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HIV Knowledge and Receipt of Targeted Training among UN Peacekeepers in a Post-Conflict Setting

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Marisa Hast

Sc.B., Brown University, 2006

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An abstract of
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Abstract

HIV Knowledge and Receipt of Targeted Training among UN Peacekeepers
in a Post-Conflict Setting
By Marisa Hast

Background: UN Peacekeepers have been identified as a high-risk population that may contribute to HIV transmission between their countries of origin and countries to which they are deployed. In response to this concern, the United Nations Department of Peacekeeping Operations (DPKO) has developed a standardized HIV training program administered to all peacekeepers upon arrival in-country. In addition, pre-deployment HIV training is recommended for militaries of countries that contribute peacekeepers for DPKO missions. However, the impact of these trainings has not been assessed and very little is known about peacekeepers' knowledge of HIV transmission and prevention.

Methods: The researchers examined the association between pre-and post-deployment HIV trainings and comprehensive HIV knowledge among male English-speaking UN peacekeepers stationed in Liberia in 2005. A total of 667 peacekeepers completed the survey. HIV knowledge was measured as a composite score based on responses to five multi-part questions, and was defined as 'comprehensive' if most components in all questions were answered correctly. We used logistic models to calculate odds ratios reflecting the association between receipt of training and comprehensive knowledge adjusted for age, rank, literacy, school level, history of previous UN missions, and prior knowledge of someone with HIV.

Results: Of 667 peacekeepers surveyed, 83.1% and 76.2% had received pre-and post-deployment HIV training, respectively, and 44.4% were determined to have comprehensive HIV knowledge. Comprehensive HIV knowledge was not associated with either training type; however it was found to be more common among younger participants and among those who completed school above secondary level.

Conclusions: The results suggest that neither pre- nor post-deployment HIV training significantly improves comprehensive HIV knowledge among UN peacekeepers. If confirmed, our observations may have important implications for the current DPKO HIV training curriculum.

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Introduction and Background

Armed conflict, natural disasters, and other emergencies resulting in mass displacement of people are referred to broadly as complex humanitarian emergencies (CHEs). CHEs result in acute civic destabilization due to compromised national and local infrastructure, separation of families, interruption of health services, increased crowding conditions, decreased access to food and other essentials, and decline in opportunities for employment and income [1, 2]. These factors dramatically increase susceptibility to infectious disease and can result in very high mortality rates [3]. While the most critical need occurs in the period immediately following displacement, an additional host of health concerns become priorities in the post-emergency phase as the conflict progresses, conditions stabilize, and international aid and security are withdrawn.

Displaced populations may experience a substantial increase in prevalence of health risk factors during the post-conflict stage. Awareness is growing that an increase in HIV transmission is of special importance in post-conflict settings. Although the literature suggests that the extreme level of disruption seen in the emergency phase may actually decrease opportunities for transmission, the risk of transmission may increase steeply during the post-emergency phase in populations affected by conflict and displacement [4-7]. These include interruption of testing and treatment services, the disruption of traditional family units, a rise in risk-taking behavior, food insecurity, and increased vulnerability of women and children leading to proliferation of contractual sex and sexual violence [1, 6-8]. These problems are exacerbated in areas with pre-existing high HIV prevalence, such as the Democratic Republic of the Congo [3, 8]. Conversely, transmission can also increase in post-conflict areas of low prevalence but with close contact with high-prevalence areas, as seen, for example, in Mozambique [6, 9, 10]. The risk of HIV transmission is an important issue because of its long-term effects on already destabilized

populations. A higher prevalence of HIV among people of working age can undermine post-emergency efforts to rebuild infrastructure and return to self-governance [11].

Special populations of concern regarding HIV transmission in post-conflict settings are deployed members of the military including UN peacekeepers. With high levels of mobility and generally young average age, these groups are at unique risk for acquiring and transmitting sexually transmitted infections (STIs) and HIV [8]. During deployments, military personnel are separated from their families and cultural social structures, are often under high amounts of stress, have frequent contact with local populations, and may be immersed in a culture that encourages risk-taking, all of which can lead to increases in risk behavior [1, 11]. These concerns are particularly relevant in light of reports of increases in contractual sex in communities that host UN peacekeepers and allegations of sexual violence perpetrated by peacekeepers [1, 6, 12]. When compared to civilian populations, military personnel in peacetime are up to five times more likely to have STIs and twice as likely to be infected with HIV, with similar data limited to African military contingents indicating an up to six-fold increase for HIV [13, 14]. This pattern clearly indicates that military groups should be considered as a high priority population for HIV interventions. Furthermore, interventions and education efforts focusing on soldiers may have especially high-impact due to the youth and mobility of the contingents and the military emphasis on discipline and hierarchy [8].

UN peacekeepers represent a particularly promising target for intervention and education. Peacekeepers, organized by the UN Department of Peacekeeping Operations (DPKO), are mostly national military and police personnel seconded to the UN in organized units [15]. As one of the most mobile populations in the world, peacekeepers have been identified as a unique potential vector for HIV transmission both in the country they are deployed and in their country of origin [11, 16]. This concern has been highlighted as a potential security issue in

recent years as peacekeepers have been reported to have HIV prevalence estimates double that of civilian populations[10, 17]. Studies have also indicated that the rate of infection correlates directly with duration of deployment. The on-mission incidence of HIV has been reported to increase by up to 5% per year of deployment [10].

Increases in HIV prevalence within a country under the auspices of the UN peacekeeping force can further weaken the disaster-affected region by exacerbating social and political instability and by impairing the country's long-term reconstruction efforts. What is more, if peacekeepers are perceived to be spreading HIV in the region they are deployed, it could threaten local trust in the mission and reduce willingness of countries to host peacekeepers from high-prevalence countries [18, 19].

Similarly, high HIV rates among military peacekeepers can have negative consequences in the soldiers' countries of origin by undermining the military strength of the country and their ability to provide national security and maintain domestic stability [11]. This is confirmed in high reported rates of morbidity attributed to HIV among African militaries, some of which report that AIDS is implicated in more military deaths than combat [20, 21]. Furthermore, high HIV rates among military personnel have the potential to affect a large proportion of the country's population in nations with mandated military service or high overall military involvement [11]. Overall, there is a concern that increasing HIV rates would divert large amounts of resources to the health sector and lead to general state destabilization [17].

Due to these concerns, the UN Security Council passed Resolution 1308 in 2000, calling for an HIV training program for UN peacekeepers, and recommending countries that contribute contingents of peacekeepers (Member States) to develop their own HIV training programs and voluntary counseling and testing services [22]. In response, DPKO developed standardized HIV training modules to be conducted in-country for all deployed UN peacekeepers. Voluntary

testing and counseling (VCT) is also made available and is encouraged [23]. To date there has been no formal evaluation of the impact of the intervention or of the basic HIV knowledge among active peacekeepers following the training [24]. Furthermore, although DPKO dissuades HIV-positive soldiers from deploying, in order to conform to statues of nondiscrimination no mandatory testing is conducted at any time, and Member States have varying policies on testing and deployment of HIV-positive individuals [23, 24]. This leads to a lack of consistency on HIV policy among different peacekeeper contingents and presents difficulties for the development of a standardized education program.

