LQAS Survey Report
2010

A Household Survey on Malaria, HIV&AIDS and TB Interventions in Nine Districts of Northern Uganda

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i. List of Acronyms

ABC	Abstinence, Being Faithful, Using Condoms
ACT	Artemisinin-based Combination Therapy
AIC	AIDS Information Centre
AIDS	Acquired Immunodeficiency Syndrome
ANC	Ante-Natal Care
ART	Antiretroviral Therapy
CMD	Community Medicine Distributors
FP	Family Planning
HC	Health Centre
HCT	HIV Counseling and Testing
HIV	Human Immunodeficiency Virus
HBC	Home-Based Care
HBMF	Home-Based Management of Fever
HMIS	Health Management Information System
HSD	Health Sub-District
IDP	Internally Displaced Person
IPT	Intermittent Preventive Therapy
IRS	Indoor Residual Spraying
ITN	Insecticide-Treated Net
IUD	Intrauterine Device
JSI	JSI Research & Training Institute, Inc.
LC	Local Council
LLIN	Long Lasting Insecticidal Net
LQAS	Lot Quality Assurance Sampling
M&E	Monitoring and Evaluation
MOH	Ministry of Health
NGO	Non-Governmental Organization
NUMAT	Northern Uganda Malaria, AIDS & Tuberculosis Programme
PEPFAR	President's Emergency Plan for AIDS Relief
PLWHA	People Living with HIV/AIDS
PMTCT	Prevention of Mother-to-Child Transmission
PPS	Probability Proportional to Size
RH	Reproductive Health
SA	Supervision Area
TB	Tuberculosis
USAID	United States Agency for International Development
VCT	Voluntary Counseling and Testing
WV	World Vision

ii. Highlights

NUMAT LQAS Survey Indicators	2006	2008	2010
HIV/AIDS			
% of adults who have ever taken an HIV test	31%	64%	79% ‡
% of adults who have tested for HIV test results in last 1 year	*N.A*	53%	66% ‡
% of adults who have tested and received their HIV test results in last 1 year	*N.A*	50%	65% ‡
% of adults who know a place to obtain condoms	*N.A*	68%	66% *
% of adults who can mention the 3 major ways of HIV/AIDS prevention	45%	48%	55% ‡
% of adults able to reject all the major HIV/AIDS misconceptions	*N.A*	47%	48%
% of adults with comprehensive knowledge about HIV/AIDS	*N.A*	26%	29% ‡
% of adults who know where they can be tested for HIV	74%	87%	94% ‡
ITN & IRS			
% of households with any mosquito net	49%	58%	77% ‡
% of households with treated mosquito net	44%	56%	75% ‡
% of under-5s sleeping under any mosquito net a night before survey	38%	48%	66% ‡
% of under-5s sleeping under a treated mosquito net a night before survey	33%	46%	63% ‡
% of households that were sprayed with insecticide to kill mosquitoes	*N.A*	45%	66% ‡
MALARIA MANAGEMENT			
% of under-5s who had fever in the last 2 weeks preceding the survey	49%	53%	49% *
(Of those who had fever): % who received any anti-malarial within 24 hours	77%	55%	48% ‡
(Of those who had fever): % who received ACTs within 24 hours	*N.A*	21%	30% ‡
REPRODUCTIVE HEALTH			
% of pregnant women attending ANC at least once during the last pregnancy	94%	92%	99% ‡
% of pregnant women attending ANC at least 4 times	52%	48%	48%
% of women receiving two or more doses of IPT	47%	59%	69% ‡
% of deliveries (in the last 2 years) that took place in a health facility	43%	50%	63% ‡
% of women 15-49 years currently using modern family planning methods	15%	13%	19% ‡
PMTCT			
% of women who were offered an HIV test during ANC in last 2 years	41%	74%	89% ‡
% of women tested for HIV during ANC in last 2 years	34%	71%	87% ‡
% of women tested and received their HIV test results in last 2 years	29%	67%	84% ‡
% of women tested, received and disclosed their results to their partners	*N.A*	62%	81% ‡
% of partners who tested	*N.A*	*N.A*	57%
% of adults who know all MTCT ways	36%	49%	50%

* Significant at <0.05 level
‡ Significant at <0.01 level

1.1 Introduction

Routine monitoring and periodic evaluation are crucial aspects of effective and efficient programme implementation. Monitoring the performance of health services is vital to allocating scarce resources, identifying gaps and evaluating programme coverage. While facility-based health management information systems (HMIS) provide a good source of routine health statistics, their usefulness for episodic programme evaluation is limited by the fact that they lack denominators and are often characterized by inaccurate recording and incomplete data. Simple small-scale surveys are useful to overcoming this limitation and can be planned for and executed to help in establishing baseline values for monitoring indicators, validating routine findings and obtaining population-based information otherwise not attainable by the HMIS. These simple surveys can also complement other surveys conducted countrywide, whose findings are usually only disaggregated at the regional level but do not reflect individual district-level performance.

