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# HIV/AIDS-RELATED STIGMA, FEAR, AND DISCRIMINATORY PRACTICES AMONG HEALTHCARE PROVIDERS IN RWANDA

QUALITY  
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OPERATIONS  
RESEARCH  
RESULTS

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It was prepared by Rachel Jean-Baptiste.



OPERATIONS RESEARCH RESULTS  
HIV/AIDS-RELATED STIGMA,  
FEAR, AND DISCRIMINATORY  
PRACTICES AMONG  
HEALTHCARE PROVIDERS IN  
RWANDA

**September 2008**

Rachel Jean-Baptiste

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## EXECUTIVE SUMMARY

While investigations conducted by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and by the Panos Institute in several African and Asian countries have highlighted the healthcare sector as the context where the most extreme forms and frequency of stigma against persons with human immunodeficiency virus and acquired immunodeficiency syndrome (HIV and AIDS) occurs, few studies have quantified this phenomena. The purposes of this study were to quantify stigma among Rwandan healthcare providers toward patients with HIV/AIDS; to assess healthcare provider fears and perceived risks for HIV while providing services to patients with HIV/AIDS; to quantify practices in hospitals and health centers and among health providers that discriminate against HIV-positive patients; and to evaluate the relationship between provider stigma, provider fears, and perceived risks with discrimination against HIV-positive patients in health facilities and among healthcare providers.

Data were collected from November 2003 to February 2004 at six Rwandan health facilities, selected with input from the Ministry of Health. In each facility, all personnel who, at least for the past year, provided comprehensive treatment, care, and support to HIV/AIDS patients were invited to participate. The study design was cross-sectional, and data collection was through in-person interviews. Interviews assessed provider beliefs, attitudes, practices, and fears with regard to care of HIV-positive patients. Interviews also assessed the frequency of discriminatory practices toward HIV-positive patients by asking about common practices in hospitals and health centers, as well as by providers. Data regarding socio-demographics and HIV/AIDS general knowledge were also collected.

Most providers who met interview criteria, 110 or 97% of those asked, consented to being interviewed. All admitted to having some stigmatizing attitudes toward persons with HIV/AIDS. All expressed some level of negative attitudes and beliefs towards HIV-positive patients. The mean and standard deviation of the attitudes and beliefs score was 53.0 +/- 8.1, with a range of 37–73. Providers also expressed fear of becoming infected while providing health services to persons with HIV. The overall score on the fear and perceived risks scale ranged from 27–64, with a mean and standard deviation of 41.1 +/- 8.8. Most respondents, 76.4%, reported being aware of common practices by healthcare facilities that are discriminatory toward HIV-positive patients, and 89.1% reported being aware of common practices by healthcare providers that discriminate against these patients. In multivariate logistic regression models, providers with high levels of stigma had more than two and a half times the odds of being aware of high levels of discriminatory practices by health providers toward HIV-positive patients (odds ratio [OR] = 2.62, 95% confidence interval [CI] = 1.07–6.41;  $p \leq 0.05$ ), while those who reported high levels of fears and perceived risks of HIV infection had almost three times the odds of also being aware of practices by their peers that stigmatize and discriminate against patients with HIV/AIDS (OR = 2.75; 95% CI = 1.18–6.39;  $p \leq 0.04$ ).

Results of the study indicate that health providers have some negative attitudes and beliefs toward patients with HIV and that they fear becoming HIV infected while providing health services to such patients, and they report that stigmatizing practices against people living with HIV/AIDS (PLWHA) are common in hospitals and health centers. As long as healthcare providers do not feel safe in providing services to HIV-positive patients, some amount of discrimination is likely to remain. These results point to the need for stigma reduction strategies to be institutionalized in all plans for health systems strengthening in order for high quality health services to be provided to all PLWHA. Such strategies would have to focus on addressing root causes of stigma for health providers, including fear of infection, de-normalizing negative behaviors and attitudes towards PLWHA, and normalizing HIV and AIDS within the healthcare setting. Interventions to reduce providers' fear of infection include increasing dialogue regarding stigma and HIV risk among providers, in-service training about ways providers can protect themselves from HIV infection in the workplace, and giving positive reinforcement to healthy attitudes toward PLWHA.

## **ABBREVIATIONS**

AIDS	Acquired immunodeficiency syndrome
CI	Confidence interval
HIV	Human immunodeficiency virus
IV	Intravenous
OR	Odds ratio
PLWHA	Person(s) living with HIV/AIDS
PMTCT	Prevention of mother-to-child transmission of HIV
SD	Standard deviation
UNAIDS	Joint United Nations Programme on HIV/AIDS

## I. BACKGROUND

The human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) epidemic has been accompanied by stigma and discrimination since its inception<sup>1,2</sup>, and their associated realities have compounded the effects of the epidemic over the past 25 years<sup>1,3-6</sup>. Increasingly, HIV/AIDS-related stigma and discrimination are acknowledged as one of the greatest challenges to slowing the spread of the disease<sup>7,8</sup> and a major roadblock to the goal of universal access to treatment, care, and support by 2010<sup>6</sup>.

According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), HIV/AIDS-related stigma is “a real or perceived negative response to a person or persons by individuals, communities or society,” and it is characterized by exclusion, rejection, blame, and devaluation of such persons<sup>3</sup>. This definition builds on previous definitions of stigma by others who suggest that stigmatized individuals are believed to possess an attribute, characteristic, or diagnosis that conveys an inferior social identity and, once obtained, immediately diminishes the worth of the individual<sup>9,10</sup>. Actions that express stigma are often referred to as “discrimination” or “behavior in which a distinction is made against people that results in the person being treated unfairly or unjustly on the basis of them belonging, or being perceived to belong to a particular group”<sup>11</sup>.

Five factors have influenced the evolution of HIV/AIDS-related stigma and discrimination: the life-threatening nature of the disease; fear of infection; association of infection with behaviors that are already stigmatized, such as homosexuality and intravenous (IV) drug use; blame placed on infected individuals; and the belief that people infected with HIV/AIDS are being justifiably punished for immoral behavior<sup>9</sup>. In many communities in Africa and elsewhere, manifestations of disregard, underrating, social distance, and adverse social judgments are ubiquitous for persons living with HIV and AIDS (PLWHA) and have come to be expected<sup>1,12</sup>. In fact, the very diagnosis of HIV/AIDS makes one vulnerable to, and a likely victim of, discrimination, disparagement, and denial of basic human rights<sup>3</sup>.

Pilot investigations conducted by UNAIDS and by the Panos Institute in several African and Asian countries early in this decade indicate that the healthcare sector is the context where the most extreme forms and frequency of stigma and discrimination occur<sup>13,14</sup>. Manifestations of HIV/AIDS-related stigma in the health sector include, but are not limited to, segregation/isolation of patients believed to be HIV-positive, selective use of universal precautions with these patients, labeling them, and denying them appropriate levels of care<sup>15-21</sup>. Furthermore, despite the fact that the epidemic has evolved from a death sentence to a disease where treatment is increasingly available, reports continue to highlight denial of medical services and lack of care and support as manifestations of stigma from and discrimination by healthcare providers against PLWHA<sup>6</sup>.

Evidence suggests that negative attitudes, beliefs, and practices of healthcare workers toward individuals who are HIV-positive (referred to in this report as “provider stigmatizing attitudes and beliefs”), compounded by fear of infection in the workplace, perpetuate HIV/AIDS-related stigma and discrimination towards PLWHA<sup>3,22-24</sup>. Internationally, investigations that evaluated attitudes of health providers (physicians, nurses, and midwives) toward providing care for PLWHA found that a substantial proportion would avoid treating HIV/AIDS patients if they had a choice<sup>25-28</sup>. Results of a study of providers in Tamatave, Madagascar, not only reported negative attitudes toward PLWHA, but also the belief that such patients should be quarantined<sup>28</sup>. In more recent studies, perceived stigma among healthcare providers was found to be associated with lower access to services, resulting in lower uptake in HIV/AIDS prevention, treatment, and care<sup>29,30</sup>. This relationship between negative attitudes and beliefs about persons infected or suspected of being infected with HIV, when combined with fear and perceived risks of becoming HIV infected in the workplace, could explain at least some of the overt and covert discriminatory behaviors within the health sector. While these have been reported in qualitative studies, there are very few quantifiable examples.



## II. OBJECTIVES

The goal of this study was to investigate and quantify the existence of stigma and discrimination, in multiple healthcare settings in Rwanda, among healthcare providers who serve PLWHA and to investigate the relationships between health providers' negative attitudes, beliefs, fears, and perceived risks to discriminatory practices towards PLWHA. Specific objectives were:

- 1) To quantify the existence of negative attitudes and beliefs (stigma) toward patients with HIV among providers of health services;
- 2) To assess health provider fears and perceived risks with regard to providing services to patients with HIV;
- 3) To quantify common practices in hospitals and health centers and among health providers that discriminate against HIV-positive patients; and
- 4) To evaluate the relationships between provider attitudes, fears, and perceived risks with common discriminating practices toward PLWHA.

