		***				***
Male	44.8	4.5	49.7	41.3	48.0	1.8	51.9	51.5
Female	55.2	5.9	50.3	69.7	52.0	2.2	48.1	76.2
Education level		***						
None	26.5	7.1	-	-	49.4	2.1	-	-
Primary	62.1	4.9			24.0	2.4		
Secondary+	11.4	3.2			26.6	1.6		
Household wealth		***				**		***
Lowest	19.5	6.1	19.1	69.0	17.8	2.2	32.1	52.4
Second-lowest	19.0	5.0	17.1	46.2	18.5	2.7	20.6	70.4
Middle	19.9	5.7	25.0	44.7	19.8	2.2	13.7	88.9
Second-highest	20.0	5.8	17.1	57.7	21.2	1.9	21.4	75.0
Highest	21.7	3.9	21.7	66.7	22.7	1.4	12.2	37.5
Region - Rwanda		***						
City of Kigali	10.5	5.2	9.3	78.6	-	-	-	-
South	26.4	5.8	27.8	52.4				
West	24.3	5.5	21.2	59.4				
North	17.9	3.8	17.2	53.8				
East	20.9	5.7	24.5	51.4				
Region - Côte d'Ivoire						***		
South	-	-	-	-	50.5	2.4	37.6	64.0
Center					30.1	2.0	33.1	68.2
North					19.3	1.2	29.3	56.4
Total	19,593	5.3	153	56.2	11,748	2.0	132	63.5

* p<0.10 ** p<0.05 *** p<0.01

Weighted cases.

The univariate column for each variable adds to 100.

The number of cases for education: Rwanda 19526 Côte d'Ivoire 11693.

Côte d'Ivoire regions of residence comprise the following provinces: South (Sud, Sud-Ouest, Ville d'Abidjan), Center (Centre, Centre-Est, Centre-Ouest, Ouest), North (Centre-Nord, Nord, Nord-Est, Nord-Ouest).

The Rwanda regions of residence are the same as the provinces listed in the DHS.

Source: INS et al. (2006), INSR & ORC Macro (2006)

There are some clear patterns of chronic illness by each variable. People aged 18-24 are least likely to be chronically ill, while females are more likely to be chronically ill, especially amongst those who died. People in the lowest household wealth quintiles in each country and, in Rwanda, the least educated, are most likely to have been sick. In Côte d'Ivoire, among people still living, rural residents are most likely to have been chronically ill.

The receipt of outside care and support by households with a chronically ill person, irrespective of whether they eventually died, is shown in Table 3. Receipt of care and support is somewhat higher in Rwanda (32.4%) than in Côte d'Ivoire (27.2%). The composition of the care and support also differs by country. In Rwanda, companionship and related support is the type of care most commonly provided to the chronically ill, at 26.0%. The next most common, medical care, was provided to only 5.9% of the chronically ill. In Côte d'Ivoire companionship and related support also was the most common type of support (23.5%), while medical care was second, at 8.5%.

Table 3: Type of outside care and support received (%), chronically ill people age 15-59 years, Rwanda and Côte d'Ivoire, 2005 Rwanda DHS, 2005 Côte d'Ivoire AIS

	Medical	Material	Social	Companionship etc	Any	N
Rwanda 18-59	5.9	4.1	5.0	26.0	32.4	1,077
Côte d'Ivoire 18-59	8.5	3.3	2.4	23.5	27.2	312

Material: clothing, food or financial support.

Social: household work, training of caregiver or assistance for legal services.

Companionship etc: companionship, emotional or spiritual support.

Weighted cases.

Missing cases: Rwanda 40, Côte d'Ivoire 12

Source: INS et al. (2006), INSR & ORC Macro (2006)

Table 4 presents the univariate and bivariate statistics of any care and support received by the chronically ill. In Côte d'Ivoire, patients aged 35-44 and males have higher levels of any care and support than women or other age groups. In Rwanda, however, there is no difference in care and support by age or sex. Individual education level does not have a significant bivariate relationship with receipt of any care and support at the national level either in Rwanda or Côte d'Ivoire. However in rural areas of both countries those with at least secondary education have the highest level of receiving care and support, while in urban Côte d'Ivoire there the relationship is the opposite. In each country household education level has a significant and positive relationship with receipt of care and support. Care and support is most likely to be received by the chronically ill in wealthier households in Rwanda but, in contrast, the poorer households in Côte d'Ivoire. In Côte d'Ivoire, receipt of any care and support is higher amongst those reported as deceased but in Rwanda there was no significant relationship with whether the person died.