The Northern Uganda Malaria, AIDS&HIV and TB Programme (NUMAT) is a USAID/PEPFAR-funded project that began in 2006 whose goal is to expand access to and utilization of HIV/AIDS, TB and malaria prevention, treatment, care and support services in the nine original districts of Northern Uganda: Amuru, Kitgum, Gulu, Pader in the Acholi sub-region and Oyam, Lira, Apac, Dokolo and Amolatar in the Lango sub-region (see Figure 1). The Programme is implemented by JSI Research & Training Institute, Inc. (JSI), in collaboration with World Vision (WV) and AIDS Information Centre (AIC).

In the efforts to gather localized information at the district and sub-district levels, the Programme adopted the Lot Quality Assurance Sampling (LQAS) survey, a rapid and cost-effective tool to measure coverage of relevant indicators while identifying gaps in performance. NUMAT employed the LQAS methodology to measure population-based indicators of knowledge, attitudes, accessibility and utilization of services in all nine districts. This was conducted in 2006 as a baseline and repeated in 2008 to monitor the indicators' progress and trends. The 2010 survey was intended to provide another assessment of the same set of indicators with the completion of the Programme approaching; to evaluate some of the Programme's main objectives; and to share relevant health-related information with district local governments and partners.

Figure 1: Map of Northern Uganda

2.0 Methodology

2.1 Lot Quality Assurance Sampling (LQAS)

The LQAS methodology was developed in the 1920s and widely used in the manufacturing industry for quality control of the goods on a production line. It involves taking a small random sample of a manufactured batch (lot) and testing the sampled items for quality. If the number of defective goods in the sample exceeds a predetermined allowable number, then the batch or lot is rejected; otherwise it is accepted as being of reasonable quality.

LQAS is a low cost, less time consuming sampling method that can be adapted to the health sector by using "supervision areas" (SAs) instead of production lots to identify poorly performing areas that do not reach an established benchmark. There are two primary reasons for using LQAS: first, to determine, within given levels of confidence, whether a specific SA has reached a predetermined coverage target, and second, to prioritize allocation of resources based on the outcomes of different SAs. The methodology uses a small sample of 19 respondents that provides an acceptable level of error for making management decisions (samples larger than 19 have practically the same statistical precision as 19 – they do not result in better information, and they cost more). Additionally, data from individual SAs can be pooled into an estimate of coverage for an entire programme area, after weighting the result from each SA by its population size.

For this study in Northern Uganda, existing lower level administrative structures, such as counties and sub-counties, were used to define the five SAs in each district. The overall district coverage for the survey indicators was then used as a benchmark against which SA performance was assessed. Based on the survey results, the district performance was assessed against the expected level and areas of poor performance were identified as priorities for improved or enhanced interventions.

2.2 Questionnaire Preparation

Semi-structured survey questionnaires were developed for this round of the LQAS survey in line with those used in the previous 2006 and 2008 studies for sake of comparability. Only one additional question was added to the 2010 questionnaires to complete the set of prevention of mother-to-child transmission (PMTCT) indicators that were considered of importance to the Programme monitoring and evaluation. Indicators that were no longer considered relevant to the Programme or to the districts were not retained in the 2010 survey instrument, hence reducing the total burden of questions and the time needed to administer it to respondents. Special consideration was also given to a few indicators that would be useful for comparison with and verification of routinely-collected service statistics (e.g. proportion of institutional deliveries, proportion of pregnant mothers attending

ante-natal clinic at least four times). Other questions were refined based on changes in current policies and in service availability (e.g. the treatment option of Homapak® as anti-malarial was excluded because it is no longer available).

Five sets of questionnaires were designed for the five sub-populations targeted by the survey, namely:
>   (1) Mothers with children under two years of age;
>   (2) Parents/caretakers of children aged 24 to 59 months;
>   (3) Young people aged 15-24 years;
>   (4) Men aged 15 to 54 years; and
>   (5) Women aged 15 to 49 years.

Most questions were common across different groups in order to ensure comparability and increase the sample size. Each individual questionnaire contained questions about household characteristics (including the exact location) and questions in the following "modules": socio-demographic characteristics, water and sanitation (except for the youth group), insecticide treated mosquito nets (ITNs), HIV&AIDS and family planning (FP). Other modules, however, were specific to some groups and did not feature in the questionnaire for the others. For example, questions on antenatal care (ANC) and PMTCT testing were only included in the questionnaires for mothers with children under two years of age.

By arranging all questionnaires in this kind of format whereby all respondents from the five target groups were asked the same questions, the sample size for all these shared modules was increased to 475 per district instead of 95, thereby increasing the degree of precision in measuring the related indicators. Overall, the sample size for these modules was 4,275.