## III. METHODOLOGY

### A. Study Design

Using a cross-sectional study design, data were collected through in-person interviews with a structured survey instrument. For the purposes of this study, "provider" refers to nurses, medical doctors, midwives, nutritionists, laboratory personnel, and social workers. "Provider stigmatizing" refers to negative attitudes and beliefs that are held by providers toward patients with HIV/AIDS. "Provider fear" and "perceived risk" refer to fear of becoming infected with HIV from providing health services. These concepts are based on previous studies that describe HIV/AIDS-related stigma. "Discrimination" refers to active and passive denial of services, as well as breaches of confidentiality, segregation or isolation, and selective use of universal precautions.

#### 1. *Site selection and recruitment of participants*

The study took place in six Rwandan health facilities, selected with input from the Ministry of Health. Represented among these facilities were urban, semi-urban, and rural health facilities. Data were collected for three months, from November 2003 to February 2004. In each facility, all personnel who had been providing comprehensive health services to patients with HIV and/or AIDS for at least a year were invited for interview. For all who participated, the interviewer read a prepared script that provided an overview of the study aims, risks, and benefits and obtained informed consent (Appendix A). Each informed consent form and its matching questionnaire were assigned a unique four-digit identifier. To protect confidentiality, this number, as opposed to names, was used in all analyses. Once informed consent was obtained, the interviewer proceeded to conduct a structured interview in a private location at the health facility. All interviews were conducted by a sensitive, well-trained interviewer experienced in interviewing people about sensitive issues. Interviews were conducted in Kinyarwanda, the local language.

#### 2. *Questionnaire development and pilot testing*

Questionnaire development was guided by theoretical understanding of stigma as published in the literature. Provider attitudes and beliefs regarding patients with HIV/AIDS was assessed using a 29-item scale, which was developed based on previously validated questions, research interests, and focus group discussions and finalized through pilot tests<sup>24,27-28,31-33</sup>. These questions assessed perceptions of blame, isolation, rights of PLWHA, and sympathy (Appendix B). Participants were read each statement and

asked to rate the degree to which they agreed on a four-point Likert scale (strongly agree, agree, disagree, and strongly disagree).

To assess provider fear and perceived risks of infection, a 20-item questionnaire, also developed from previously validated questions, was used<sup>25,27</sup>. It assessed perceptions of risk through casual contact such as working with an HIV-positive colleague, shaking hands and sharing drinking glasses with someone with HIV, as well as through clinical contact with same, from providing general care to performing surgery (Appendix C). Participants were read text involving a clinical activity and asked to rate the degree of risk associated with each activity using a four-point scale (1 = no risk, 2 = low risk, 3 = moderate risk, 4 = high risk).

Provider awareness of the occurrence of anti-PLWHA stigma and discrimination in health facilities and among peer healthcare providers was used as a proxy measure for discrimination. This proxy measure was used in order to avoid or minimize social desirability bias on the part of providers who might feel judged or otherwise exposed for admitting during the interview to mistreatment or disregard of PLWHA. Thus, to assess the occurrence of discriminatory practices in hospitals and health centers, participants were read nine statements of situations that could happen in health facilities and asked, based on their personal experience, how often these things happen in Rwanda (never, rarely, sometimes, always). The statements touched on facilities not providing treatment for HIV-positive patients or not admitting them for care; discontinuing care or treatment for other conditions when a patient's HIV status is discovered; not performing surgeries or other invasive procedures despite obvious need; overcharging HIV-positive patients; and testing patients without their consent. The statements can be found in Appendix D.

Similarly, to assess the occurrence of discrimination among healthcare providers, participants were read nine statements of discriminatory behaviors and asked to relate how often (never, rarely, sometimes, always) they thought providers behaved in such way when providing direct patient care. These practices included a range of behaviors: refusing to touch HIV-positive patients, wearing protective gear unnecessarily (e.g., double gloving) or discriminately (only with patients known to be or thought to be HIV-positive), delaying or denying medical care, and not maintaining confidentiality. Exact wording can be found in Appendix E.

Data regarding socio-demographics (age, sex, education, type of service provider, length of time working in health care, length of time in current position), provision of care to pregnant women and training in the prevention of mother-to-child transmission (PMTCT) of HIV, HIV/AIDS general knowledge as well as specific knowledge about HIV transmission (how it is transmitted as well as how it is not transmitted) were also collected.

The questionnaire was pilot tested in two phases. First, the content of the questionnaire was evaluated for content validity by five expert clinicians in Kigali with experience in taking care of HIV-positive patients. Suggestions were discussed and incorporated as necessary. During the second phase, the proposed process for identifying and interviewing participants was evaluated. Based on lessons learned from this exercise, the data collection process was modified. Any additional necessary changes to the questionnaire that became evident were also made at the end of this phase. The revised questionnaire and data collection process were used in subsequent data collection efforts.

## **B. Data Management and Statistical Analysis**

### **1. *Data management***

To ensure data integrity, all forms necessary for a particular interview (i.e., participant identification, consent form, data collection tools) were collated during the data collection phase and placed in envelopes so that interviewers could easily pick up full and complete interviewing packages. The interviewers were trained in the importance of maintaining confidentiality and sensitized to the local cultural response to HIV/AIDS. They used this understanding as appropriate throughout the interviewing process to establish rapport and help participants feel safe to respond to questions. To ensure that each study participant was

asked every question in the questionnaire, interviewers were trained to double-check the questionnaire for any accidental omissions before leaving each interview. Whenever possible, an attempt was made to obtain any data omitted during the interview from the relevant participants. The research manager periodically (every two or three days) reviewed completed data collection tools for completion.

Open-ended questions from the survey instrument were translated from Kinyarwanda into English. Codes for open-ended questions were developed from a sub-sample of responses, taking into consideration the variability of the data and leaving room for necessary additions. Data were entered into Microsoft Access and later uploaded into secured SPSS master files for analysis. To ensure accuracy, data were double-entered and hand-checked. In addition, data were closely monitored for missing data lines, blanks, outliers, inappropriate or impossible values, and illogical values for logical combinations of variables by evaluating frequency distributions. Data entry was concurrent with data collection, so that to the extent possible and necessary, the interviewers could be briefed on any noted patterns of data collection errors.

## **2. Data analysis**

The data were analyzed with SPSS software (v. 11.0). Once translated back to English, open-ended questions from the survey instrument were post-coded and analyzed as categorical variables. Descriptive analyses described the sample of providers in terms of demographics (e.g., age, sex, level of education), type of service provider, departments or clinics where the provider works, the country where the provider was trained (Rwanda or other), length of time that the provider had been working in healthcare, length of time that the provider has been in his or her current job, and whether or not he/she provide care to pregnant women or had any training in PMTCT.

General HIV knowledge and knowledge specifically related to HIV transmission and universal precautions were analyzed in two ways. First, a summary of responses for each question was obtained. Second, a scale was created that summarized the total knowledge questions answered correctly. The mean, standard deviation, median, and range were obtained for this “knowledge” variable and used in subsequent analyses as a continuous variable.

Each answer on the Attitudes and Beliefs Scale was numerically scored using a Likert scale of 1–4. Negative attitudes and beliefs (higher stigma) were assigned higher scores, so the higher the score, the greater the negative attitudes (or stigma). These scores were added together to create a scale. Similarly, each answer on the Fears and Perceived Risks Scale was also numerically scored from 1–4, with higher scores representing higher levels of fears and perceived risks for HIV infection while on the job. Prior to any analysis, each scale was evaluated for internal consistency and the alpha coefficients calculated. The overall mean, median, range, and standard deviation were obtained for each, and the scales were evaluated to assess whether or not the results followed the normal distribution.

In order to investigate the logic used by healthcare providers in assigning HIV risk, the analysis further evaluated for over-estimation as well as under-estimation of risk. A care service was judged as having “risk” if a provider of the service would come in contact with bodily fluids that could contain the HIV virus if appropriate protection was not used. Similarly, a health service was considered as having “no risk” if a provider was not likely to come in contact with bodily fluids that contain the HIV virus either because protection was used or because bodily fluids would contain minimal to no viruses (such as minute amounts of saliva from a drinking glass). Variables within the scale were divided into two categories: Category 1 (10 questions) included situations that in reality pose no risk, and category 2 (10 questions) had situations where there is associated risk if proper precautions are not taken. Assigning risk to items in category 1 was considered an over-estimation of risk, while assigning no risk to items in category 2 was considered an under-estimation of risk. The percentage of participants who fell in each category and for each question was calculated.

To analyze discriminatory practices toward PLWHA in hospitals and among health providers, first the group of participants who responded that discriminatory practices “never” took place among their peers or

within hospitals and health centers to their knowledge and experience was compared to those who responded that these did happen. This provided an overview of how common the knowledge of discriminatory practices against PLWHA was among those who work in health services. Where the data in one of the two groups were too few to permit meaningful analysis, a scale was created to summarize the responses. Higher scores represented higher levels of discrimination. Analysis of these scales then followed the process described above for the provider attitudes and beliefs scale and for the fears and perceived risks scale. The scale was further dichotomized into high and low levels of discrimination.