With 15,880 peacekeepers on active duty in 2005, Liberia presented an ideal opportunity to assess HIV risk among peacekeepers and to evaluate DPKO's training program. Liberia is still in a state of post-conflict transition after more than a decade of civil war, which resulted in large-scale infrastructural damage, massive population displacement, and widespread sexual violence [25]. Despite low estimates of HIV prevalence for the region (approximately 2%), Liberia has consistently had some of the worst development indicators in the world; it is currently ranked 162 out of 169 on the Human Development Index [26, 27]. Most recent data show an average of less than four years of school among adults, undernourishment in the population at almost 40%, and high levels of sexual risk-taking among youth [25, 26]. This combination of a high-risk undereducated population, relatively low HIV prevalence, and the country's continuing struggle for stability indicate that Liberia is at very high risk for an explosive increase in HIV incidence. With continuing presence of UN peacekeepers and the ongoing debate about associated HIV risk, Liberia is a key setting to evaluate DPKO's educational programs and the HIV-related knowledge of the peacekeepers themselves.

In order to accomplish this goal, DPKO, the Joint United Nations Program on HIV/AIDS (UNAIDS) , and the Centers for Disease Control and Prevention (CDC) conducted an HIV

knowledge attitude and practice survey in May-June 2005 in a representative sample of English speaking peacekeepers deployed in Liberia. The purpose of the survey was to assess the levels of HIV awareness and sexual practices among peacekeepers during deployment, and to evaluate the HIV/AIDS program. The current report will focus on measures of HIV knowledge among the peacekeepers and the factors influencing their understanding of HIV transmission and prevention.

Methods

Survey Design and Data Collection

The current study analyzed the underlying data from the 2005 report by Tomczyk, et al, entitled *Results from a HIV/AIDS Knowledge, Attitude and Practice Survey Conducted Among English Speaking UN Peacekeepers in Liberia* [28]. The target population for this report comprised of 5,745 English-speaking peacekeepers stationed in Liberia in 2005 with the United Nations Mission in Liberia (UNMIL), and included military contingents from Ghana, Ireland, Namibia, Nigeria, Philippines, Sweden, Bangladesh and Pakistan, Nigerian formed police units, military observers (UNMO), and individually deployed civilian police officers (CIVPOL). Peacekeepers were selected for the survey from each contingent using a systematic random sample technique with a random start based on probabilities proportionate to the size of the contingent [28]. The survey was limited to male peacekeepers with fluency in English. There were insufficient numbers of female peacekeepers to ensure confidentiality.

Once troops were selected, consent to participate in the study was first obtained from each commanding officer. Overall 849 peacekeepers were randomly selected, and all potential participants in the survey were collectively and individually asked for informed consent. The survey achieved a sample of 667 peacekeepers for a total response rate of 79%. All interviewers

were male members of the UN HIV unit. To minimize the impact of rank and to maintain confidentiality, survey personnel did not wear uniforms and did not interview counterparts from their own sector, contingent, or group. Confidentiality of the nominal roll was maintained by destroying all lists at the end of the interviews.

Within each peacekeeper contingent, the target sample size was based on a target precision of 6% around a goal of 50% per contingent. As a result, probability of selection was unequal among the eleven peacekeeper contingents. In order to retain generalizability to the target population, these differences were accounted for in the analysis by utilizing inverse probability weighting (IPW) in all models [29].

Questionnaire and Outcome Measures

The original study questionnaire was constructed from two valid and reliable HIV/AIDS knowledge, attitudes and practice surveys, and originally contained 74 questions [30, 31]. The main indicators of interest for this study were presence or absence of targeted HIV training, measured as a proportion of respondents that received HIV/AIDS training as part of their pre-deployment preparation, and a proportion of respondents that received HIV/AIDS training from the UN HIV unit while deployed in Liberia.

The main outcome variable for this study was comprehensive HIV knowledge, defined as a composite of responses to several survey questions:

- Correct knowledge that a healthy-looking person can have HIV
- Correct knowledge that there is no cure for HIV
- Comprehensive correct knowledge about HIV transmission (correctly answered at least four of seven questions on transmission, including two true modes of transmission and five common misconceptions about transmission, e.g., getting HIV through a mosquito bite).

- Correct identification of the appropriate level of risk (no risk, low risk, high risk) for at least three of five stated activities (i.e. anal sex without a condom, sharing a toothbrush).
- Correct comprehensive knowledge of HIV prevention (correctly answered at least six of ten questions on prevention, including five correct methods to reduce risk and five common misconceptions, i.e. only sleeping with young girls).

The covariates in the analysis were age in years, literacy as defined by ability to read and write easily, education level defined as completion of secondary school, military rank, admission of having personally known someone with HIV, and whether this was the first UN mission.

Data analysis

The program EPI-INFO 6.0 [32] was used for data entry and the SAS V9.2 [33] and SUDAAN 9.0.1 software packages were used for all data analyses. The data were first entered in Liberia. All personal and contingent identifiers were removed and replaced by unique numerical identifiers during data entry. Data were cleaned and re-entered at CDC in Atlanta. Institutional Review Board approval was not required for analysis of data in Atlanta due to lack of contact with human subjects or identifying information, and exemption status was obtained prior to the start of analysis.

Univariate analyses compared the distribution of comprehensive HIV knowledge across various participant demographic characteristics using Fischer's exact tests. Associations were considered significant if the two sided Fischer's exact p-values were less than 0.05.

Multivariate logistic regression analyses were initially conducted using an all-inclusive model as the gold standard with comprehensive HIV knowledge expressed as the dichotomous dependent variable. The two main independent variables of interest were presence of HIV training before and after deployment. The results of logistic regression analyses were expressed

as odds ratios (ORs) accompanied with the corresponding 95% confidence intervals (CIs). Models were examined for all possible interactions, and interaction terms with p-values greater than 0.05 were removed. In the presence of significant interaction, stratified models were created.

Inclusion of covariates into the final model was based on backwards elimination, which defined a 10% change in the odds ratio in either of the two independent variables of interest as evidence of confounding [34]. All covariates that showed evidence of confounding or demonstrated a statistically significant association with the outcome of interest at the level of 0.05 were retained in the final model. Sampling weights and stratification by contingent was used in all secondary analyses to account for differing probabilities of selection. The sampling weight was constructed based on the inverse probability of selection of a respondent within a contingent. Models included the finite population correction factor to account for small populations in some contingents.

Additional analyses were conducted to determine which individual components of HIV knowledge were associated with training variables. Multivariate logistic regression analyses were conducted using each component of HIV knowledge as a dichotomous dependent variable (ex. correct knowledge that there is no cure for HIV, yes vs. no), and by including both pre- and post-deployment HIV training as the two independent variables in each model. Associations with at least one training variable were considered significant at the 0.01 level to account for precision lost in multiple tests.