Table 4: Univariate and bivariate statistics of whether received outside care and support, chronically ill people age 15-59 years, Rwanda and Côte d'Ivoire, 2005 Rwanda DHS, 2005 Côte d'Ivoire AIS

	Rwanda 18-59		Côte d'Ivoire 18-59	
	% univar.	% receiving care/support	% univar.	% receiving care/support
Place of residence				**
Urban	18.2	31.1	37.3	35.4
Rural	81.8	32.6	62.7	22.4
Age	***			
18-24	17.6	35.1	10.2	21.7
25-34	23.6	35.7	33.5	18.8
35-44	25.3	27.8	19.3	44.1
45-59	33.5	31.9	37.1	27.7
Sex				***
Male	38.4	30.0	42.6	40.2
Female	61.6	33.9	57.4	17.6
Education level				
None	36.1	30.8	38.9	18.1
Primary	57.2	32.2	21.3	26.3
Secondary+	6.7	41.5	16.8	30.7
Education level - urban				**
None	29.3	29.1	42.2	28.9
Primary	54.2	31.7	31.1	50.0
Secondary+	16.5	29.0	26.7	16.7
Education level - rural		**		***
None	37.7	31.0	55.6	12.5
Primary	57.8	32.3	25.7	8.1
Household wealth		**		**
Lowest	23.1	31.1	20.7	31.1
Second-lowest	17.5	26.0	24.1	19.2
Middle	21.0	29.2	20.2	29.2
Second-highest	22.1	36.0	21.6	39.3
Highest	16.4	40.0	13.4	13.1
No. of usual hhold				
1-3	26.6	32.3	21.2	22.3
4-5	38.1	31.0	19.5	35.7
6+	35.3	33.9	59.3	26.2
HH member with sec.		**		**
No	85.9	31.2	46.0	21.1
Yes	14.1	39.5	54.0	32.4
Died				***
No	92.9	32.3	75.5	23.1
Yes	7.1	33.8	24.5	39.8
Region - Rwanda		***		
City of Kigali	10.2	36.0	-	-
South	28.8	25.4		
West	25.3	43.9		
North	13.2	39.2		
East	22.5	22.7		
Region - Côte d'Ivoire				**
South	-	-	55.5	33.2
Center			30.5	17.2
North			14.0	25.3

Continued...

Table 4. Continued...

	Rwanda 18-59		Côte d'Ivoire 18-59	
	% univar	% receiving care/support	% univar.	% receiving care/support
Region - Tanzania	-	-	-	-
Dar es Salaam				
Northwest				
North				
West				
Center				
Coast (excl. Dar es Sal.)				
Total	1,077	32.4	312	27.2

* p<0.10 ** p<0.05 *** p<0.01

The univariate column for each variable adds to 100.

The number of cases for education: Rwanda 998, Côte

The number of cases for HIV status: Rwanda 353, Côte d'Ivoire

Source: INS et al. (2006), INSR & ORC Macro (2006)

There are significant differences in the receipt of care and support by the chronically ill by region of residence. In Rwanda, the highest level of receipt is in the West region, with the lowest in the East and South. In Côte d'Ivoire the lowest level of receiving care and support is amongst residents in the Center region. In Côte d'Ivoire urban residents have a higher level of receiving care and support than in rural areas while in Rwanda there is little difference.

Table 5 shows the results from the multivariate analysis for the receipt of care and support of a chronically ill person. In Côte d'Ivoire chronically ill people age 35-44 years are significantly more likely to receive any care and support than those age 18-24 years. Furthermore, females are only 30 per cent as likely as men to receive any care and support. In Côte d'Ivoire there is also a large difference in receipt of care and support by wealth status: a person in the highest household wealth quintile is only 5% as likely, and in the second-highest quintile 24% as likely, to receive any care and support as a person

in the lowest household wealth quintile. In Rwanda, in the first model a person in the highest household wealth quintile is significantly more likely to have received care and support than if from the lowest quintile. In Côte d'Ivoire, having at least another household member with secondary education predicts a higher likelihood of receiving care and support (OR=3.29). Also in Côte d'Ivoire, if the chronically ill person is reported as deceased, they are over two times more likely to have received any care and support than if alive.