For the module on malaria in children less than five years of age, the sample size was 190 for each district and 1,710 for the whole survey, since only two respondent types were eligible for that; while the module on maternal care was asked only to mothers of children less than 2 years, making 95 respondents per district, 855 in total.

2.3 Sampling

To ensure consistency, comparability and ease interpretation of the results, the NUMAT LQAS survey 2010 used the SA boundaries established for the 2006 and 2008 surveys. At the time of the original definition of these divisions, considerations for population size and geography were taken into account. Although Northern Uganda has recently undergone redistricting, the geographic area of the original nine districts used in 2006 and 2008 was maintained for the 2010 survey. In cases where one of the original districts now contained two district offices, both were informed of the exercise.

As in the previous study, 19 villages were sampled from each SA using the household listings of the mid North Region obtained from the Uganda National Population Census, 2002 and applying the probability proportional to size (PPS) sampling method. During field data collection, the individual interviewer/enumerator determined the first household to visit randomly, as described in the data collection section below and subsequently the interviewer/enumerator selected the next nearest household from the entrance of the household they had just visited.

While in a household, selections of respondent for interviews were prioritized starting with the least common (mothers of children under 2 years of age) to most common (women aged 15 – 49 years). To minimize measurement biases, only one respondent was selected from each individual household.

2.4 Ethical Considerations

Confidentiality during interviews was emphasized during training of interviewers

Permission was sought from the district authorities and respective Local Council (LC) 1 leaders in the study area to conduct the study. In addition, each individual interview began with an oral consenting process in which the interviewer explained the details of the study, including the participant's right to refuse to participate in all or part of the survey and assuring the confidentiality of the responses given. Participants verbally consented to participating in the survey.

In order to protect the confidentiality of all information provided and assure the privacy of each individual participant's responses, the data from this survey have been kept in a locked storage area in the NUMAT office and only survey staff have had access to these data. A unique identification number was assigned to each respondent and coded onto the survey questionnaire during data collection. No identifying information was included on the individual filled-in surveys that would allow anyone to connect individual survey responses back to individual respondents.

In order to maintain the confidentiality that participants were assured in the consenting process, interviews had to be conducted in privacy. Each interview was conducted in a manner that was comfortable for the participant, in which they were able to speak openly and honestly. Most interviews were conducted in the respondent's home in a private area. During the interview, no other adult man, woman or older child was present or able to hear the interview, with a few exceptions in which a translator was needed for a local dialect that the interviewer did not speak. If the respondent indicated that s/he was uncomfortable holding the interview at home, the interview was done at another location of his/her choice.

2.5 Training of Interviewers

Training on the LQAS methodology and data collection took place from 18th-21st November 2010. Two teams of trainers from the NUMAT M&E team were able to train 34 participants from the Acholi region in Gulu while an identical training was being given to 41 interviewers from Lango region in Lira. The participants included district officials from the Health, Community Development and Planning Departments in the nine NUMAT supported districts. The majority of these participants had participated in LQAS surveys conducted in the past. Additionally, some NUMAT staff were include in the training. Altogether, a total of 75 (65 district officials and 10 NUMAT staff) were trained. The training covered the following topics: introduction to surveys and LQAS methodology, field preparation, sampling and selection of households, selection of respondents, pretesting, interviewing techniques and logistics of data collection.

The training was participatory with a practical session where the interviewers demonstrated knowledge on household selection within a mini, mock village. During the session on interviewing techniques, tips were provided to the interviewers on how to contact the household in a village, explain the purpose of the study, gain cooperation, enumerate household members, select the respondent, ask questions in the required manner, put the respondent at ease, and accurately record the respondent's

Exercise on household selection conducted by a District Supervisor during training of interviewers in Lira

answers and any other required information. Role-play and mock interview training techniques were employed.

During the training, a day was dedicated to training interviewers on the questionnaires used to collect data. A translator led the group in interpretations of the questions in the local languages which ensured consistencies in interpretation/translation of the questions and aimed to minimize ambiguity. Interviewers and their supervisors then went to the field to conduct the pre-test. Results of the pre-test were reviewed overnight by the survey supervisors and discussed the following day together with the field interviewer teams.

There was a special training for field supervisors to discuss quality control procedures, team management and management of field logistics and work. A field guide of tips was prepared for each interviewer as a quick reference when implementing fieldwork. This guide highlighted how they could tackle potentially problematic questionnaire sections such as the ITN module, specific response categories and interviewer instructions. The remainder of the last training day was dedicated to logistical arrangements for field work.

2.6 Data Collection

The process of data collection was coordinated by a team of two supervisors assigned to each district and one regional supervisor for Lango and Acholi regions. Sixty-three trained interviewers collected data over a period of 10 days from the original 9 baseline NUMAT supported districts.