Results

A total of 667 peacekeepers completed the survey. The median age of study participants was 34 years with a range from 18 to 57. Of these, 552 (83.1%) had received HIV

training prior to deployment, and 508 (76.2%) had received post-deployment awareness training in Liberia, with 443 (66.7%) peacekeepers having had both trainings and 48 (7.2%) having neither [28]. Of the participants, 296 (44.4%) were determined to have comprehensive HIV knowledge as defined in the Methods section. Overall, the self-reported literacy rate was high at 98.5% (n=657), 50.7% had achieved education higher than secondary school (n=338), 68.8% were currently serving on their first UN mission (n=456), and 31.3% had known someone previously who had HIV (n=208). Of troops serving in a military contingent (n=597), 273 (45.7%) were non-commissioned officers (NCO), 106 (17.8%) were senior NCO, and 218 (36.5%) were officers (Table 1).

In the crude analysis shown in Table 1, participants that had comprehensive HIV knowledge (compared to those without comprehensive knowledge) were more likely to have higher than secondary school level (p=0.02) and be involved in their first UN mission (p=0.04); they were less likely to have received pre-deployment training (p=0.04) and know somebody with HIV (p=0.01). The proportion of persons under the median age of 34 was also significantly higher (p=0.03) among peacekeepers that demonstrated comprehensive knowledge of HIV transmission and prevention. Respondents with and without comprehensive HIV knowledge were not statistically different with respect to frequency of training since deployment, rank, and literacy.

After the full "gold standard" model (Table 2) was reduced to a more parsimonious final model (Table 3), neither training type was a statistically significant predictor of comprehensive HIV knowledge with the adjusted ORs (95% CIs) of 0.69 (0.42-1.10) and 0.85 (0.54-1.34) for pre- and post-deployment training, respectively. Other statistically significant factors in the final model were age (OR=0.97; 95% CI: 0.94-0.99 per each additional year of life), and higher than secondary school level (yes versus no; OR=1.61; 95% CI: 1.12-2.35). First UN mission was not

statistically significant (yes versus no; OR=0.75; 95% CI: 0.50-1.12), but was retained in the model due to evidence of confounding.

In the analyses of individual survey components (Table 4), the post-deployment UN HIV training was positively associated at the 0.01 level with knowledge that there is no cure for HIV, acknowledgment that unprotected sex at least once is a mode of transmission, and understanding that mosquitoes and eating utensils are not modes of transmission. The post-deployment UN training was also inversely associated with knowledge that prayer could not prevent HIV contraction. By contrast, HIV training prior to deployment was not significantly associated with any component of HIV knowledge at the 0.01 level.

Discussion

The primary focus of this study was to assess the combined and individual effects of DPKO HIV training compared with pre-deployment HIV training and other factors on HIV comprehensive knowledge among UN peacekeepers in Liberia. Less than half of peacekeepers were identified as having comprehensive knowledge of HIV transmission and prevention, which is problematic given the international concern about peacekeepers serving as a vector for transmission. Although most peacekeepers reported attending the DPKO training and many also received HIV training in their countries of origin, this study found no significant associations between either type of training and comprehensive knowledge. Comprehensive knowledge about HIV risk and transmission was, however, significantly associated with age below the median and higher levels of education. These results seem to indicate that prior education, pre-existing misconceptions, and age are important predictors of comprehensive HIV knowledge, and may in fact be more influential than training, among UN peacekeepers in this study.

Although the literature on this subject is limited, other studies of military contingents in Africa have reported similarly poor knowledge of factors affecting HIV transmission and prevention. Among Angolan military personnel, 61% demonstrated "low to moderate knowledge of HIV/AIDS" and 39% scored at the high-level of knowledge [35]. Surveys of Nigerian Navy and Ethiopian Army demonstrated high frequencies (10-60%) of misconceptions, including views that there is a cure for HIV, transmission can occur through casual contact, and people with HIV always look sick, although participants in these studies scored better overall than the UNMIL peacekeepers in our study [20, 36]. By contrast, a study among South African military recruits found a much higher proportion of respondents that had appropriate HIV knowledge with questions answered correctly 60-94% of the time [37]. Another study in Sierra Leone found low baseline HIV knowledge among a demographically similar military population including peacekeepers, but demonstrated statistically significant increases in knowledge of transmission and prevention following an educational intervention [38].

Altogether, the UNMIL peacekeeper population in our study had similar knowledge levels to other military populations at baseline, but their comprehension of transmission and prevention showed no significant difference between those who received and those who did not receive targeted HIV training. One potential explanation for the lack of observable association in this study is the limitations of the data collection and/or analysis. If however the survey is indeed valid, our findings have to be interpreted as evidence that the DPKO training did not produce a measurable change in the comprehensive HIV knowledge of deployed peacekeepers in Liberia. If confirmed in other settings, our observations may have important implications for the current DPKO HIV training curricula and for the HIV prevention efforts.

The literature demonstrates a clear link between HIV knowledge and risk behaviors [36, 38, 39]. Although the 2% HIV prevalence in Liberia is relatively low for the region, the country is

at very high risk of an exponential increase in transmission due to ongoing instability, large vulnerable populations, and reported risk behaviors among youth including high rates of contractual sex work [25, 27]. Liberia also shares a border with Côte d'Ivoire, which has the highest HIV prevalence in the region, and currently hosts over 30,000 Ivorian refugees who have crossed the border following a disputed election in November, 2010 [9, 40]. These factors in combination with a large persistent peacekeeper population make Liberia a susceptible environment for peacekeepers to acquire and/or transmit HIV.

Before drawing conclusions from the current data, it is important to take into consideration several potential limitations in the study design that might have affected our results. Due to the sampling and weighting methods, the study population is a representative sample of peacekeepers that were defined by UNMIL as "English-speaking," however most participants came from non-Anglophone countries, and had variable command of the language and therefore variable understanding of the survey instruments [28]. Confounding through both measured and unmeasured factors, most notably background characteristics of participants, may have served as another potential source of error in our study. Due to security issues, and following the request of DPKO, we were unable to control for countries or regions of origin although responses were expected to differ among participants from different parts of the world. Factors known to differ by country include the content and curricula of the HIV training received before deployment, as well as HIV testing policy and subsequent deployment restrictions [24]. It is also possible that misconceptions about transmission and prevention might vary by country or culture, and these differences may also need to be considered in the analyses.

Another potential limitation of this study is that some survey questions could have been more ambiguous than intended, leading to a gap between information sought and responses

provided. For example, peacekeepers were asked about HIV training before deployment with the assumption that this would denote DPKO-recommended HIV training modules within their military contingent. However, the respondents may have reported any non-UN HIV training they had received including, courses taught in schools, or community programs.

The choice of the main outcome of interest and the choice of survey tool are other important issues in this study. Health knowledge is difficult to measure quantitatively, particularly among groups with low health literacy or poor language skills [41]. We define the outcome as comprehensive knowledge of HIV expressed as a dichotomous composite of several multi-part questions, based loosely on existing DHS-measures of comprehensive HIV knowledge [42]. This method was chosen in favor of a scale measure of knowledge for simplicity and ease of use in logistic regression models. However, if this method does not accurately measure significant differences in knowledge, then the analysis may not correctly represent the effects of training and covariates. Additional research is required to investigate the validity of various measures reflecting both overall HIV knowledge and its components among persons with limited or variable language comprehension skills.