Table 5: Multivariate results of whether received outside care and support, chronically ill people age 15-59 years, Rwanda and Côte d'Ivoire, 2005 Rwanda DHS, 2005 Côte d'Ivoire AIS

	Rwanda 18-59		Côte d'Ivoire 18-59
	OR (1)	OR (2)	OR
Place of residence			
Urban	1.00	1.00	1.00
Rural	1.50*	1.57*	0.35**
Age			
18-24	1.00	1.00	1.00
25-34	0.97	1.06	1.29
35-44	0.72	0.84	4.20*
45-59	0.88	0.95	2.32
Sex			
Male	1.00	1.00	1.00
Female	1.21	1.21	0.30**
Education level			
None	-	1.00	-
Primary		1.08	
Secondary+		1.39	
Household wealth quintile			
Lowest	1.00	1.00	1.00
Second-lowest	0.86	0.74	0.44
Middle	1.03	0.98	0.39
Second-highest	1.27	1.24	0.24*
Highest	1.61*	1.43	0.05***
No. of usual hhold members			
1-3	1.00	1.00	1.00
4-5	0.96	0.94	1.29
6+	0.92	0.94	0.98
HH member with sec educ+			
No	1.00	1.00	1.00
Yes	1.25	1.20	3.29***
Died			
No	1.00	-	1.00
Yes	1.03		2.70**
Region - Rwanda			
City of Kigali	1.00	1.00	-
South	0.59*	0.59*	
West	1.28	1.23	
North	1.15	1.08	
East	0.52**	0.52*	
Region - Côte d'Ivoire			
South	-	-	1.00
Center			0.38**
North			0.38*
Number of cases	1,090	1,011	269

* p<0.10 ** p<0.05 *** p<0.01

For Côte d'Ivoire, given that the number of cases in each category is small, a model is also conducted with the inclusion of household wealth index as a continuous variable (for clarity, the household index is divided by 100,000). Household wealth index is significantly and negatively related with use of any care or support (OR=0.438, p<0.001).

Source: INS et al. (2006), INSR & ORC Macro (2006)

The multivariate analysis reveals a strong relationship of geographic location with receipt of care and support. In Rwanda, living in a rural area predicts a significantly higher likelihood of receiving any care and support. In Côte d'Ivoire, rural residents are only 35% as likely as an urban resident to receive any care and support.

Region of residence has a strong relationship in Rwanda; residents in the South and East region are substantially less likely to receive any care and support compared with those living in Kigali. In Côte d'Ivoire, this difference is more acute; those living in the Center and North are only 38% as likely as residents in the South to receive any care and support.

Discussion

Traditional familial care and support systems in sub-Saharan Africa face great stress in caring for the chronically ill, particularly because of the HIV/AIDS epidemic. Therefore, outside sources of care are becoming increasingly important. The findings of this study of DHS data from Côte d'Ivoire and Rwanda show that the majority of chronically ill people do not receive free outside care and support, however, indicating that family, friends and neighbors are still the primary care givers.

Some population groups are particularly in need of outside care and support. Rural, poorer, less educated, female and older people, who often have the least capacity to provide household support, are the most likely to be chronically ill. These population groups are among the most socio-economically disadvantaged and are more likely to have

been sick for at least three of the past 12 months and hence have the greatest need to receive care and support.

In each country less than one-third of people who were chronically ill received any source of free outside care and support. While medical care is the second-highest used type of free care and support in both Rwanda and Côte d'Ivoire, it is only received by less than 10% of chronically ill people. That such a small percentage of chronically ill people are receiving free medical care is of particular concern for HIV-positive people who require ARVs. In Côte d'Ivoire the low figure is likely due to the widespread abandonment of health facilities. The findings are also worrying because households with a sick productive member are likely to have particular difficulty affording medical care.

The most common type of outside care and support in each country is companionship, emotional or spiritual support. Such support is likely to be provided by religious groups. The least used types of free care and support are material and social support. This indicates that financial, clothing and food support is not coming from formal sources, such as government, but is primarily provided by family, friends and neighbors. The poor condition of public sector social safety nets in sub-Saharan Africa, as described by Foster (2007), may provide an explanation. Household work and caregiver support is also rarely provided by outside sources, again emphasizing the importance of family in providing such help.