Tables were created to present the bivariate associations between discrimination and attitudes and fears (discrimination in health facilities versus provider attitudes and beliefs; discrimination in health facilities versus provider fears and perceived risks; discrimination by peer health providers versus provider attitudes and beliefs; discrimination by health providers versus provider fears and perceived risks). These associations were analyzed using T-tests. Bivariate associations of discrimination (both provider and health facility) and socio-demographic variables and with accumulated knowledge were also analyzed using T-tests, Chi-Square, or median tests as appropriate. Statistical significance was set at  $p \leq 0.05$ .

Multivariate logistic regression models were constructed to calculate adjusted odds ratios and 95% confidence intervals for each core concept in relationship to practices in hospitals or among healthcare providers that stigmatize patients with HIV and/or AIDS. All socio-demographic variables were selected for inclusion in the model using the “backwards conditional” method. Variables were removed from the model one at a time. A variable could only remain in the model as long as its adjusted p-value (once in the model with other significant variables) was equal to or less than 0.05, or if it was found to be a confounder to the relationship between the core concept and discriminating practices (resulting in an “important” change in the odds ratio). The final model was chosen by evaluating for parsimony and comparing the changes in the log likelihood estimates of the various possible models. A final model was developed of stigmatizing practices in hospitals and health centers and another of stigmatizing practices among health providers.

## **IV. RESULTS**

### **A. Demographic Characteristics**

At the selected health facilities, 110 providers (97%), consented to being interviewed. The 3% who were not interviewed either refused outright or failed to make contact with the interviewer. Participants worked in urban (17.3%), semi-urban (19.1%), and rural areas (63.6%).

A little more than 75% of those interviewed were female, and the average age was 34 years. Most had at least a secondary education (80%), while some also had diplomas or degrees. Most were nurses (63.6%); 10% were medical doctors. Other professionals represented in the sample were laboratory personnel (7.3%), midwives (6.4%), social workers (7.3%), and nutritionists (4.5%). The majority of participants worked in the antenatal clinics or labor and delivery wards, while others worked in pediatrics, laboratory, and several other hospital wards that provided services to HIV/AIDS patients. Most participants provided care to pregnant women (86.4%), and a little less than two-thirds (64.5%) were trained in PMTCT. Almost all were professionally trained in Rwanda (92.7%) and had been providing health services for an average of seven years (range 12–420 months). On average, participants had been working in their current job for 2 years (range 1–156 months). These data are presented in Table 1.

**Table 1: Socio-demographic characteristics of staff interviewed**

<b>Characteristics (N=110)</b>	<b>Total</b>
Age (mean +/- standard deviation [SD])	33.6 +/- 8.7
Sex	
Male	27 (24.5%)
Female	83 (75.5%)
Location of practice	
Urban	19 (17.3%)
Semi-urban	21 (19.1%)
Rural	70 (63.6%)
Highest level of education	
Secondary level	88 (80%)
Tertiary diploma	11 (10%)
Tertiary degree	11 (10%)
Type of service provider	
Medical doctor	11 (10%)
Nurse	70 (63.6%)
Laboratory personnel	8 (7.3%)
Midwife	7 (6.4%)
Social worker	8 (7.3%)
Nutritionist	5 (4.5%)
Departments/clinics where providers work	
Antenatal clinic	25 (22.7%)
Labor and delivery	43 (39.1%)
Pediatrics	7 (6.4%)
Laboratory	8 (7.3%)
Other	27 (24.5%)
Country trained	
Rwanda	102 (92.7%)
Other country	6 (5.5%)
Both	2 (1.8%)
Length of time in healthcare	
Median months	84
Range	12–420
Length of time in current job	
Median (months)	24
Range (months)	1–156
Provide care to pregnant women: Percentage indicating “Yes”	95 (86.4%)
Trained in PMTCT: Percentage reporting “Yes”	71 (64.5%)

## B. HIV Knowledge

HIV knowledge was assessed by asking general questions about HIV risk, indications of infection, universal precautions, and PMTCT. Results suggest relatively high levels of general knowledge about HIV among participants. Most participants knew that HIV is the virus that causes AIDS. Despite high levels of knowledge of HIV transmission, knowledge of universal precautions was discriminate. More than 30% of respondents said that medical instruments used on HIV-positive patients should be sterilized “separately,” while 84% said that such instruments should be disinfected and sterilized “in a more rigorous manner” than those used on non-HIV patients. These results are in Table 2.

**Table 2: General knowledge about HIV**

	<b>Percentage responding “Yes”</b>
HIV is the virus that causes AIDS	95 (86.4%)
One can only know for sure that a patient is HIV-positive if s/he has tested positive for HIV	108 (98.2%)
The highest risk for healthcare workers of contracting HIV at work is by accidentally pricking themselves with a needle	104 (94.5%)
Older men are at a lower risk for HIV infection than the general public	45 (40.9%)
Blood and semen are the only bodily fluids to transmit HIV	19 (17.3%)
Even outside the body, the HIV virus is hard to kill	6 (5.5%)
Instruments used on HIV-positive patients must be sterilized separately	34 (30.9%)
To ensure the safety of HIV-negative patients, equipment used for HIV-positive patients must be disinfected and sterilized in a more rigorous manner	92 (83.6%)
A different instrument kit should be set aside for use on HIV-positive patients	14 (12.7%)
Persons infected with HIV will likely develop antibodies within six months	34 (30.9%)
Recurrent vaginal yeast infections or cervical cancer may indicate HIV infection in women	41 (37.3%)

Respondents knew that HIV can be transmitted from mother to child during pregnancy (89.1%) or labor (100%) and through breast milk (99.1%). Almost all participants knew that HIV could be transmitted through vaginal sex (97.3%); a slightly lower proportion knew that HIV could be transmitted through oral (92.7%) and anal (92.7%) sex. Some interesting discrepancies were notable, however. More than 90% of respondents knew that one could become infected by accidentally pricking oneself with a needle used on an HIV-positive patient or by reusing needles. While recapping needles presents the highest risk for accidental needle-stick injuries, only 68% of respondents said that HIV could be transmitted that way. Fewer participants knew that HIV could be transmitted through IV drug use and through donating blood. Surprisingly, a minority said that HIV could be transmitted through mosquito bites (4.5%) and through sharing cups and spoons (1%). These results are in Table 3.

**Table 3: Ways that HIV can be transmitted**

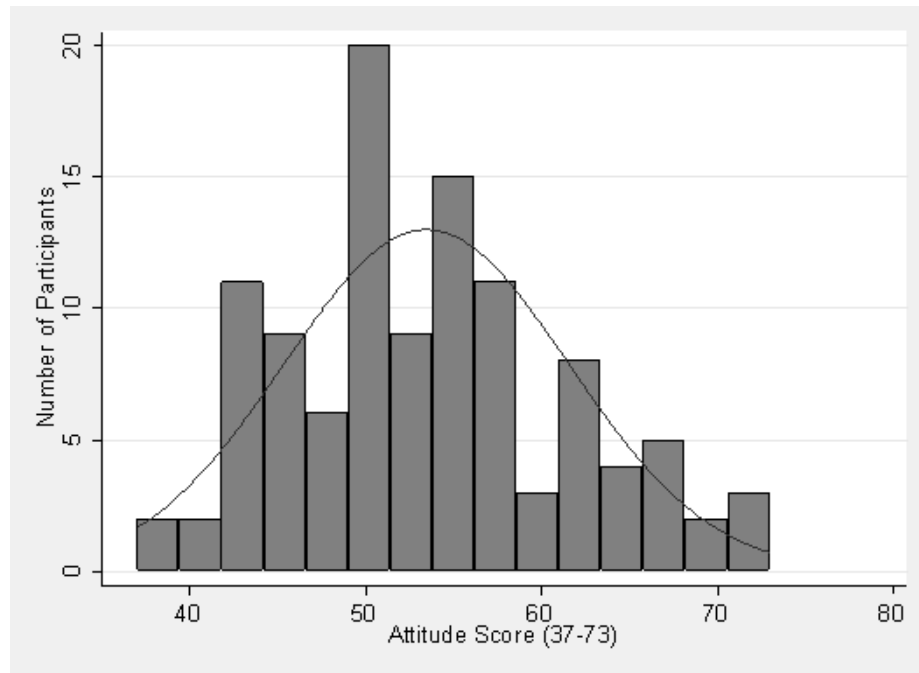
<b>In what ways can HIV be transmitted?</b>	<b>Number (percentage) responding “Yes”</b>
Greeting an HIV-positive person with a kiss on the cheek	0%
Sharing cups and spoons with an HIV-positive person	1 (0.9%)
Donating blood	60 (54.5%)
Receiving blood	100 (90.9%)
Mosquito bites	5 (4.5%)
Accidentally sticking oneself with a needle used on an HIV-positive person	109 (99.1%)
Exposure to blood when taking care of patient	101 (91.8%)
Blood splash or spill	64 (58.2%)
Mother to child while pregnant	98 (89.1%)
Mother to child during labor	110 (100%)
Breast milk	109 (99.1%)
Recapping needles	75 (68.2%)
Reusing needles	109 (99.1%)
IV drug use	61 (55.5%)
Vaginal sex	107 (97.3%)
Oral sex	102 (92.7%)
Anal sex	102 (92.7%)

All 26 knowledge questions were categorized as correct versus not correct; each correctly answered question was worth one point. The sums were added to create a continuous variable. The mean and standard deviation for this variable was 21.3 +/- 2.18, while the range was 15–26.