Despite the above limitations and uncertainties, this study represents an important step towards international HIV collaboration and policy-building. Prior to the 2005 UNMIL survey, neither DPKO nor any outside entity had ever assessed the UN HIV training program or comprehensive knowledge among peacekeepers. While there are many publications on sexual behaviors, this is one of very few studies to examine peacekeeper understanding of transmission and prevention or to assess differences in HIV knowledge among trained and untrained individuals. The survey also represents the first time DPKO has collaborated with CDC in evaluating their public health activities. This partnership has the potential to produce meaningful collaborative work in HIV awareness and prevention moving forward.

Conclusions and Recommendations:

In summary, the current study did not find an association between HIV training and comprehensive HIV knowledge. If confirmed, our results indicate that the pre-and post-deployment training modules may fall short of DPKO's goals of improving HIV knowledge among peacekeepers. Furthermore, we demonstrate that implementation of training programs without evaluation runs the risk of wasting resources and even contributing to poor understanding of transmission and prevention. The main contributions of this study include assessment of a leading public health issue among DPKO peacekeepers and the development of a partnership between CDC and the DPKO. Limitations include potential biases in data collection and analysis, most likely linked to the need for better survey instruments and more adequate control of confounders.

Further research on the effects of HIV training among peacekeepers is warranted. Future studies should incorporate more robust validated measures of knowledge acquisition, improved control for confounding factors, and greater focus on how improved knowledge relates to changes in risk behavior. A pre- and post-training survey may more accurately determine changes in knowledge than a single cross-sectional survey. Moreover, serotesting in combination with behavioral surveys could provide a clearer picture of the transmission risk posed to both peacekeepers and local communities. In addition to further assessment, DPKO has the opportunity to address the lack of demonstrated effect from its training and standardize their pre- and post- deployment curricula.

The importance of this research for post-conflict settings in general, and specifically for DPKO, is evidenced by the high prevalence of HIV among militaries worldwide and the security implications of peacekeepers transmitting HIV in their home countries and abroad. This study has highlighted the high-risk country of Liberia with its lengthy progress towards stability, long-

term peacekeeper involvement, and recent influx of refugees. Peacekeepers and HIV must therefore be a high priority issue for the UN and the HIV prevention community in order to develop integrated policies at local, national, and international levels. The collaboration between DPKO and CDC documented in this study provides a framework for future cooperative efforts aimed at effectively addressing HIV and other global health problems.

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Table 1. Associations between Comprehensive HIV Knowledge and Selected Demographic Variables

		Have Comprehensive Knowledge of HIV Transmission and Prevention				
		Yes (N=296)		No (N=371)		
Variable		Number	%	Number	%	P-Value*
HIV training before Deployment						
	Yes	235	80	317	86	*0.04*
	No	60	20	52	14	
UN HIV training since Deployment						
	Yes	221	75	287	77	0.46
	No	75	25	84	23	
Age below 34 (median)						
	Yes	168	57	178	48	*0.03*
	No	128	43	193	52	
Rank[+]						
	Officer	92	35	126	37	0.24
	Senior NCO	40	15	66	20	
	NCO	128	49	145	43	
Literacy						
	Yes	293	99	364	98	0.52
	No	3	1	7	2	
School Level higher than Secondary						
	Yes	165	56	173	47	*0.02*
	No	131	44	198	53	
Know someone with HIV						
	Yes	77	26	131	35	*0.01*
	No	219	74	239	65	
First UN Mission?						
	Yes	215	73	241	65	*0.04*
	No	80	27	127	35	

*Used two sided Fischer's exact test to generate P-values, [+]Missing data (Rank = 70 missing)

Table 2. Multivariable Analyses of Predictors of Comprehensive HIV Knowledge among UN Peacekeepers in Liberia, 2005*

Variable	P-value**	Odds Ratio	95% CI (lower, upper)
HIV training before Deployment *(Yes vs. No)*	0.11	0.64	(0.38, 1.10)
UN HIV training since Deployment *(Yes vs. No)*	0.31	0.78	(0.48, 1.26)
Age *(Continuous)*	*0.03*	0.97	(0.94, 0.99)
Rank *(Officer vs. Senior NCO vs. NCO)*	0.27	1.18	(0.88, 1.59)
Literacy *(Yes vs. No)*	0.89	1.10	(0.28, 4.35)
School Level higher than Secondary *(Yes vs. No)*	*0.02*	1.84	(1.11, 3.03)
Know someone with HIV *(Yes vs. No)*	0.55	0.87	(0.56, 1.36)
First UN Mission? *(Yes vs. No)*	0.09	0.69	(0.45, 1.07)

*Gold Standard Model, inverse probability weighting and finite population correction factor

**P-value calculated using Chi square distribution

Table 3. Multivariate Analyses of Effect of Pre- and Post-Deployment Training and other variables on Comprehensive HIV Knowledge*

Variable	P-value**	Odds Ratio	95% CI (lower, upper)
HIV training before Deployment *(Yes vs. No)*	0.12	0.69	(0.42, 1.10)
DPKO HIV training since Deployment *(Yes vs. No)*	0.48	0.85	(0.54, 1.34)
Age *(Continuous)*	*0.009*	0.97	(0.94, 0.99)
School Level higher than Secondary *(Yes vs. No)*	*0.01*	1.61	(1.12, 2.35)
First UN Mission?[+] *(Yes vs. No)*	0.16	0.75	(0.50, 1.12)

*Final Logistic Model, included inverse probability weighting and finite population correction factor: Likelihood Ratio value for model <0.0001, Wald value = 0.0003

**P-value calculated using Chi square distribution

[+]Retained in model due to evidence of confounding

Table 4. Multivariate Analyses of Effect of Pre and Post-Deployment Training on Individual Components of HIV Knowledge*

	HIV training before Deployment			UN HIV training since Deployment		
Outcome Variable	P-value**	Odds Ratio	95% CI (lower, upper)	P-value**	Odds Ratio	95% CI (lower, upper)
Correctly stated no cure for HIV	0.85	0.87	(0.19, 3.88)	*0.01*	7.57[+]	(1.63, 35.75)
Correctly rejected mosquito bite as mode of transmission	0.28	1.41	(0.75, 2.63)	*<0.0001*	3.43[+]	(2.14, 5.51)
Correctly identified unprotected sex once as mode of transmission	0.92	1.07	(0.33, 3.39)	*0.009*	4.30[+]	(1.43, 12.94)
Correctly rejected sharing eating utensils as mode of transmission	0.05	2.04	(1.05, 4.14)	*0.0002*	2.85[+]	(1.64, 4.98)
Correctly rejected prayer as method of risk reduction	0.28	0.75	(0.44, 1.27)	*0.001*	0.43[+]	(0.26, 0.71)

*Included inverse probability weighting and finite population correction factor

** P-value calculated using Chi square distribution

[+]Significant at the 0.01 level

Appendix: IRB Approval and Study Questionnaire

QUESTIONNAIRE

KNOWLEDGE, ATTITUDES, and BEHAVIOUR

Adapted from the following sources

[1]UNAIDS/MEASURE EVALUATION 2000

and

[2]Reproductive Health Surveys Centers for Disease Control and Prevention, 2002

[**INTERVIEWER:** PLEASE NOTE THAT CONSENT HAS ALREADY BEEN OBTAINED BUT PLEASE INTRODUCE YOURSELF AND ASK IF HE HAS ANY QUESTONS BEORE YOU BEGIN.