The multivariate analysis shows that the factors associated with receipt of outside care and support are different in Côte d'Ivoire than Rwanda. A notable exception is

region of residence. Within each country analysis there are significant geographic disparities in receipt of formal care and support, after controlling for household and individual level factors. This result suggests that care and support programs will need to be strengthened particularly in the South and East of Rwanda and the Centre and North of Côte d'Ivoire. Interestingly, there is no consistent relationship of urban and rural residence with receipt of care and support in the two countries. An analysis of medical care, where proximity to services is vital, may however reveal a different finding.

Household wealth and individual education have a weaker relationship. Household-level education has a stronger bivariate relationship with receipt of care and support than individual education, indicating that other household members may play an important role in determining whether outside care and support is provided. In Côte d'Ivoire the lower likelihood of females receiving care and support compared with males is a concern given their higher level of HIV prevalence.

This study is limited because of the small number of cases prevents detailed analysis of each type of care and support. Similarly, small sample size does not allow analysis of patients who are HIV-positive and aware of their status. These limitations prevent firm conclusions from being made about access of HIV-positive people to treatment, especially given that HIV treatment is unlikely to be provided free.

Despite these limitations, the low provision of free medical care to the chronically ill in Rwanda and Côte d'Ivoire indicates that the health system in general is weak, and hence HIV treatment is difficult for the poor to access. Because the data used by this

study provide nationally representative data, while previous studies have used data specific to a small area, the study can provide a broader view of the problems faced by the chronically ill in receiving care and support outside the circle of family and friends.

The challenges posed by chronic illnesses, including HIV/AIDS, to traditional familial sources of care and support mean that sick people must rely on outside sources, such as government, NGOs and religious organizations. The fact that free care and support provided by sources outside family and friends is not available to the majority of chronically ill people in Rwanda and Côte d'Ivoire suggests that these countries face significant difficulties in providing care and support and that more needs to be done to strengthen the ability of health care systems to care for the chronically ill.

References

- Agadjanian, V. & Sen, S. (2007) 'Promises and challenges of faith-based AIDS care and support in Mozambique', *American Journal of Public Health*, vol. 97, no. 2, pp. 362-366.
- Betsi, N.A., Koudou, B.G., Cissé, G., Tschannen, A.B., Pignol, A.M., Ouattara, Y. Madougou, Z., Tanner, M. & Utzinger, J. (2006) 'Effect of an armed conflict on human resources and health systems in Côte d'Ivoire: Prevention of and care for people with HIV/AIDS', *AIDS Care*, vol. 18, no. 4, pp. 356-365.
- Chimwaza, A.F. & Watkins, S.C. (2004) 'Giving care to people with symptoms of AIDS in rural sub-Saharan Africa', *AIDS Care*, vol. 16, no. 7, pp. 795-807.
- Csete, J. (1993) 'Health-seeking behavior of Rwandan women', *Social Science and Medicine*, vol. 37, no. 11, pp. 1285-1292.
- Foster, G. (2007) 'Under the radar: Community safety nets for AIDS-affected households in rural sub-Saharan Africa', *AIDS Care*, vol. 19, suppl. 1, pp. S54-S63.
- Gregson, S., Mushati, P., Nyamukapa, C. (2007) 'Adult mortality and erosion of household viability in AIDS-afflicted towns, estates, and villages in eastern Zimbabwe', *Journal of Acquired Immune Deficiency Syndromes*, vol. 44, no. 2, pp. 188-195.

Guarcello, L., Lyon, S. & Rosati, F.C. (2004) Orphanhood and Child Vulnerability: Côte d'Ivoire, Understanding Children's Work (UCW) Working Paper, Rome: UCW.

Hatchett, L.A., Kaponda, C.P.N., Chihana, C.N., Chilemba, E., Nyando, M. Simwaka, A. & Levy, J. (2004) 'Health-seeking patterns for AIDS in Malawi', *AIDS Care*, vol. 16, no. 7, pp. 827-833.

Institut National de la Statistique (INS), Ministère de la Lutte contre le Sida (Côte d'Ivoire) & ORC Macro. (2006) *Enquête due les Indicateurs du Sida, Côte d'Ivoire 2005*, INS & ORC Macro, Calverton, MD.

Institut National de la Statistique Rwanda (INSR) & ORC Macro. (2006) *Rwanda Demographic and Health Survey 2005*, INSR & ORC Macro, Calverton, MD.

Ismail, Y., Watt, A., Allen, K. & Pepper, L. (2003) 'Providing HIV/AIDS care in Mbarara, Uganda', *The Lancet Infectious Diseases*, vol. 3, no. 3, pp. 169-171.