### C. Attitudes and Beliefs

The Attitudes and Beliefs Scale followed a normal distribution, with a mean and standard deviation of 53.0 +/- 8.1 and a median of 53 (Figure 1). The absolute minimum score possible if a provider had no negative attitudes would have been 29. The minimum score attained was 37, indicating that all healthcare providers interviewed held some amount of negative attitudes toward PLWHA. The overall range of scores for this scale was 37–73. The alpha correlation matrix was 0.68.

**Figure 1: Attitudes and Beliefs Scale**



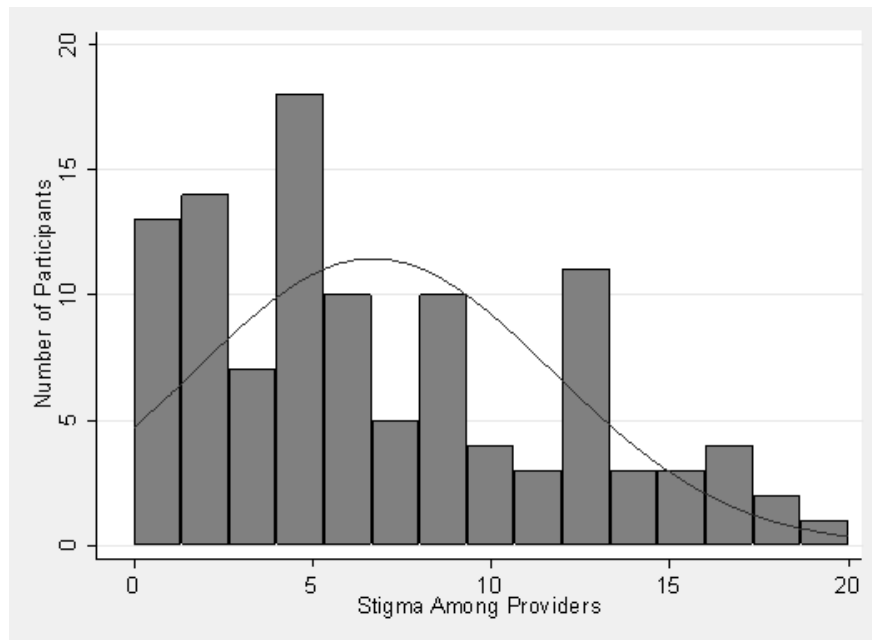
Notes: Range = 37–73; alpha coefficient = 0.68; SD = 8.11; mean = 53.4; N = 110.



#### D. Fears and Perceived Risks

The overall spread of the Fears and Perceived Risks Scale also followed a normal distribution, with a mean and standard deviation of 41.1 +/- 8.8 (Figure 2). The absolute minimum score possible if a provider had no fears or perceived risks of becoming HIV infected on the job was 20. With a range of 27–64, however, clearly all providers had some amount of fear. The correlation matrix alpha coefficient for the scale was 0.83.

**Figure 2: Fears and Perceived Risks Scale**



Notes: Range = 27–64; alpha coefficient = 0.83; SD = 8.81; mean = 41.1; N = 110.

To further understand provider perceptions of risk, the data were analyzed to identify over- and under-estimation of HIV-infection risk related to service delivery. Activities that health providers viewed as posing a risk of transmitting HIV but that actually pose no such risk were evaluated as risk over-estimation. These results are summarized in Table 4. It is interesting that in spite of mass information, education, and communication efforts, some casual contacts were associated with HIV risk: A fifth of providers assigned risk to working daily with HIV-positive colleagues, and almost a third assigned risk to shaking hands with AIDS patients or sharing a glass with someone who is HIV-positive. Almost a half of respondents assigned risk to care provision even when protection, such as gloves, is used, and slightly more than half assigned risk to providing care to many HIV-positive patients every day. Almost three-quarters of respondents assigned risk to 1) being bitten by a person with AIDS and 2) not knowing a patient's status while providing him or her general, non-intrusive care.

**Table 4: Overestimating HIV risk: Percentage of providers assigning risk to situations with no risk**

<b>Situations with no risk</b>	<b>Percentage assigning risk</b>
Working every day with a colleague who is HIV-positive	24 (21.8%)
Shaking hands with AIDS patients	36 (32.7%)
Sharing a drinking glass with someone who is HIV-positive	35 (31.8%)
Touching an HIV-positive patient when assessing him/her	15 (13.6%)
Being sneezed on by an AIDS patient	21 (19.1%)
Being bitten by a person with AIDS	82 (74.5%)
Not knowing a patient's status while providing care to him or her	81 (73.6%)
Using only one pair of gloves when performing invasive procedures with an HIV-positive patient	51 (46.4%)
Providing care to dying AIDS patients	37 (33.6%)
Taking care of many HIV-positive patients every day	59 (53.6%)

Similarly, the data were analyzed for under-estimation of HIV risk. Activities that health providers viewed as having no risk for transmitting HIV but in reality do pose some risk if performed without appropriate protection are listed in Table 5. All respondents recognized risk in accidentally pricking oneself with a needle used on a patient with AIDS, and only a small minority assigned no risk to recapping needles after withdrawing blood from a patient of unknown HIV status. Yet as many as 30% assigned no risk to providing care to patients with HIV/AIDS that involves manipulation of sharps and needles, the most likely way that health providers can be infected with HIV from their patients. Close to 50% assigned no risk to providing services that exposed the provider to bodily fluids, including blood, pus, and vaginal fluids, that could contain the HIV virus of an infected person. These results show that providers are afraid of contracting HIV while on the job, but that their perceptions of risk do not always correspond to its realities.

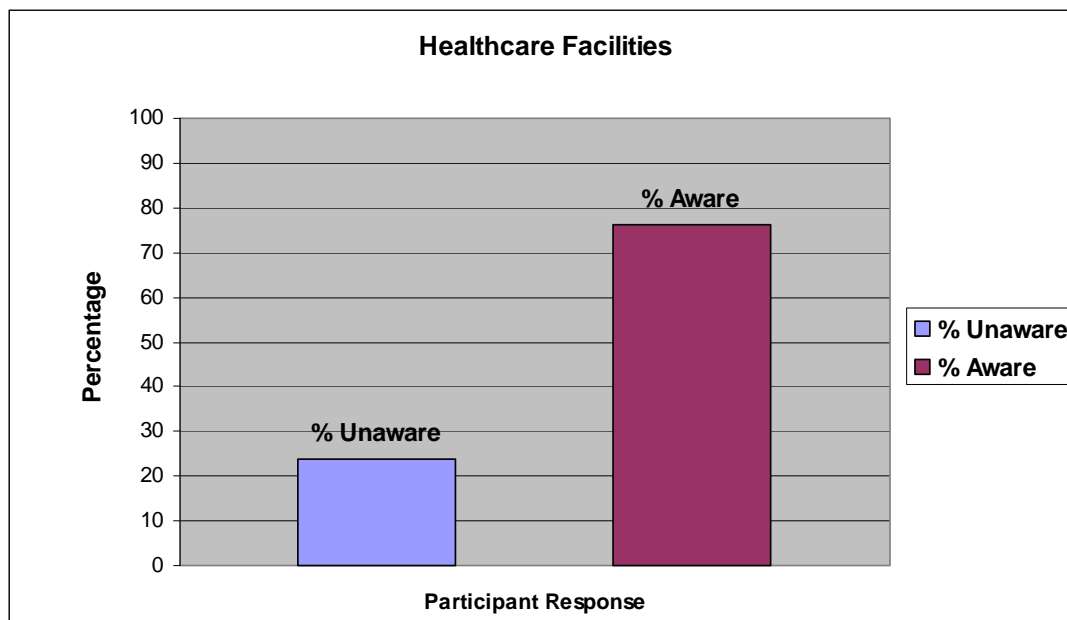
**Table 5: Underestimating HIV risk: Percentage of providers who assigned no risk to situations with low to high risk**

<b>Situations with risk</b>	<b>Percentage assigning no risk</b>
Inserting or removing an intravenous cannula on an HIV-positive patient	17 (15.5%)
Accidentally pricking oneself with a needle used on patients with AIDS	0%
Recapping needles after withdrawing blood from a patient of unknown HIV status	3 (2.7%)
Having sexual intercourse with a person with HIV/AIDS using a condom	28 (25.5%)
Administering injections to an HIV-positive patient	33 (30%)
Delivering babies of women who are HIV-positive	13 (11.8%)
Administering vaccines to an infant born to an HIV-positive woman	67 (60.9%)
Performing surgery on a patient of unknown HIV status	18 (16.4%)
Performing vaginal examinations on an HIV-positive woman	53 (49.5%)
Cleaning and dressing a wound of an HIV-positive patient	52 (48.6%)

## E. Common Discriminatory Practices at Health Facilities

The analysis of data on discrimination in health facilities compared participants who were aware of any discriminatory or stigmatizing behaviors toward HIV-positive patients from health facilities to those who were unaware (i.e., answered “never” to all statements) of such practices. The results, in Figure 3, show that more than three-quarters, or 76.4%, of participants were personally aware of discrimination that occurs against PLWHA in hospitals and health centers.