SECTION 1: BACKGROUND CHARACTERISTICS **ID _ _ _**

INTERVIEWER: First, I am going to start by asking some general questions about you.

No	QUESTIONS	CODING CATEGORIES	Skip to
Q01	How old were you at your last birthday?	AGE IN COMPLETED YEARS [__|__]	
Q02	Can you read and understand a newspaper in your own language easily, with difficulty or not at all?	1. EASILY 2. WITH DIFFICULTY 3. NOT AT ALL 9. NON RESPONSE (NR)	
Q03	Have you ever attended school?	1.YES 2. NO (skip to Q.06)	Q06
Q04	What is the highest level of school you attended: primary, secondary, or higher?	1. PRIMARY 2. SECONDARY 3. HIGHER (INCL MILITARY ACADEMY)	
Q05	How many years of education did you complete in total?	YEARS COMPLETED [__|__]	
Q06	What year did you join your uniformed service?	YEAR [__|__]__|__]	
Q07	What rank are you? (NOT FOR CIVPOL OR MILOBS)	RANK_____1. Officer 2. Senior NCO 3. NCO	
Q08	Have you ever served with a non-UN (regional) peacekeeping mission?	1. YES 2. NO (SKIP TO Q 10)	Q10
Q09	How many non-UN (regional) peacekeeping missions have you been on?	Number of missions [__|__]	
Q10	Is this your first peacekeeping mission with the United Nations?	1. YES (SKIP TO Q.12) 2. NO	Q12

Q11	In total, how many United Nations missions have you been on including this one?	Number of missions [__|__]	
Q12	How long have you been deployed in Liberia	(RECORD 00 IF LESS THAN 1 Month) Months [__|__]	

SECTION 2: MARRIAGE AND LIVE-IN PARTNERHSIPS

I am going to ask you some questions about your relationships back home.

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	Skip to
Q13	Are you married?	1. YES (SKIP TO Q.15) 2. NO 9. NR	Q15
Q14	Do you have a partner/long term relationship with someone back home?	1. YES 2. NO 9. NR	

SECTION 3: SEXUAL HISTORY AND BEHAVIOUR

READ OUT:

I am now going to ask you some specific questions about your sex life and your sexual partners while deployed with this mission in Liberia. Some of the questions may apply to you and some may not. Please answer the questions to the best of your knowledge, as this information is very important for the survey. Again, this information is all completely private and anonymous and cannot be linked to you or any partner in any way. Do you have any questions before we continue?

First I have to ask you ask you a general question:

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	Skip to
Q15	Have you *ever* had sex? (vaginal, anal or oral)	1. YES 2. NO (SKIP TO Q 40) 9. NR	Q40
	READ ALOUD: Now I would like to ask the following questions about your time in Liberia.		
Q16	Have you had sexual intercourse (vaginal or anal penetrative sex) during this deployment in Liberia?	1. YES 2. NO 9. NR	
Q17	Have you had oral sex while in Liberia?	1. YES 2. NO 9. NR	If NO to Q16 and Q17 skip to Q40
Q18	Who have been your different sexual partners in Liberia: male only, female only, both female and male?	1. MALE ONLY 2. FEMALE ONLY 3. BOTH MALE AND FEMALE 9. NR	
Q19	About how long after arriving in Liberia did you *first* have sex?	1. WITHIN DAYS 2. WITHIN A MONTH 3. ONE TO TWO MONTHS 4. THREE TO FOUR MONTHS 5. MORE THAN FOUR MONTHS 8. DK 9. NR	
Q20	When was the *last time* you had sex while in Liberia?	1. DAYS AGO 2. WEEKS AGO 3. ONE TO TWO MONTHS AGO 4. THREE TO FOUR MONTHS AGO 5. MORE THAN FOUR MONTHS AGO 8. DK 9. NR	

Q21	Since you have been on this mission how many *different* people have you had sex with altogether?	1. ONE 2. TWO TO THREE 3. FOUR TO FIVE 4. SIX TO TEN 5. MORE THAN TEN 9. NR	
Q22	Since you have been on this mission have you exchanged money, gifts or services for sex?	1. YES 2. NO (SKIP TO Q 24) 9. NR	Q.24
Q23	Have you ever negotiated to pay more or given a gift not to use a condom	1. YES 2. NO 9. NR	
	IF THE RESPONDENT HAS NOT HAD PENETRATIVE SEX IN LIBERIA (IF THEY RESPONDED NO TO QUESTION 16) THEN SKIP TO QUESTION 40		
Q24	(ONLY ASK IF RESPONDENT ANSWERED YES TO Q16, HAS HAD SEXUAL INTERCOURSE IN LIBERIA) Have you sometimes had sexual intercourse (anal or vaginal penetrative sex) *without* using a condom while with this mission in Liberia?	1. YES 2. NO 9. NR	
Q25	Has a condom you have used in this mission ever broken?	1. YES 2. NO 7. NA 8. DK 9. NR	

I would like to ask about your most recent sexual partner and will ask only about the last three people you have had sexual intercourse (vaginal or anal) with while on this mission in Liberia. This includes anyone you might have had sex with: girlfriends, boyfriends, casual partners, commercial sex workers or someone you may have met at a bar, etc. Do you have any questions before we continue?

I would like you to think about the last time you had sexual intercourse in Liberia. OK?

(Prompt: DO NOT ASK FOR NAMES OF SEXUAL PARTNERS BUT TRY TO IDENTIFY IN SOME SMALL WAY SUCH AS MOST RECENT = TALL, AND SECOND MOST RECENT = SHORT).