Data collection started with identification of the community leader who in most cases acted as the guide responsible for introducing the interviewer to the selected households during the exercise. In an effort to select a household at random various procedures were followed depending on the size of the village and available information about households. Where a village household roster existed and could be provided by the guide, the list was used to assign numbers chronologically to all households and the first household to be interviewed was selected randomly. Where a household list could not be used but there were 25-30 households in the village, the interviewer listed all the households with the help of the guide, assigned numbers to the households and randomly selected the first household to be interviewed

In cases where more than 30 households existed in a village with no roster, the "*spin the bottle method"* was used to determine the first household to be interviewed. When using this method, the interviewer walked to the middle of the village spun a bottle on the ground and listed all the households in the direction to which the bottle pointed when it stopped spinning then randomly selected the first household for interviewing. After the interview at the first randomly selected household was complete, the next nearest household was selected until all respondent types were interviewed in each village.

One eligible respondent was selected per sampled household. Where two or more respondent types were eligible, the interviewer selected from the least to the most common respondent type. If two or more of the same respondent type was found then random selection was applied to choose one for the interview. In cases where not all respondent types were found within the sampled village and by adhering to the sampling procedures outlined above, the interviewer moved to the next nearest village and followed the same procedure for household and respondent selection. Some villages were selected twice due to size of their populations. In such cases, the interviewer visited the specific village twice but on second visit sampled households in the opposite direction (tail of the bottle) and then followed the same criteria for household and respondent selection

Finally, at the end of each data collection day, interviewers submitted their questionnaires to their respective district supervisors for checks on completeness and data quality, aiming to minimize incomplete and contradicting sections. Feedback on questionnaires was shared by the supervisor each morning to individual interviewers as well as any general lessons applicable to all.

2.7 Data Entry and Quality Assurance

EpiInfo version 2.0 was used for data entry for the 4,275 questionnaires. This took place at the NUMAT office in Gulu for 11 working days between November 30th and December 14th 2010. The five data entrants attended a one-day training where they were familiarized with the questions in the questionnaire and practiced entry directly into the data entry screen. Data entrants entered data in sets of five questionnaires, one of each type of respondent, representing a complete village. This was done to ensure equitable labor distribution between entrants since the number of modules in questionnaires varied by respondent type containing between 54 and 88 questions.

The EpiInfo database was converted to a Microsoft Access file which was then used to check data quality. At the end of each day, data entry queries were run on this Access file to identify any issue regarding inconsistent or missing information. In both cases, questionnaires were reviewed where possible by the individual interviewers for the necessary corrections. In addition to using queries to detect data entry errors, design of the data entry screen also provided some validation measures. In order to reduce possible data entry error, dropdown menus, required fields and restricted number ranges were used. Programming in EpiInfo was also designed to ensure that skip patterns were followed.

2.8 Data Analysis

Tabulation: During data collection, computerized tabulation of data took place concurrently in all districts for a group of core indicators. Tabulation combined with appropriate weighting provided preliminary findings on the district coverage for the

selected indicators that were shared with district health officials as part of the dissemination process.

Interviewers are taken through the principles of LQAS by the lead facilitator in Lira

Weighting: Selection of the SAs was made based on existing administrative units. While the population of the individual areas differs substantially, the sample size of 19 respondents is constant. Calculating a weighted result based on relative population size provides a more precise representation of the percentage of the population covered. Weighted district and programme percentages were calculated for all survey indicators using the formula suggested in the LQAS training manual and the available 2010 projected population figures for the respective SAs. Unless stated otherwise, the results presented in this report are weighted results.

Analysis: Data analysis was carried out using SPSS 17.0 statistical software. Data analysis focused on assessing coverage levels for the different program indicators and outcomes were determined as percentages with 95% confidence intervals. For those indicators that have consistently featured in all surveys, these percentages were compared with the results of the 2006 and 2008 LQAS survey. Unless stated otherwise, any significant change in proportions appearing in this report was derived by using the Pearson chi-square statistical test. The data were also disaggregated and comparisons were made by district, respondent's age and sex, and other variables like education and marital status to determine any significant differences in the indicators of interest. A bivariate analysis was done to determine significant associations between the indicators of interest and the independent

variables using chi-square tests. Variables that were significantly associated with the indicators in the bivariate analysis were then entered into a logistic regression model to control for confounding factors and assess true associations.

3.0 Results

3.1 Study Population

Overall, the population surveyed was predominantly female (67%), due to the fact that women were purposefully oversampled (see Table 1). The population did not have very high levels of education with only 20% having any secondary or higher schooling. The majority of people interviewed (73%) were married or cohabiting and resided in households of four or more members (87%). The break-down of education and marital status characteristics are in line with the findings from the 2006 Uganda Demographic and Health Survey and also with the LQAS conducted within the region in 2008 (results not shown).