**Figure 3: Awareness of stigma and discrimination against PLWHA in health facilities**



Analyses were performed to evaluate the bivariate associations between discrimination in health facilities and provider attitudes, and the same for provider fears and perceived risks (Table 6). Results indicate that those who reported being aware of discrimination in health facilities had higher negative attitudes and beliefs regarding PLWHA, as indicated by a significantly higher mean ( $p = 0.03$ ). However, while a similar association was noted for fears and perceived risks, it was not statistically significant ( $p = 0.06$ ).

**Table 6: Bivariate analysis of the associations between discrimination in health facilities, provider stigmatizing attitudes and beliefs, and provider fears and perceived risks**

	Unaware of discrimination	Aware of discrimination	P-value
Stigmatizing attitudes and beliefs: scale mean +/- SD	50.5 +/- 7.9	54.4 +/- 8.0	0.03
Fears and perceived risks: scale mean +/- SD	38.3 +/- 6.7	42.0 +/- 9.2	0.06

Socio-demographic characteristics were also analyzed for bivariate associations with discrimination against PLWHA in health facilities. Results revealed statistically significant differences in sex, with men being more likely than women to report their awareness of such discrimination ( $p = 0.02$ ). Statistically significant differences were also noted for type of provider, with doctors being more likely than any other type to report awareness of stigma and discrimination against PLWHA in health facilities ( $p = 0.006$ ). No statistically significant differences (with regard to awareness of discrimination in facilities) were noted among respondents in terms of age, education level, clinics where providers work, country trained, or

length of time in healthcare or in current job, or whether they provide care to pregnant women or were trained in PMTCT. A slightly higher mean HIV knowledge was noted among respondents who reported no stigma in hospitals, but the difference was small and only approached significance ( $p = 0.10$ ). These results are in Table 7.

**Table 7: Socio-demographic characteristics of healthcare providers unaware versus aware of discrimination against PLWHA in health facilities**

<b>Characteristic (N=110)</b>	<b>Providers unaware of discrimination (n = 26)</b>	<b>Providers aware of discrimination (n = 84)</b>	<b>P-value</b>
Age (mean/SD in years)	35.6 +/- 8.9	32.9 +/- 8.6	0.19
*Sex			0.02
Male	2 (7.7%)	25 (29.8%)	
Female	24 (92.3%)	59 (70.2%)	
Highest level of education			0.12
Secondary level	24 (92.3%)	64 (76.2%)	
Tertiary diploma	2 (7.7%)	9 (10.7%)	
Tertiary degree	0	11 (13.1%)	
**Type of service provider			0.006
Medical doctor	0	11 (13.1%)	
Nurse	15 (57.7%)	55 (65.5%)	
Laboratory personnel	3 (11.5%)	5 (6.0%)	
Midwife	1 (3.8%)	6 (7.1%)	
Social worker	6 (23.1%)	2 (2.4%)	
Nutritionist	1 (3.8%)	4 (4.8%)	
Departments/clinics where providers work			0.76
Antenatal clinic	9 (34.6%)	16 (19.0%)	
Labor& delivery	8 (30.8%)	35 (41.7%)	
Pediatrics	1 (3.8%)	6 (7.1%)	
Laboratory	3 (11.5%)	5 (6.0%)	
Other	5 (19.2%)	22 (26.2%)	
Country trained			0.26
Rwanda	25 (96.2%)	77 (91.7%)	
Other country	0	6 (7.1%)	
Both	1 (3.8)	1 (1.2%)	
Length of time in healthcare			0.15
Median months	114	72	
Range (months)	12-360	4-420	
Length of time in current job			0.99
Median (months)	24	24	
Range (months)	1-156	1-120	
Provide care to pregnant women			0.34
Yes	21 (80.8%)	74 (88.1%)	
No	5 (19.2%)	10 (11.9%)	
Trained in PMTCT			0.30
Yes	19 (73.1%)	52 (61.9%)	
No	7 (26.9%)	32 (38.1%)	
HIV knowledge			
Mean +/- SD	21.9 +/- 2.0	21.1 +/- 2.2	0.10

\* p < 0.05; \*\*p < 0.01.

## F. Multivariate Models of Awareness of Discrimination

The relationships between provider stigmatizing attitudes/beliefs and fears/perceived risks with perceived discrimination against PLWHA in health facilities were evaluated in multivariate logistic regression models that controlled for all factors deemed important through literature review or found to be statistically significant in previous bivariate analyses. Specifically, the relationship between provider attitudes and awareness of stigma in hospitals and health centers was tested using multivariate logistic regression in one model, while the relationship between fears/perceived risks with perceived health facility stigma was tested in another such model. Finally, the combined relationships of provider attitude, fears, and perceived risk with perceived stigma in health facilities were tested.

Table 8 shows a slight but significant positive relationship between providers' own negative attitudes and beliefs and their awareness of practices in health facilities that stigmatize and discriminate against HIV/AIDS patients. Specifically, one's odds of being aware of discriminatory practices in health facilities increases by 8% with every unit of increase in negative attitudes toward PLWHA (OR = 1.08; 95% CI = 1.01 – 1.15; p = 0.02). Sex was found to be the most important confounding variable to this relationship among the socio-demographic variables evaluated. In particular, men were more likely to be aware of discriminatory practices toward PLWHA in health facilities, compared to women.

**Table 8: Multivariate logistic regression model of the relationship between awareness of PLWHA discrimination in health facilities and provider stigmatizing attitudes and beliefs**

Variable	Adjusted OR	95% CI	P-value
Stigmatizing attitudes and beliefs	1.08	1.01–1.15	0.02
Sex (reference: male)	0.16	0.04–0.76	0.02

Table 9 shows results for the multivariate model of the relationship between provider fears/perceived risks and their awareness of anti-PLWHA discriminatory or stigmatizing practices in health facilities. Results indicate that providers with higher levels of fears and perceived risks for HIV infection also had significantly greater odds of reporting the practices (OR = 1.10; 95% CI = 1.02 – 1.19; p = 0.01). This model controlled for age, secondary education as highest attained, length of time one has worked in the healthcare field, and one's HIV knowledge, all socio-demographic variables found to be important confounders of the relationship between provider fears/perceived risk and awareness of discrimination in health facilities.

**Table 9: Multivariate logistic regression model of the relationship between provider fears/perceived risks of HIV infection and awareness of PLWHA discrimination in health facilities**

Variable	Adjusted OR	95% CI	P-value
Fear/perceived risks	1.10	1.02–1.19	0.011
Age	0.87	0.77–0.98	0.021
Secondary education (highest achieved versus not)	0.03	0.003–0.38	0.006
Length of time working in healthcare	1.009	1.000–1.02	0.057
HIV knowledge	0.79	0.61–1.02	0.07

The combined relationship between attitudes/beliefs, fears/perceived risks, and awareness of stigma and discrimination against PLWHA in health facilities was tested. Results indicate that providers with more stigmatizing (negative) attitudes toward PLWHA and higher levels of fear and perceived risks of contracting HIV while providing health services had slightly greater odds of being aware of discrimination in their health facility. However, these relationships only approached statistical significance, even when sex, the only important socio-demographic confounding variable, was included in the multivariate model. These results are in Table 10.

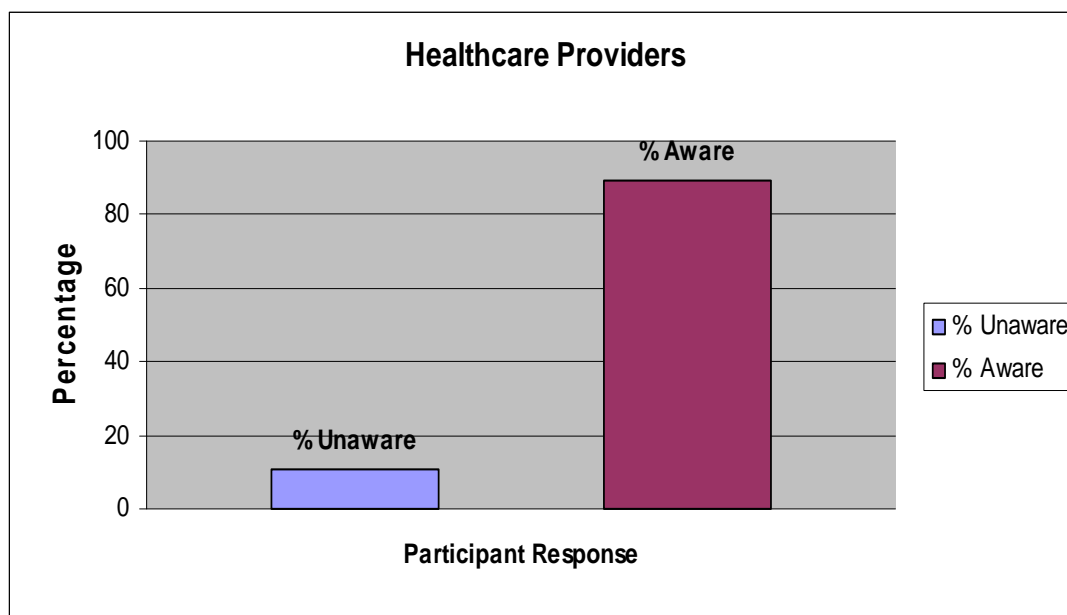
**Table 10: Multivariate logistic regression model of the relationship between discrimination against PLWHA in health facilities, provider attitudes and beliefs toward PLWHA, and provider fears/perceived risks for HIV infection**

Variable	Adjusted OR	95% CI	P-value
Provider attitudes/beliefs	1.07	1.00–1.13	0.05
Provider fears/perceived risks	1.06	0.99–1.12	0.09
Sex (reference: male)	0.14	0.03–0.67	0.01

### G. Awareness of PLWHA Discrimination among Healthcare Providers

The analysis of discrimination by providers compared participants who were unaware of any discriminatory behaviors toward HIV-positive patients by other healthcare providers (i.e., those who answered “never” to all statements in Appendix D) with those who were aware of such practices. Results, in Figure 4, indicate that the vast majority of respondents, or 89.1%, reported knowing that healthcare providers discriminate against patients with HIV and/or AIDS.