No.	Question	Partner 1 Most recent Identifier-------------------------------------	Partner 2 Next most recent Identifier-------------------------------------	Partner 3 Next most recent Identifier---------------------
Q26	Did you meet this person in Liberia?	1. YES 2. NO 9. NR	1. YES 2. NO 9. NR	1. YES 2. NO 9. NR
Q27	What is or was your relationship to this person?	1. WIFE 2. GIRLFRIEND 3. SOMEONE WHOM YOU PAID/GAVE GIFT OR SERVICES/SEX WORKER 4.CASUAL PARTNER 5. ANOTHER PEACEKEEPER 6. BOYFRIEND 7. OTHER (SPECIFY)_________________	1. WIFE 2. GIRLFRIEND 3. SOMEONE WHOM YOU PAID/GAVE GIFT OR SERVICES/SEX WORKER 4.CASUAL PARTNER 5. ANOTHER PEACEKEEPER 6. BOYFRIEND 7. OTHER (SPECIFY)_______________	1. WIFE 2. GIRLFRIEND 3. SOMEONE WHOM YOU PAID/GAVE GIFT OR SERVICES/SEX WORKER 4. CASUAL PARTNER 5. ANOTHER PEACEKEEPER 6. BOYFRIEND 7. OTHER (SPECIFY)___________
Q28	Where did you meet this person? (CLARIFY THAT NOT ANOTHER PEACEKEEPER FROM Q27)	1. PLACE OF WORSHIP 2.BAR/NIGHT CLUB 3.PARTY (THROUGH FRIENDS) 4.HOTEL 5.BROTHEL 6.SCHOOL 7.BARRACKS 8.AT THE MARKET 9.ON THE STREET 10. WORK PLACE	1. PLACE OF WORSHIP 2.BAR/NIGHT CLUB 3.PARTY (THROUGH FRIENDS) 4.HOTEL 5.BROTHEL 6.SCHOOL 7.BARRACKS 8.AT THE MARKET 9.ON THE STREET 10. WORK PLACE	1. PLACE OF WORSHIP 2.BAR/NIGHT CLUB 3.PARTY (THROUGH FRIENDS) 4.HOTEL 5.BROTHEL 6.SCHOOL 7.BARRACKS 8.AT THE MARKET 9.ON THE STREET 10. WORK PLACE

		11. OTHER (SPECIFY) 88.DK 99.NR	11. OTHER (SPECIFY) 88.DK 99.NR	11. OTHER (SPECIFY) 88.DK 99.NR
Q29	Did you use a condom the first time you had sex with this person?	1.YES.....(SKIP TO Q 31) 2. NO 8. DR.....(SKIP TO Q 36) 9.NR.....(SKIP TO Q 36)	1.YES.....(SKIP TO Q 31) 2. NO 8. DR.....(SKIP TO Q 36) 9.NR.....(SKIP TO Q 36)	1.YES.....(SKIP TO Q 31) 2. NO 8. DR.....(SKIP TO Q 36) 9.NR.....(SKIP TO Q 36)
Q30	Why did you not use a condom? (INTERVIEWER: CIRCLE ALL THAT APPLY, THEN SKIP TO QUESTION 36)	1.NOT AVAILABLE 2.TOO EXPENSIVE 3.PARTNER OBJECTED 4.DON'T LIKE THEM 5.FORGOT 6.DIDN'T THINK IT WAS NECESSARY 7.DON'T TRUST THEM (THEY BREAK) 8.RELIGIOUS/CULTURAL 9. ALLERGIC 10. EMBARASSING 11. OTHER(SPECIFY)_____ 88.DON'T REMEMBER 99.NR	1.NOT AVAILABLE 2.TOO EXPENSIVE 3.PARTNER OBJECTED 4.DON'T LIKE THEM 5.FORGOT 6.DIDN'T THINK IT WAS NECESSARY 7.DON'T TRUST THEM (THEY BREAK) 8.RELIGIOUS/CULTURAL 9. ALLERGIC 10. EMBARASSING 11. OTHER(SPECIFY)_____ 88.DON'T REMEMBER 99.NR	1.NOT AVAILABLE 2.TOO EXPENSIVE 3.PARTNER OBJECTED 4.DON'T LIKE THEM 5.FORGOT 6.DIDN'T THINK IT WAS NECESSARY 7.DON'T TRUST THEM (THEY BREAK) 8.RELIGIOUS/CULTURAL 9. ALLERGIC 10. EMBARASSING 11. OTHER_____ 88.DON'T REMEMBER 99.NR
Q31	Why did you use a condom the first time?(CIRCLE ALL THAT APPLY) (PROBE IF NECESSARY, Protect or prevent what?)	1.PREVENT PREGNANCY 2.PROTECT FROM STIs 3.PROTECT FROM HIV/AIDS 4.PARTNER INSISTED 5. PREVENT PREMATURE EJACULATION 6. IT WAS AVAILABLE 7.OTHER (SPECIFY) 88. DK 99.NR	1.PREVENT PREGNANCY 2.PROTECT FROM STIs 3.PROTECT FROM HIV/AIDS 4.PARTNER INSISTED 5. PREVENT PREMATURE EJACULATION 6. IT WAS AVAILABLE 7. (SPECIFY) 88. DK 99.NR	1.PREVENT PREGNANCY 2.PROTECT FROM STIs 3.PROTECT FROM HIV/AIDS 4.PARTNER INSISTED 5. PREVENT PREMATURE EJACULATION 6. IT WAS AVAILABLE 7.OTHER (SPECIFY) 88. DK 99.NR
Q32	Who suggested using a condom you or your partner or	1. THE RESPONDENT 2.THE PARTNER 3.BOTH	1. THE RESPONDENT 2.THE PARTNER 3.BOTH	1. THE RESPONDENT 2.THE PARTNER 3.BOTH

	both of you?	88. DR 99. NR	88. DR 99. NR	88. DR 99. NR
Q33	Who brought the condom, you or your partner or did you both have condoms?	1.THE RESPONDENT 2.THE PARTNER 3.BOTH 99. NR 88.DR	1.THE RESPONDENT 2.THE PARTNER 3.BOTH 99. NR 88.DR	1.THE RESPONDENT 2.THE PARTNER 3.BOTH 99. NR 88.DR
Q34	Did you use a condom *every time* you had sex with this person?	1. YES (SKIP TO Q 36) 2.NO 88. DR 99.NR	1. YES (SKIP TO Q 36) 2.NO 88. DR 99.NR	1. YES (SKIP TO Q 36) 2.NO 88. DR 99.NR
Q35	Why did you not use a condom every time?	1.NOT AVAILABLE 2.TOO EXPENSIVE 3.PARTNER OBJECTED 4.DON'T LIKE THEM 5.FORGOT 6.DIDN'T THINK IT WAS NECESSARY 7.FORMED STEADY RELATIONSHIP 8.EMBARASSING 9. PREVENT PREMATURE EJACULATION 10.OTHER (SPECIFY) 99. NR 88. DR	1.NOT AVAILABLE 2.TOO EXPENSIVE 3.PARTNER OBJECTED 4.DON'T LIKE THEM 5.FORGOT 6.DIDN'T THINK IT WAS NECESSARY 7.FORMED STEADY RELATIONSHIP 8.EMBARASSING 9. PREVENT PREMATURE EJACULATOIN 10.OTHER (SPECIFY) 99. NR 88. DR	1.NOT AVAILABLE 2.TOO EXPENSIVE 3.PARTNER OBJECTED 4.DON'T LIKE THEM 5.FORGOT 6.DIDN'T THINK IT WAS NECESSARY 7.FORMED STEADY RELATIONSHIP 8.EMBARASSING 9. PREVENT PREMATURE EJACULATION 10.OTHER (SPECIFY) 99. NR 88. DR
Q36	How many times have you had sex with this person in total? (CIRCLE ONE)	1.ONE TIME 2. TWO TO FIVE TIMES 3. SIX TO TEN TIMES 4. MORE THAN 10 TIMES 99. NR	1.ONE TIME 2. TWO TO FIVE TIMES 3. SIX TO TEN TIMES 4. MORE THAN 10 TIMES 99. NR	1.ONE TIME 2. TWO TO FIVE TIMES 3. SIX TO TEN TIMES 4. MORE THAN 10 TIMES 99. NR
Q37	The first time you had sex with this person, did you drink alcohol or take any drugs?	1.YES 2.NO 88. DR 99.NR	1.YES 2.NO 88. DR 99.NR	1.YES 2.NO 88. DR 99.NR