Kayombo, E.J., Mbwambo, Z.H. & Massila, M. (2005) 'Role of traditional healers in psychosocial support in caring for the orphans: A case of Dar-es-Salaam City, Tanzania', *Journal of Ethnobiology and Ethnomedicine*, vol. 1, no. 3. <http://www.ethnobiomed.com/content/1/1/3>.

Kikumbih, S.N., Isingo, R. & Boerma, J.T. (1997) 'Consequences of adult HIV infection for outpatient morbidity and treatment costs: a prospective study in a factory clinic in Tanzania', *Health Policy and Planning*, vol. 12, no. 3, pp. 234-239.

Kipp, W. Matukala Nkosi, T., Laing, L. & Jhangri, G.S. (2006) 'Care burden and self-reported health status of informal women caregivers of HIV/AIDS patients in Kinshasa, Democratic Republic of Congo', *AIDS Care*, vol. 18, no. 7, pp.694-697.

Kone-Pefoyo, A. & Rivard, M. (2006) 'Poverty and sociocultural factors in the use of maternal health services in Côte d'Ivoire', *Revue d'Épidémiologie et de Santé Publique*, vol. 54, no. 6, pp. 485-495.

Landman, K.Z., Kinabo, G.D., Schimana, W., Dolmans, W.M., Swai, M.E., Shao, J.F. & Crump, J.A. (2006) 'Capacity of health-care facilities to deliver HIV treatment and care services, Northern Tanzania, 2004', *International Journal of STD & AIDS*, vol. 17, no. 7, pp. 459-462.

Lundberg, M., Over, M. & Mujinja, P. (2000) 'Sources of financial assistance for households suffering an adult death in Kagera, Tanzania', Policy Research Working Paper no. 2508, The World Bank, Washington, DC.

Msellati, P., Juillet-Amari, A., Prudhomme, J., Akribi, H.A., Coulibaly-Traore, D., Souville, M., Moatti, J.P. & the Côte d'Ivoire HIV Drug Access Initiative Socio-

- Behavioral Evaluation Group. (2003) 'Socio-economic and health characteristics of HIV-infected patients seeking care in relation to access to the Drug Access Initiative and to antiretroviral treatment in Côte d'Ivoire', *AIDS*, vol. 17, suppl. 3, pp. S63-S68.
- Muela, S.H., Mushi, A.K. & Ribera, J.M. (2000) 'The paradox of the cost and affordability of traditional and government health services in Tanzania', *Health Policy and Planning*, vol. 15, no. 3, pp. 296-302.
- Mutangadura, G. Mukurazita, D. & Jackson, H. (1999) *A Review of Household and Community Responses to the HIV/AIDS Epidemic in the Rural Areas of Sub-Saharan Africa*, Best Practice Collection, UNAIDS, Geneva.
- http://data.unaids.org/Publications/IRC-pub04/una99-39_en.pdf Date accessed: 29 May, 2007.
- Ndaba-Mbata, R.D. & Seloilwe, E.S. (2000) 'Home-based care of the terminally ill in Botswana: Knowledge and perceptions', *International Nursing Review*, vol. 47, no. 4, pp. 218-223.
- Ngalula, J., Urassa, M., Mwaluko, G., Isingo, R., Boerma, J.T. (2002) 'Health service use and household expenditure during terminal illness due to AIDS in rural Tanzania', *Tropical Medicine and International Health*, vol. 7, no. 10, pp. 873-877.

Rutstein, S. & Johnson, K. (2004) 'The DHS Wealth Index', DHS Comparative Reports No. 6, ORC Macro, Calverton, MD.

Schellenberg, J.A., Victora, C.G., Mushi, A. de Savigny, D., Schellenberg, D., Mshinda, H., Bryce, J. & the Tanzania Integrated Management of Childhood Illness MCE Baseline Household Survey Study Group. (2003) 'Inequities among the very poor: Health care for children in rural southern Tanzania', *The Lancet*, vol. 361, no. 9357, pp. 561-566.

Stata Corp. (2003) *Stata 8.1*, Stata Corp, College Station, TX.

Veenstra, N. & Oyier, A. (2006) 'The burden of HIV-related illness on outpatient health services in KwaZulu-Natal, South Africa', *AIDS Care*, vol. 18, no. 3, pp. 262-268.

World Bank. (2004) Rwanda Country Assistance Evaluation. Report No. 27568-RW, Washington DC: World Bank.