3.2 HIV&AIDS

Although the total number of survey respondents was 4,275, the analysis of HIV/AIDS related questions was limited to only those of reproductive age, thus excluding the few respondents who did not fit within this age range (15-49 years for women and 15-54 years for men). Therefore, the total denominator for these specific questions was 4,254 (1,410 males and 2,844 females). The analysis also looked at the young people (15-24 years old) as a sub-population of interest, whose performance against the various survey indicators was also assessed.

3.2.1 HIV Counseling and Testing

Knowledge of a site where HIV testing is available was almost universal, with 94% of respondents able to indicate one. Additionally, more people in Northern Uganda knew their HIV status compared with findings from the 2006 and 2008 surveys. In total, 79% of respondents had ever been tested for HIV; and 65% had tested and received their result in the one year prior to the survey. Overall, women were more likely than men to have been tested for HIV (see Figure 2). The subgroup of youth has recorded a similar improvement in as far as testing for HIV is concerned showing an analogous difference between male and female; besides, testing and receiving their result in the last one year was significantly associated with being in a married or cohabiting relationship (69%). Respondents in Acholi districts are also more likely to have been tested, with 76% of Acholi respondents and 58% of Lango respondents reporting they were tested for HIV and received their result in the last one year.

Table 1: Demographic Distribution of Study Population, 2010

Characteristic	Category	Number (n=4,275)	Percentage
Sex	male	1,414	33%
	female	2,861	67%
Education	No school education	644	15%
	Primary 1-4	752	18%
	Primary 5-7	2,036	48%
	Secondary 1-4	638	15%
	Secondary 5-6	82	2%
	Tertiary	123	3%
Marital status	Single, no partner	644	15%
	Single, regular partner	195	5%
	Married/Cohabiting	3,132	73%
	Divorced/Separated	193	5%
	Widowed	111	3%
District of residence	Amuru (Acholi region)	475	11%
	Gulu (Acholi region)	475	11%
	Kitgum (Acholi region)	475	11%
	Pader (Acholi region)	475	11%
	Amolatar (Lango region)	475	11%
	Apac (Lango region)	475	11%
	Dokolo (Lango region)	475	11%
	Lira (Lango region)	475	11%
	Oyam (Lango region)	475	11%
Household size	1 member	37	1%
	2 members	114	3%
	3 members	380	9%
	4 members	538	13%
	5 members	669	16%
	6 members	656	15%
	7 members	546	13%
	8 members	490	11%
	9+ members	834	20%

Figure 2: HIV testing knowledge and behavior, by sex, 2010
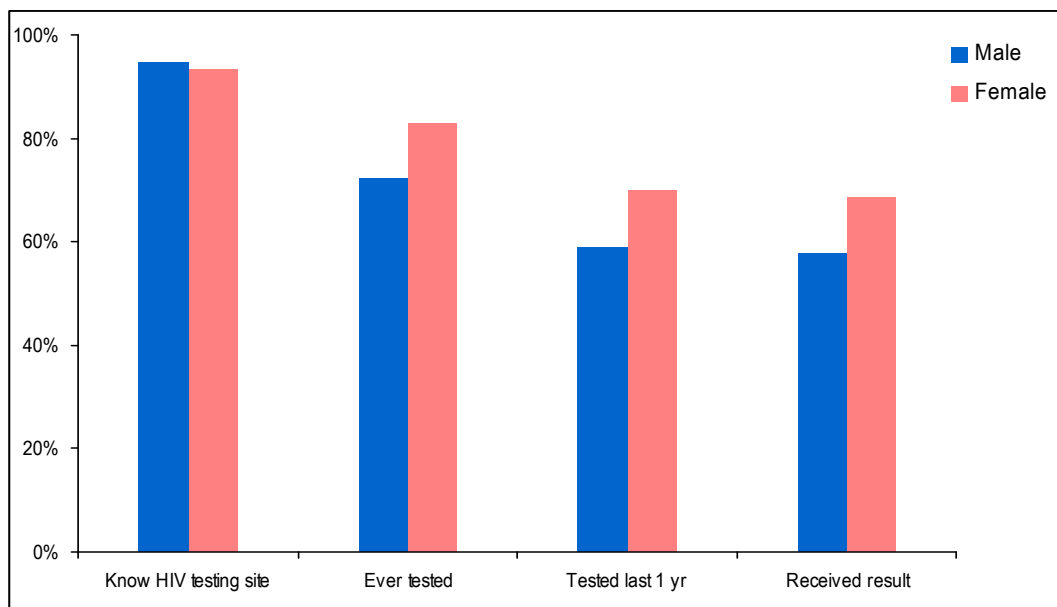
In general, all districts have shown a marked increased in these indicators as compared to results in 2008 (see Table 2).