Q38	Do you think this person has other sexual partners?	1.YES 2.NO 88.DK 99.NR	1.YES 2.NO 88.DK 99.NR	1.YES 2.NO 88.DK 99.NR
Q39	Now think about the person you had sex with before the person we just talked about. Did you have sex with them while being deployed in Liberia?	1.YES (GO BACK TO QUESTION 26 AND ASK ABOUT PARTNER 2) 2.NO (IF NO, GO TO QUESTION 40) 99. NR	1.YES (GO BACK TO QUESTION 26 AND ASK ABOUT PARTNER 3) 2.NO (IF NO, GO TO QUESTION 40) 99.NR	(GO TO QUESTION 40)

Q40	Where can you get condoms in the mission area? (INTERVIEWER: CIRCLE ALL THAT APPLY) Prompt: anywhere else?	1. SHOP 2. PHARMACY 3. UN (CIVILIAN) CLINIC 4.BAR/HOTEL 5.BATTALION (MILITARY) CLINIC 6.CONDOM DISPENSER 7. SEXUAL PARTNER 8. OFFICER'S MESS/SOLDIER'S CANTEEN 9. TOILETS 10. TEAM SITE 11. OTHER (SPECIFY)_____ _____ 88. DK 99. NR	

SECTION 4: SEXUALLY TRANSMITTED INFECTIONS

Now I am going to ask some different questions.

No	Questions and filters	Coding categories	Skip to
Q41	Have you ever heard of diseases or infections that can be transmitted through sexual intercourse (STDs/STIs)?	1. YES 2. NO 9.NR	
	INTERVIEWER: HAS THIS RESPONDENT EVER HAD SEXUAL INTERCOURSE? (QUESTION 15) YES (GO TO QUESTION 42) NO (SKIP TO Q 47)		
Q42	Since you have been on mission, have you had a genital discharge, ulcer, genital itching or pain passing urine?	1.YES 2. NO (SKIP TO Q47) 9. NR	Q47
Q43	When you had a genital discharge, ulcer, genital itching or pain passing urine while on mission, did you seek any kind of advice or treatment?	1. YES 2. NO (SKIP TO Q 45) 9.NR	Q45
Q44	Where did you go for advice or treatment? (AFTER RESPONSE SKIP TO Q 46, IF RESPONSE DOES NOT INCLUDE A MEDICAL/HEALTH PRACTITIONER, GO TO Q. 45)	1. BATTALION CLINIC 2. UN MEDICAL CLINIC 3.LOCAL CLINIC OR HEALTH WORKER 4.TRADITIONAL HEALER (GO TO Q 45) 5.SHOP OR PHARMACY (GO TO Q 45) 6.FRIENDS (GO TO Q 45) 7. RELIGIOUIS LEADER (GO TO Q 45) 8. OTHER (SPECIFY)_____ 9. NR	After response Q 46

Q45	(INTERVIEWER: APPLYS ONLY TO A NO RESPONSE TO Q43 OR IF DID NOT SEEK MEDICAL ADVICE) Why did you not seek medical treatment?	1. THOUGHT WOULD GET INTO TROUBLE 2. DID NOT THINK IT WAS IMPORTANT 3. IT WAS EMBARASSING 4. THOUGHT IT WAS SORTED OUT 5.OTHER REASONS (SPECIFY)_____ 9. NR	
Q46	When you had a genital discharge, ulcer, genital itching or pain passing urine, did you: INTERVIEWER: OPTIONS B, C AND D ONLY APPLY IF THEY HAVE HAD SEX IN LIBERIA.	A. Take medicines when you had the symptoms? 1. Yes 2.No 9. NR B. Tell your sexual partner(s) about the symptoms? 1.Yes 2. No 9. NR 7. NA C. Use a condom when having sex when you had the symptoms? 1.Yes 2. No 9 NR 7. NA D. Stop having sex when you had the symptoms? 1.Yes 2. No 9 NR 7. NA	

SECTION 5: KNOWLEDGE ABOUT HIV/AIDS AND LEVEL OF EXPOSURE TO INTERVENTIONS

No.	Questions and filters	Coding categories	Skip to
Q47	Have you ever heard of HIV/AIDS	1. YES 2. NO (SKIP TO END OF INTERVIEW AND REFER THE RESPONDENT TO HIV/AIDS TRAINING) 9.NR	
Q48	Do you believe that HIV/AIDS exists?	1. YES 2. NO 9.NR	
Q49	Did you receive HIV/AIDS training before you were deployed on this mission?	1. YES 2. NO 9.NR	
Q50	Since you have been deployed in this mission have you received training about HIV/AIDS?	1. YES 2. NO (SKIP TO 52) 9.NR	Q52
Q51	Who gave you this HIV/AIDS training? (CIRCLE ALL THAT ARE MENTIONED. MORE THAN ONE ANSWER IS POSSIBLE.) Prompt: anyone else?	1. UN HIV/AIDS UNIT 2. BATTALION MEDICAL STAFF 3. UN MEDICAL STAFF 4. PEER EDUCATOR 5. COMMANDING OFFICER 6. RELIGIOUS LEADER 7. TRAININC CELL (INDUCTION) 8 OTHER (SPECIFY) 9. NR	
Q52	Have you been given an HIV/AIDS awareness card while in this mission? (SHOW THE CARD)	1. YES 2. NO (SKIP TO 54) 9.NR	Q 54

Q53	Could you please show me your card?	1. HAD THE CARD 2. DID NOT HAVE THE CARD	
Q54	Can you tell me three ways that HIV is transmitted? (DO NOT STATE THE WAYS) IF RESPONDENT ONLY GIVES ONE OR TWO VALID ANSWERS Prompt: any others?	A) MOTHER TO CHILD 1. STATED 2. Not STATED B)UNPROTECTED SEX 1. STATED 2. Not STATED C) EXPOSURE TO INFECTED BLOOD (WOULD INCLUDE BLOOD TRANSFUSIONS, ACCIDENTS, SHARING NEEDLES) 1. STATED 2. Not STATED	
Q55	Can you tell just by looking at someone if they are infected with HIV?	1.YES 2.NO 8. DK 9.NR	
Q56	Do you know anyone personally with HIV or AIDS?	1. YES 2. NO 9.NR	
Q57	Have you known anyone personally who has died of AIDS?	1. YES 2. NO 9.NR	
Q58	Do you think it is true or false that a person can get HIV, the virus that causes AIDS, from: (INTERVIEWER: REPEAT OPTIONS TRUE, FALSE OR DON'T KNOW WITH EACH STATEMENT	**A. A mosquito bite 1. True 2. False 8. DK** B. Having unprotected sex just one time 1. True 2. False 8. DK C. Holding hands with someone with HIV 1. True 2. False 8. DK D. Sharing a toilet seat with someone with HIV 1. True 2. False 8. DK	