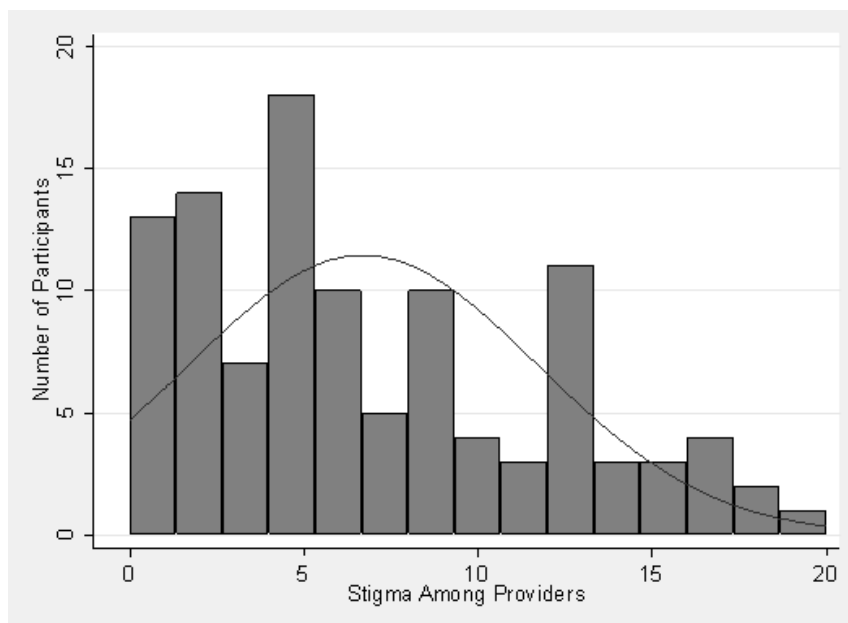
**Figure 4: Awareness of discrimination against PLWHA among healthcare providers**



The small numbers of participants who were unaware of discrimination against PLWHA among their peers hindered comparing the two groups. A decision was made to create a scale for “provider discrimination”: The responses for the nine statements were added together after being coded, with “always” coded as 3, “sometimes” coded as 2, “rarely” as 1, and “never” as 0. The alpha coefficient of this scale was 0.78, indicating strongly that the statements were tapping one underlying theme of

discrimination. The overall range was 0–20, with a mean and standard deviation of 6.7 +/- 5.0, and a median of 6. Figure 5 shows the spread of the distribution of this scale.

**Figure 5: PLWHA discrimination by healthcare providers: Provider Discrimination Scale**



Notes: Range = 0–20; alpha coefficient = 0.78; SD = 5.02; mean = 6.7; N = 108.

We further dichotomized the responses into “low levels of awareness of discrimination” among healthcare providers versus “high levels of awareness of discrimination.” Because the scale results did not follow the normal distribution, the median was used as the measure of central tendency instead of the mean; the median was also used as the cut-off point. Bivariate analyses were conducted to evaluate relationships among awareness of discrimination by providers and provider attitudes and beliefs about PLWHA, and similarly for provider fears and perceived risks of becoming HIV infected while working. Table 11 presents the analyses for both. Results indicate that those who reported being aware of anti-PLWHA discrimination among their peers had significantly more stigmatizing attitudes and beliefs toward PLWHA ( $p = 0.002$ ) and higher levels of fear and perceived risk for becoming infected while providing health services. The latter this only approached statistical significance ( $p = 0.07$ ).

**Table 11: Bivariate analysis of the association between provider stigmatizing attitudes and beliefs, provider fears and perceived risks for HIV infection, and awareness of healthcare provider discrimination toward PLWHA**

	<b>Low levels of awareness</b>	<b>High levels of awareness</b>	<b>P-value</b>
Stigmatizing attitudes and beliefs: scale mean +/- SD	51.5 +/- 7.7	56.2 +/- 7.9	0.002
Provider fears and perceived risks: scale mean +/- SD	39.8 +/- 8.5	42.9 +/- 9.0	0.07



Bivariate analyses were performed to describe socio-demographic characteristics of respondents who reported “low” versus “high” levels of awareness of discrimination among healthcare providers. No statistically significant differences were found for age, sex, education level, department where providers work, country where they were trained, length of time in healthcare in general or in their current job, specific training in PMTCT, or more general HIV/AIDS knowledge. However, certain descriptive variables approached statistical significance. It was noted that for each provider type, approximately half perceived high levels of discriminatory practices among their peers, but laboratory technicians were less likely to perceive high levels of discrimination ( $p = 0.09$ ) as were providers who did not provide care to pregnant women ( $p = 0.08$ ). The results are in Table 12.

**Table 12: Socio-demographic characteristics of healthcare providers aware versus not aware of PLWHA discrimination among peers (high versus low levels of awareness)**

<b>Characteristics (N=110)</b>	<b>Low levels of awareness (n = 64)</b>	<b>High levels of awareness (n = 46)</b>	<b>P-value</b>
Age (mean, SD in years)	33.7 +/- 8.6	33.4 +/- 8.9	0.87
Sex			0.34
Male	18 (28.1%)	9 (19.6%)	
Female	46 (71.9%)	37 (80.4%)	
Highest level of education			0.28
Secondary level	54 (84.4%)	34 (73.9%)	
Tertiary diploma	4 (6.3%)	7 (15.2%)	
Tertiary degree	6 (9.4%)	5 (10.9%)	
Type of service provider			0.09
Medical doctor	6 (9.4%)	5 (10.9%)	
Nurse	41 (64.1%)	29 (63.0%)	
Laboratory personnel	7 (10.9%)	1 (2.2%)	
Midwife	4 (6.3%)	3 (6.5%)	
Social worker	5 (7.8%)	3 (6.5%)	
Nutritionist	5 (7.8%)	0	
Departments/clinics where providers work			0.11
Antenatal clinic	15 (23.4%)	10 (21.7%)	
Labor and delivery	20 (31.3%)	23 (50.0%)	
Pediatrics	4 (6.3%)	3 (6.5%)	
Laboratory	7 (10.9%)	1 (2.2%)	
Other	18 (28.1%)	9 (19.6%)	
Country trained			0.45
Rwanda	59 (92.2%)	43 (93.5%)	
Other country	3 (4.7%)	3 (6.5%)	
Both	2 (3.1%)	0	
Length of time in healthcare			0.78
Length of time in current job			0.95
Provide care to pregnant women			0.08
Yes	50 (82%)	43 (93.5%)	
No	11 (18%)	3 (6.5%)	
Trained in PMTCT			0.43
Yes	38 ( 62.3%)	32 (69.6%)	
No	23 (37.7%)	14 (30.4%)	
HIV knowledge			0.70
Mean +/- SD	21.4 +/- 2.3	21.2 +/- 2.1	

Table 13 shows the results for the relationship between provider attitudes and their awareness of anti-PLWHA discrimination among their peers. These results indicate that respondents with stigmatizing attitudes and beliefs toward HIV-positive patients had more than two and a half times greater odds of reporting discriminatory practices in health facilities, compared to those with more positive attitudes (OR = 2.60, 95% CI = 1.07 – 6.38; p = 0.04). The most important confounding variables were having a secondary education as highest level attained and having worked at one’s current job for longer than 24 months.

**Table 13: Multivariate logistic regression model of the relationship between provider stigmatizing attitudes/beliefs and awareness of anti-PLWHA discrimination among their peers**

Variable	Adjusted OR	95% CI	P-value
Stigmatizing attitudes and beliefs	2.60	1.07–6.38	0.04
Secondary education	0.43	0.16–1.18	0.10
Length of time at current job >24 months	1.34	0.57–3.15	0.50

Table 14 has the results of the relationship between providers’ fears and perceived risks for HIV infection and their awareness of anti-PLWHA discrimination among their peers. Providers with high levels of fears and perceived risks had two and three-quarters increased odds of reporting discriminatory practices among their peers, compared to those with lower levels of fears and perceived risks (OR = 2.75; 95% CI = 1.2 – 6.4; p = 0.02). The most important confounding variables were caring for pregnant women, having had training in PMTCT, and secondary education as one’s highest education level attained, although these were not statistically significant in and of themselves in the final model.