Table 2: HIV testing knowledge and behavior, by district and by survey year

Districts	Know where testing services are offered		Have ever tested		Tested and received HIV results in 1 yr prior to the survey	
	2008	2010	2008	2010	2008	2010
Amolatar	93%	96%	59%	79%	51%	65%
Amuru	90%	96%	81%	87%	66%	72%
Apac	83%	89%	45%	62%	27%	46%
Dokolo	92%	93%	55%	74%	40%	62%
Gulu	89%	98%	80%	93%	60%	78%
Kitgum	92%	97%	77%	89%	70%	82%
Lira	80%	92%	58%	77%	44%	58%
Oyam	74%	91%	48%	71%	34%	57%
Pader	87%	95%	73%	88%	62%	76%

The results above show the growth of HIV counseling and testing (HCT) services in Uganda and more specifically in this region, as well as the knowledge of their availability to the public. Such expansion made the service more accessible and its uptake easier for potential clients. Particularly impressive is the general increase in respondents who have tested in the one year prior to the survey, thus indicating recent testing and a responsible and positive attitude by the general population towards the recommended regularly repeated testing.

Similar to the 2008 findings, female respondents seem to be more attentive than men in being aware of their HIV sero-status; this could possibly be attributed to them having more regular interactions with health services as both patients and care-takers. Respondents with a partner have more motives to get tested, since HIV testing is a widespread recommendation to all couples before getting into a stable union and during ante-natal visits for pregnant women. Although Acholi districts still recorded a higher proportion across all HCT indicators, the gap with Lango districts is smaller than in previous years, showing a significant uptake of HCT services in the latter.

3.2.2 Knowledge of HIV transmission and prevention

Abstaining from sexual activity, being faithful to one sexual partner, and using condoms during sexual intercourse are three behaviors that can prevent or reduce the likelihood of sexual transmission of the HIV virus. These behaviors are often included together under a strategy known as the "ABC approach." Some questions related to this aspect of knowledge of HIV transmission were assessed during the survey, as well as questions concerning HIV-related misconceptions.

When asked about ways to reduce their chances of getting HIV/AIDS, 55% of respondents reported knowing that abstaining from sex, consistent condom use and having one faithful, uninfected partner are key prevention methods. More than 60% of respondents from Acholi districts knew of these methods, compared with slightly more than half of those from Lango districts. Slightly more men (58%) than women (53%) knew about these HIV/AIDS prevention methods. Youth (57%) were also somewhat more informed about ways of preventing HIV transmission than respondents 25 years old and above (53%). Young males in Kitgum district (90%) were most likely to know these prevention methods. By contrast, female respondents 25 years and older from Lira district (35%) were least likely to have knowledge of HIV/AIDS prevention methods.

In addition to knowing about effective ways to avoid contracting HIV, it is also necessary to identify incorrect beliefs about AIDS. Many of the survey respondents had misconceptions about HIV/AIDS. When asked about whether HIV can be transmitted through sharing food with HIV-infected individuals, witchcraft or mosquito bites only less than half of respondents (48%) rejected these false transmission ways, which marked a non-significant change from the 2008 survey result (46%). The same pattern in the differences across regions, sex and age groups found for HIV prevention knowledge was found here.

An indicator of comprehensive knowledge about HIV/AIDS was created that combined several individual indicators previously discussed, namely: knowledge on the three main ways of preventing HIV transmission together with rejection of the main misconceptions about HIV. Overall, less than one out of three respondents

(29%) was shown to have comprehensive knowledge on HIV. Differences between men and women and trends from previous survey results are displayed in Table 3.

Table 3: HIV knowledge and misconceptions, by survey year and by sex

Districts	Total		Male		Female	
	2008	2010	2008	2010	2008	2010
Knowledge of HIV ways of transmission	48%	55%	52%	58%	46%	53%
Ability to reject major HIV misconceptions	47%	48%	55%	56%	43%	44%
Comprehensive knowledge about HIV/AIDS	26%	29%	33%	36%	23%	26%

A specific question on whether respondents knew where to locate a condom distributing outlet was also asked in view of complementing awareness of condoms as a prevention tool with knowledge of where to access them. Just two thirds of respondents (66%) were able to mention a condom outlet, with a substantial difference between men (78%) and women (60%); youth (70%) and non-youth (63%); and Acholi (71%) and Lango regions (63%). Of all HIV-related indicators, knowledge of a condom site is the only one that has declined compared with previous results, slightly but significantly dropping from 68% in 2008 to 66% in 2010. Respondents who knew about effective ways to avoid contracting HIV (73%) – and more so those who had mentioned condom use as one of them (83%) – were more likely to know the location of a condom distributing site.

HIV can also be transmitted from mother to child (referred to as "vertical transmission") during pregnancy, delivery, and breastfeeding. Although almost all respondents (95%) knew at least one way of mother–to-child transmission, only about half of the respondents (50.2%) were able to mention all three ways of HIV vertical transmission, marking a negligible improvement from 2008. Women (51.3%) were slightly more likely than men (47.8%) to know of all three ways.