	YOU READ OUT TO THE RESPONDENT)	E. Sharing eating utensils with someone who has HIV 1. True 2. False 8. DK F. Sharing a house or barracks with someone who has HIV 1. True 2. False 8. DK G. From an infected mother to her unborn child 1. True 2. False 8. DK	
Q59	Do you think that the following is a high risk, low risk or no risk activity for transmitting HIV? (INTERVIEWER: REPEAT OPTIONS NO RISK, LOW RISK, HIGH RISK WITH EACH STATEMENT YOU READ OUT TO THE RESPONDENT)	1 2 3 8 A. Anal sex without a condom NR LR HR DK B. Kissing NR LR HR DK C. Sex with commercial sex workers with a condom NR LR HR DK D. Sharing a toothbrush NR LR HR DK E. Oral sex without a condom NR LR HR DK	
Q60	What do you think are your chances of getting HIV? Do you have no risk, a low risk or a high risk?	1. No risk 2. Low 3. High 8. DK	
Q61	I am going to read some statements to you about what a person can do to reduce their risk of contracting HIV. For each statement, please let me know if you think the statement is true, false or if you don't know? (INTERVIEWER: REPEAT OPTIONS TRUE, FALSE OR DON'T KNOW WITH EACH STATEMENT YOU READ OUT TO THE RESPONDENT)	**1. 2. 8.** **1. Always use condoms all the time True False DK** 2. Avoid drinking dirty water True False DK 3. Have only one sexual partner True False DK 4. Only sleep with young girls True False DK 5.Ask partner to have an HIV test True False DK 6. Use sterilized/unused syringes True False DK 7.Prayer True False DK 8. Washing after sex True False DK 9. Eating well and exercising True False DK 10. Abstinence True False DK	

Q62	Is there a cure for HIV/AIDS?	1. YES 2. NO 88. DK	

SECTION 6: ATTITUDES TOWARDS HIV TESTING AND COUNSELLING

INTERVIEWER: We have come to the last section of the questionnaire. I am now going to ask you some questions about HIV testing. I want you to understand that I am not interested in knowing about your HIV test results or your HIV status OK? Do you have any questions before we continue?

No	Questions and filters	Coding categories	Skip to
Q63	I don't want to know the results but have you *ever been tested* to see if you have HIV, the virus that causes AIDS?	1. YES 2. NO (SKIP TO 69) 9.NR (SKIP TO 69)	Q69
Q64	Did you have an HIV test as part of your preparation for this peacekeeping mission?	1.YES 2.NO (SKIP TO Q.69) 8.DK (SKIP TO Q.69) 9.NR (SKIP TO Q.69)	Q69
Q65	Did you voluntarily undergo this HIV test or were you required to have the HIV test?	1. VOLUNTARILY 2. REQUIRED 9.NR	
Q66	Did you receive any counseling with this HIV test?	1.YES 2.NO (SKIP TO 68) 3.NR (SKIP TO 68)	Q68
Q67	Did you receive the counseling before the test, after the test or both before and after?	1. BEFORE ONLY 2. AFTER ONLY 3. BOTH BEFORE AND AFTER 8. DR 9.NR	

Q68	Please don't tell me the result, but were you directly informed of the results of your test that time?	1.YES 2.NO 9.NR	
Q69	Do you know of a place where you can go to get an HIV test in the mission area?	1. YES 2. NO (SKIP TO 71)	Q71
Q70	If you wanted to be tested, where could you go for the test? (CIRCLE ALL THAT ARE MENTIONED. MORE THAN ONE ANSWER IS POSSIBLE.)	1. UN VCT CENTRE (GERMAN EMBASSY/STAR BASE) 2.LOCAL HOSPITAL/CLINIC 3.LOCAL FAMILY PLANNING CENTRE 4.BATTALION DOCTOR 5. OTHER (SPECIFY)_____ 8. DON'T KNOW	
Q71	If an HIV test was provided free and was confidential in the mission would you go to be tested?	1.YES (SKIP TO Q 73) 2.NO 3. UNDECIDED 9.NR	Q73
Q72	What would stop you from having a HIV test? After finishing Q72 End of interview and read wrap up	1.FEAR OF RESULTS 2.FEAR THAT PEOPLE WOULD FIND OUT RESULT 3.FEAR THAT I WOULD HAVE TO LEAVE THE MISSION 4.I AM NOT AT RISK 5.I AM NOT HAVING SEX 6. WAS TESTED AS PART OF MEDICALS 7. FEAR PEOPLE WOULD THINK I AM SICK 8.OTHER (SPECIFY) 88.DK 99.NR	End of interview

Q73	If you chose to be tested for HIV and were told after the test that you had HIV, would you tell anyone the results?	1. YES 2. NO (END OF INTERVIEW AND READ WRAP UP) 9. NR (END OF INTERVIEW AND READ WRAP UP)	End of interview
Q74	With whom would you share this information? Would you tell your…	1. 2. 7. 9 A. Wife Yes No NA NR B. Family member Yes No NA NR C. Friends Yes No NA NR D. Health care workers Yes No NA NR E. Sex partner Yes No NA NR F. Superior officer Yes No NA NR G. Other peacekeepers Yes No NA NR H. Religious leader Yes No NA NR I. Traditional healer Yes No NA NR G. Other (specify) ----------	

INTERVIEW WRAP-UP

TO: Marisa Hast
Principal Investigator

DATE: February 2, 2011

RE: **Notification of Submission Determination: No IRB Review Required**
HIV Knowledge, attitudes, and practices among English-speaking UN peacekeepers in a post-conflict setting: results of a CDC survey in Liberia

The above-referenced study has been vetted by the Institutional Review Board (IRB), and it was determined that it does not require IRB review because it does not meet the definition of "Research involving Human Subjects" or under applicable federal regulations. Based on the information included in the protocol, the PI will conduct a secondary data analysis of de-identified data. The dataset comes from a survey conducted by the CDC's International and Humanitarian Emergency and Refugee Health Branch. The PI and research team will not have access to identifiers or coded-links to identifiers now or in the future. Accordingly, IRB review is not required.

45 CFR Section 46.102(f)(2) defines "Research involving Human Subjects" as follows:

> Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains:
>
> (1) data through intervention or interaction with the individual, or
> (2) identifiable private information
>
> Intervention includes both physical procedures by which data are gathered (for example, venipuncture) and manipulations of the subject or the subject's environment that are performed for research purposes. Interaction includes communication or interpersonal contact between investigator and subject. Private information includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record). Private information must be individually identifiable (i.e., the identity of the subject is or may be ascertained by the investigator or associated with the information) in order for obtaining the information to constitute research involving human subjects.

Please note that any changes to the protocol could conceivably alter the status of this research under the federal regulations cited above. Accordingly, any substantive changes in the protocol should be presented to the IRB for consideration prior to their implementation in the research.

Sincerely,

Carol Corkran, MPH, CIP
Senior Research Protocol Analyst
This letter has been digitally signed