**Table 14: Multivariate logistic regression model of the relationship between provider fears and perceived risks and awareness of PLWHA discrimination among peers**

Variable	Adjusted OR	95% CI	P-value
Fears and perceived risks for HIV infection	2.75	1.2–6.4	0.02
Care of pregnant women (yes/no)	3.51	0.86–14.35	0.08
PMTCT training (yes/no)	1.98	0.82–4.72	0.13
Secondary education (highest attained/not)	0.51	0.2–1.4	0.20

A final multivariate logistic regression model combined the two main independent variables, provider attitudes and fears, and evaluated their relationship to anti-PLWHA discrimination among other healthcare providers. Table 15 shows the results. Similar to results obtained in individual multivariate models, providers with more stigmatizing attitudes and beliefs regarding PLWHA, as well as those having higher levels of fear and perceived risks of HIV infection, had more than two and a half times the odds of reporting that they were aware of anti-PLWHA discrimination among their peers, with statistical significance. The interaction of the two main variables was also tested, but was not found to be statistically significant and therefore not included in the final model. Important covariates include providing care to pregnant women, length of time at one’s current job, and having attained secondary education as one’s highest level.

**Table 15: Multivariate logistic regression model of the relationship between and provider stigmatizing attitudes and beliefs, provider fears/perceived risks, and awareness of PLWHA stigma and discrimination among other healthcare providers**

Variable	Adjusted OR	95% CI	P-value
Stigmatizing attitudes and beliefs (high versus low)	2.6	1.01–6.60	0.04
Fears and perceived risks (high versus low)	2.7	1.12–6.34	0.02
Care of pregnant women (yes/no)	3.4	0.79–14.69	0.10
Length of time at current job	1.008	0.99–1.02	0.24
Secondary education (highest attained/not)	0.41	0.14–1.18	0.09

## V. DISCUSSION

It is now recognized widely that HIV/AIDS is not only a concern of biological and medical importance, but also as a social phenomenon. This disease has cut across class, race, and socio-economics, affecting, though in unequal distributions, residents of rich western countries as well as poor ones. Around the world, PLWHA have experienced compassion, solidarity, and support, but also stigma, repression, discrimination, and rejection. The research shows that stigma against this population continues to be a powerful tool of social control and could provide members of society with an excuse from the joint responsibility to respond to the root causes of the disease. This is expressed not only in placing responsibility for the spread of HIV among certain groups of people, but also at times in denying such groups access to services and treatment they need<sup>34</sup>.

Several reports by UNAIDS and others offer qualitative data on patients' experiences of stigma and discrimination while seeking health services<sup>35</sup>. These include withholding or refusing treatment, testing without consent, and lack of confidentiality. Other studies, some conducted in Tanzania and in Kenya, discussed stigma in qualitative terms, and mostly focused on rejection and discrimination from communities and families toward persons living with HIV and AIDS. This study's focus on the health system and in particular on healthcare providers is consistent with findings from other studies on stigmatizing attitudes among providers in East and West Africa, as well as across the world in India<sup>36</sup>. In addition, it quantifies the issues.

Results of one quantitative survey of more than 1000 physicians, nurses, and midwives in four states in Nigeria show that 9% of providers admitted to having refused to provide care to a patient with HIV/AIDS, and 9% admitted to having refused hospital admission to an HIV-positive patient. A further 40% believed that one's HIV status could be determined by one's appearance, and 20% admitted to judging PLWHA as immoral and deserving of the disease<sup>37</sup>. Yet despite the fact that the spread of the epidemic is somewhat different in Nigeria (not generalized, low overall prevalence rate) versus Rwanda (generalized epidemic, higher overall prevalence rate), our results echo these findings. We found that the majority of those interviewed expressed some form of discrimination toward PLWHA, including selective use of precautionary measures (84%). All providers admitted to having some negative (stigmatizing) attitudes and beliefs toward persons with HIV/AIDS. The minimum score possible for the Attitudes and Beliefs Scale described in the results section is 29, and a respondent with that score would have not expressed any stigmatizing attitudes and beliefs at all toward PLWHA. However, in our study, the minimum score was 37.

Measuring stigmatizing attitudes and beliefs and/or discriminatory behavior among healthcare providers can be challenging, as providers are not likely, due to social bias, to admit that they themselves actively discriminate against patients. The proxy measures used to assess discriminatory behaviors were useful for this purpose. Most providers, 76%, admitted being aware of the occurrence of discrimination toward persons with HIV/AIDS in hospitals and health centers, and almost 90% admitted knowing of providers

who discriminate against HIV/AIDS patients. Of most interest is the fact that providers' own negative views regarding PLWHA were significantly associated with this proxy measure. Furthermore, the data show that this association was even stronger with their awareness of anti-PLWHA discrimination among their peers compared to their awareness of anti-PLWHA discrimination in health facilities.

Fear of exposure to HIV has been purported to be one of the main drivers of stigma among healthcare providers<sup>38</sup>. This hazard has been added on top of other systems-based constraints to their job, including lack of protective gear for universal precaution. This study clearly shows that providers are afraid. All providers reported some level of fear, as indicated by minimum score from the fears and perceived risks scale of 27, compared to the possible minimum of 20. However, our analysis revealed that both over-estimation and under-estimation of risk of infection occurred. We found that despite high levels of knowledge, as many as 75% of providers over-estimated risk of becoming infected with HIV by assigning risk to at least one activity and/or process that does not pose any known risk of HIV infection. Yet where real risk was involved, it was sometimes under-estimated. Providers risk needle prick injuries when conducting procedures that involve needles and when recapping needles. Yet 30% of respondents did not assign any risk to administering injections to HIV-positive patients, and a little more than 60% did not assign risk to administering vaccines to infants born to HIV-positive women. These results show that the fear and perceived risk of HIV exposure and infection experienced by providers is not necessarily based on sound knowledge of HIV transmission or sound rationale. Providers are not afraid when they should be and are afraid when they need not be.

Key strengths of this study include the fact that data were collected from various types of health facilities, urban and rural, and almost all providers from the six health facilities involved were interviewed. This has allowed for a more robust data collection, obtaining viewpoints not just from nurses and doctors, as is traditionally done, but also from laboratory personnel, nutritionists, social workers, and midwives who come in contact with patients living with HIV/AIDS. In addition, the data collection instruments, though used for the first time in a developing country setting, proved to be sufficiently reliable for the Attitudes and Beliefs Scale (alpha coefficient of 0.68) and very reliable for the Fear and Perceived Risks Scale (alpha coefficient of 0.83). These results therefore could provide a basis for the government, donor organizations, and non-governmental organizations, both local and international, to improve understanding of the way some healthcare providers think about HIV-positive patients.

However, it must be understood that these results are couched within larger issues in the Rwanda healthcare system. In general, there is gross lack of motivation for providing health services, and not just to persons with HIV/AIDS. Other overarching issues such as low (and sometimes unreliable) salaries and training are more prominent in their minds. Nevertheless, the need to focus on developing stigma reduction strategies and for addressing fears and misconceptions about HIV transmission is clear.

Brown and colleagues recently conducted a review of the literature in an effort to summarize lessons learned from interventions to reduce HIV/AIDS stigma and discrimination<sup>39</sup>. Several types of interventions have been tested to improve community-based stigma and discrimination, including 1) increasing knowledge of HIV transmission and 2) skills building through imagery. Results to date are mixed, and those interventions that did reduce stigma and discrimination either had only temporary effects, or long-term effects were not evaluated. Studies that focused on decreasing stigma in the health sector worked with providers using a combination of information and skills-building strategies to improve attitudes. These interventions, while successful in improving attitudes and willingness to treat patients, did not decrease fear of infection.

Results from this study indicate that healthcare providers are quite aware of anti-PLWHA discriminatory practices of their peers. A significant association was found between their own negative attitudes and their awareness of anti-PLWHA discrimination among their peers. While we used this as a proxy measure for their own tendencies to discriminate toward PLWHA, these results also imply how widespread discrimination is toward PLWHA among healthcare providers. Furthermore, these results

show that it is likely that healthcare providers who do discriminate may not feel isolated in their actions, but very much a part of a larger peer group. Therefore, interventions that look at ways to reduce stigma and discrimination may achieve more by addressing providers as a community, and not as individuals. Such interventions might make use of participatory methods, such as small group discussions and role plays to spread stigma reduction messages. Wu et al. recently published results of one such study among healthcare providers in China<sup>40</sup>. While longer term effects remain to be seen, the results are promising, and healthcare providers showed a significant decrease in stigma toward PLWHA in the short term.

## **VI. CONCLUSION**

Results of the study indicate that there are negative attitudes and beliefs toward patients with HIV/AIDS. Almost every provider interviewed had one or more negative attitudes and beliefs toward PLWHA. Providers also expressed relatively high levels of fears and perceived risks for HIV transmission while providing routine services, care, and support for patients. Results indicate both over-estimation and under-estimation of risk, highlighting perhaps a need to further educate health providers in ways to better protect themselves while caring for patients. Furthermore, results show strong associations between provider attitudes and fears and their awareness of discriminatory practices that occur in facilities.