Despite the maturity of the epidemic in Uganda, the proportion of respondents who were able to identify all the three ways people can be protected from HIV infection did not increase substantially from 2008. Among misconceptions, believing that HIV could be spread through mosquito bites was still prevalent. Thus, the comprehensive knowledge on HIV – that includes rejecting common misconceptions towards HIV – stagnated compared to 2008 results. Surprisingly, 41% of both those who had ever tested and those who had tested in the last year were not able to mention all three ways which HIV can be transmitted. This may be due to inadequate information that HCT clients received during their counseling sessions, which ideally should include providing sufficient information, enquiring about misconceptions and setting risk reduction strategies. If this is true, health

departments should ensure that HIV testing sites do not merely focus on output numbers but also on service quality; and that all information and communication needs of clients are addressed by health providers.

HIV comprehensive knowledge was more common among men, youth and respondents from more urbanized districts, which is likely to be due to their higher education level attained. By contrast, women were found to be slightly more knowledgeable about mother-to-child transmission of HIV, possibly because of having received information during past pregnancies.

An interviewer asks questions to a care-taker of under-five years old child during the data collection exercise

It is also noteworthy that the only indicator about the HIV-related general knowledge of participants to show a decline from 2008 was the proportion of those able to locate a condom distributing outlet. This finding appears to indicate that the health sector investment into a wider condom awareness, distribution and availability has met a significant set-back. It is likely that the controversies that have questioned the quality of condoms available in the country and their overall role and importance in the HIV prevention have affected the 'credibility' of condoms as a preventive tool and people's perception on their usefulness and efficacy. Additionally, a reasonable proportion of rural respondents, especially women, were found to not be comfortable discussing condoms openly which may have affected how they responded to this question.

3.2.3 HIV-related stigma and discrimination

Some questions related to HIV/AIDS stigma were also included in the survey questionnaire. Respondents were asked whether they would be able to disclose the status of their family members to any of their relatives if they were found to be HIV-

positive. Almost two thirds of respondents (65%) answered that they would not keep it a secret, marking a significant increment from the 2008 finding of 57%. Additionally, almost 8 in every 10 respondents (79%) reported that if a female teacher was found to be HIV positive, then she should be allowed to continue teaching. Similarly, 82% reported that they feel they would be able to disclose their HIV test results to either a partner, family member or other relative or friend if they ever went for an HIV test, with almost no difference between men and women.

These findings seem to suggest that people's attitudes towards HIV-infected individuals showed an improvement with regard to potentially stigmatizing behaviors from 2008. This has been consistent across respondents' categories with no significant difference detected. Similarly, people's willingness to disclose their sero-status seems also to have increased considerably. The results are likely to be due to a sustained and widespread campaign of fighting stigma and discrimination attitudes; widespread advocacy towards opening up and communicating HIV sero-status to partners; and use of testimonials from people living with HIV/AIDS (PLWHA) during public gatherings and official ceremonies.

3.2.4 Other HIV-related indicators

Similar to the 2008 survey, a few questions on TB were asked of respondents meant to assess their knowledge on other HIV-related issues. Of all respondents, 76% (compared to 72% in 2008) believed that TB can occur together with HIV; but only 61% thought that TB is a curable disease, a proportion still very close to the 2008 result (60%). Among TB signs and symptoms mentioned by the respondents, cough was the most common (59%), followed by weight loss (31%) and chest pain (18%).

These indicators did not show a large increase compared with the previous survey's findings. TB is a relatively uncommon disease especially if compared to malaria or even HIV infection and most respondents may not have come across any relative or friend suffering from it, hence missing a more direct exposure to key facts about TB. TB education is more ordinarily offered within health settings and sometimes restricted to TB patients and their close relatives. It is probably time to become a topic for a broader community audience in order to boost early detection and fight some enduring misconceptions.

The survey also asked some questions on care and support services. Compared with the 2008 results, among the people interviewed in 2010 there has been a decline from 24% to 13.5% in the proportion of households that had a sick bedridden person or someone who died after being sick or bedridden for more than 3 months. Amuru District (21%) reported having the highest proportion while Oyam district reported the lowest (6%). When asked whether households had received any form of support due to the presence of a terminally ill person or a person who died after being terminally ill, 59% responded having received this support, with a large difference across districts (Dokolo recorded the highest with 76%, while Pader had the lowest with 41%).

The proportion of households with a sick bedridden person or someone who died after being sick or bedridden is not a precise enough proxy indicator for terminally-ill HIV/AIDS-related conditions to allow an accurate interpretation of its decline from 2008, although the steep increase of anti-retroviral treatment (ART) availability during this time period may offer an explanation for it. What is notable, however, is the extreme variability across districts in the delivery of any form of support to the affected households. This form of assistance is often delegated by the public sector to civil society and local organizations; the evident differences in the various districts and their unequal trend recorded seems to indicate disparities regarding how vibrant and active these organizations are in providing home-based care support to households.