Host governments, donors, and implementing agencies all recognize the health care crisis in Africa, and in particular, poor infrastructure and inefficient systems for human resources management and service provision. Strategic plans are being created, modified, and implemented in efforts to improve health systems. Results of the study point to the need for HIV/AIDS stigma reduction strategies to be institutionalized in all plans for health systems strengthening in order for high quality health services to be provided to all persons living with HIV/AIDS. In addition, programs that focus specifically on supporting healthcare providers who serve PLWHA may help them to appropriately assess risk and to better protect themselves against accidental HIV transmission.

As long as healthcare providers do not feel safe in providing services to HIV-positive patients, some amount of discrimination is likely to remain. This fear may in fact be one of the root causes of HIV stigma and discrimination. Therefore, interventions need to be developed that focus specifically on reducing providers' fear of infection, while giving positive reinforcement to healthy attitudes toward PLWHA. A part of such an intervention might be increasing dialogue regarding stigma and HIV risk among providers and ways in which providers could protect themselves against HIV infection while in the workplace. Such interventions should focus on normalizing HIV, realigning perceptions of HIV risk, and establishing work environments that support efforts of healthcare providers to protect themselves. It is just as important that this process not stigmatize providers who discriminate against PLWHA.

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## APPENDIX A: INFORMED CONSENT

This study of providers of PMTCT services is being conducted through University Research Co., LLC in Maryland USA in collaboration with USAID and the Ministry of Health in Rwanda.

We are speaking with many healthcare providers throughout Rwanda who are interested in improving the services they provide along the continuum of PMTCT services. We are interested in learning about your perspective of what it is like to take care of pregnant women, especially with the current epidemic of HIV/AIDS. If you agree, we will be having a conversation with you about your beliefs, attitudes, and daily work experiences, including your workload. We will also be asking you some questions about HIV/AIDS. All of the information you give to us will remain confidential, which means that no one will ever know what you said to me in this interview. When the results of this study are written for reports or publication in scientific journals, your identity will never be revealed in any way.

This interview will take about an hour and a half of your time. You can ask me to repeat any questions that you did not hear well or if you are confused about what I mean. You do not have to answer any questions you do not want to or do not understand.

You may end the interview for any reason at any time if you feel uncomfortable about answering any of the questions, or about continuing with our conversation. By participating in this interview you will be helping us gather important information that will help in improving PMTCT services throughout Rwanda. However, you should know that your part is voluntary.

Do you understand what your participation in this study means?

Yes       No

Is it okay if we continue our conversation?

Yes       No

Is it okay if I record the answers and comments you give me?

Yes       No

Date      \_\_ \_\_ / \_\_ \_\_ / \_\_ \_\_ \_\_ \_\_

Interviewer Signature: \_\_\_\_\_ [*only if provider consents participation*]

## APPENDIX B: INSTRUMENT FOR ATTITUDES AND BELIEFS

I am going to read several statements regarding patients with HIV/AIDS. Please rate the degree to which you agree with each statement.

		Rate the degree to which you agree with each statement			
		Strongly Agree	Agree	Disagree	Strongly disagree
301.	Most people with AIDS have only themselves to blame				
302.	Most people with AIDS deserve what they get				
303.	Patients who are HIV infected should not be put in rooms with other patients				
304.	If you were assigned to patients with AIDS, you worry about putting your friends and family at risk of contracting the disease				
305.	Young children should be removed from the home if one of the parents is HIV infected				
306.	Patients with AIDS have the right to the same quality of care as any other patient				
307.	It is especially important to work with patients with AIDS in a caring manner				
308.	Men who have sex with men deserve to get AIDS				
309.	HIV+ women should not have children				
310.	Prostitution should be legalized				
311.	You feel more sympathetic toward people who get AIDS from blood transfusions than those who get it from homosexuality				
312.	Patients with AIDS should be treated with the same respect as any other patient				
313.	If you found out that a friend of yours had AIDS, you would not maintain the friendship				
314.	You worry about getting AIDS from social contact with someone (e.g. sharing local brew, shaking hands, hugging, sharing food, etc.)				
315.	Nevirapine encourages HIV+ women to have children				
316.	You worry about getting AIDS from one of your HIV-positive patients				
317.	You are sympathetic towards the misery that people with AIDS experience				
318.	You would like to do something to make life easier for people with AIDS				
319.	You would do everything you could to give the best possible care to patients with AIDS				

320.	Children who get AIDS from their mothers are more deserving of treatment than people who get AIDS through sexual promiscuity				
321.	People who get AIDS through a blood transfusion are more deserving of treatment than people who get AIDS through sexual promiscuity				
322.	You would be worried about your child getting AIDS if you knew that one of the school teachers had AIDS				
323.	People with HIV should be isolated from the rest of the community				
324.	You would hire someone you knew to be HIV+ to work at the clinic/hospital				
325.	You would work with colleagues who you know are HIV+				
326.	If people know that some of your patients are HIV+ they will stigmatize you				
327.	Most likely, men who are HIV+ are promiscuous and deserve what they get				
328.	If a woman becomes HIV+ she has only herself to blame				
329.	You have little sympathy for people who get AIDS through sexual promiscuity				

## APPENDIX C: INSTRUMENT FOR FEARS AND PERCEIVED RISKS OF HIV INFECTION

I am going to read several statements regarding transmission of HIV/AIDS. In your opinion how risky is each situation.

		Rate the degree of personal risk you believe is associated with each statement			
		No risk	Low risk	Moderate risk	High risk
401.	To work every day with a colleague who is HIV+				
402.	To shake hands with AIDS patients who have generalized body skin rash				
403.	Insertion or removal of intravenous cannula on an HIV-positive patient				
404.	Doing vaginal examinations on an HIV+ woman				
405.	Accidentally pricking yourself with a needle used on a patient with AIDS				
406.	Recapping needles after withdrawing blood from a patient of unknown HIV status				
407.	Sharing a drinking glass with someone with HIV/ AIDS				
408.	Having sexual intercourse with a person with HIV/ AIDS using a condom				
409.	Touching an HIV-positive patient when assessing him or her				
410.	Cleaning and dressing a wound of an HIV-positive patient				
411.	Not knowing a patient's HIV status while providing care to him or her				
412.	Administering injections to an HIV-positive patient				
413.	Delivering babies of women who are HIV+				
414.	Being sneezed on by an AIDS patient				
415.	Being bitten by a person with AIDS				
416.	Administering vaccines to an infant born to HIV+ woman				
417.	Performing surgery on a patient of unknown HIV status				
418.	Using only one pair of gloves when performing invasive procedures with an HIV-positive patient				
419.	Providing care to dying AIDS patients				
420.	Taking care of many HIV-positive patients every day				

## APPENDIX D: INSTRUMENT FOR DISCRIMINATORY PRACTICES IN HEALTH FACILITIES TOWARDS PLWHA

I am going to read several statements of things that happen in hospitals or health centers. Please tell us, in your experience, often these things occur in some hospitals in or health centers.

		Always	Sometimes	Rarely	Never
515.	Some hospitals/health centers do not offer treatment for other illnesses to a patient if he or she is known to be HIV+ because he/she is going to die anyway				
516.	Some hospitals/health centers do not perform surgeries or invasive procedures if the patient is known to be HIV+				
517.	For the same services, some hospitals/health centers might charge HIV-positive patients more than HIV- patients				
518.	Some hospitals/health centers provide care to HIV-positive patients only if they can pay				
519.	Some hospitals/health centers do not admit HIV-positive patients if their health is already very poor				
520.	In some hospitals or health centers, HIV-positive patients are isolated in special sections of the hospital or health facility				
521.	On-going treatments for a hospitalized patient is discontinued if it is discovered that he/she is HIV+ positive in some hospitals or health centers				
522.	Some hospitals/health centers send HIV/AIDS patients home to die				
523.	Some hospitals/health centers test patients for HIV without their consent				

## APPENDIX E: INSTRUMENT FOR DISCRIMINATORY PRACTICES AMONG HEALTHCARE PROVIDERS TOWARD PLWHA

I am going to read several statements of things that health providers do when taking care of patients with HIV/AIDS. Health providers include doctors, nurses, auxiliaries, matrons, lab technicians, and anyone else who provides direct patient care. Please tell us how often you think some providers do these things when taking care of HIV patients.

		Always	Sometimes	Rarely	Never
524.	Some health providers administer medications for symptomatic conditions but do not touch or physically examine patients with HIV/AIDS				
525.	Some health providers use protective wear (e.g. gloves, gowns, mask, etc) to do non-intrusive physical exams on non-bleeding HIV-positive patients even if the patient does not have open sores				
526.	Some health providers delay treatment or provide slower service for HIV+ individuals				
527.	Some health providers use double gloves when preparing the dead body of an HIV+ individual for the mortuary				
528.	Some health providers do not maintain the confidentiality of HIV+ individuals				
529.	Some health providers try to cleverly deny admission of HIV-positive patients by giving excuses (e.g. “not enough beds”, “the doctor is not here”, etc) but admission is not denied outright				
530.	Some health providers keep HIV-positive patients under observation without a treatment plan for a few days				
531.	Some health providers prescribe ‘non-serious’ medicines (e.g. vitamins) to HIV/AIDS patients with opportunistic infections instead of ‘real’ medicines				
532.	Some health providers postpone treatment or surgery for HIV-positive patients as long as possible				

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