3.3 Malaria

An interviewer observes the presence of an ITN in a household during the data collection exercise

Malaria is the leading cause of morbidity and mortality in Uganda, contributing over 40% of all outpatient cases and causing more than 70,000 deaths among under-5 children every year. The major interventions for malaria control include: selective vector control using indoor residue spraying (IRS) and insecticide-treated nets (ITNs); improved diagnosis and effective case management of malaria; intermittent preventive treatment (IPT) to pregnant women and health education for malaria prevention and control.

Results on essential malaria indicators are presented and discussed below.

3.3.1 Utilization of Insecticide-Treated Nets (ITNs)

In determining the utilization of ITNs, respondents in all households were asked whether they had a mosquito net, and then the enumerator observed the brand and type of net. In addition, questions asked on whether the mosquito net had been slept under by any children under 5 years old residing in that household.

Findings from the surveyed households reveal that there was a significant increase in the proportion of households with an observed treated mosquito net in 2010 (74.8%) compared to 2008 (56.5%). Across the districts, Dokolo had the highest

coverage with 95%, followed by Amolatar with 88% and Amuru at 85%. Lira had the lowest coverage at 48% a significant drop from 68% in 2008. The proportion of nets in Acholi region was also seen to be much higher than in Lango region. The rapid increases in the ITN coverage over the years can be attributed to the scale up of ITN coverage by the Global Fund and USAID-funded organizations that have worked in the region.

Figure 3: Percent of households with ITNs, by district and by survey year
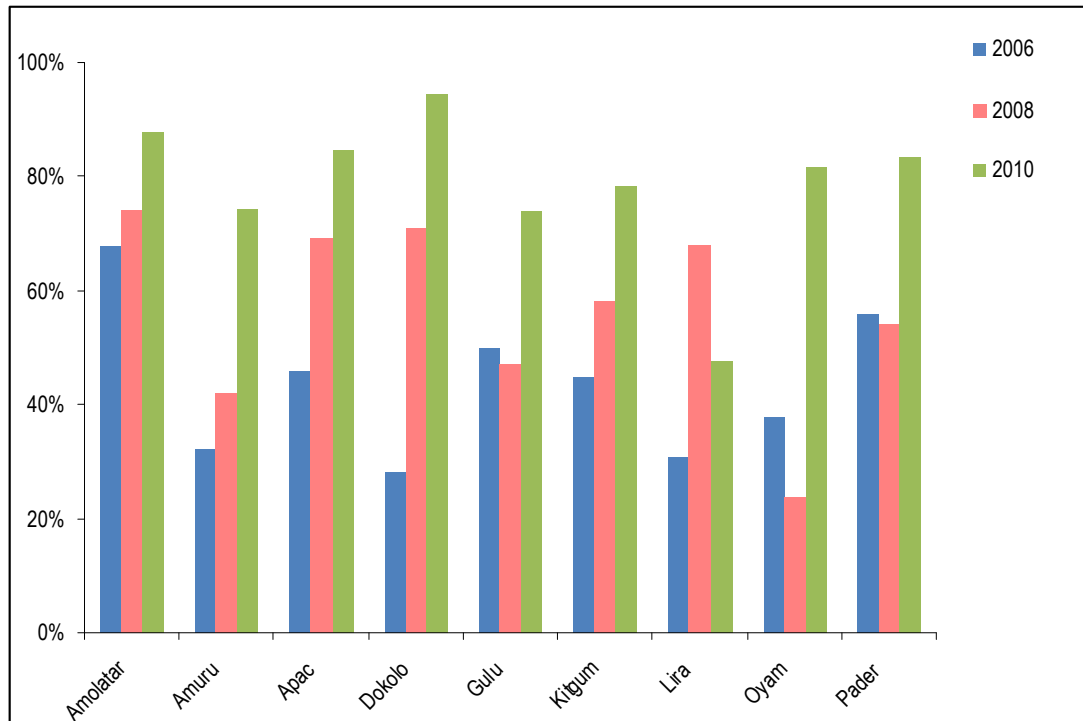
The percentage of children under 5 years old sleeping under any mosquito net the night prior to the survey increased to 66% in 2010 compared to 48 % in 2008. Dokolo and Oyam districts had the highest coverage of this indicator at 90% and 77%, respectively. By contrast, Lira had the lowest coverage at 39%. This is a drop from 2008 which was 56%. The low coverage in Lira district could be as a result of unequal coverage of ITNs by projects in the region; or of low sensitization on use of ITNs by the community, since it was found that some respondents had nets but they were not in use.

Figure 4: Percent of children under 5 years sleeping under an ITN, by district and by survey year
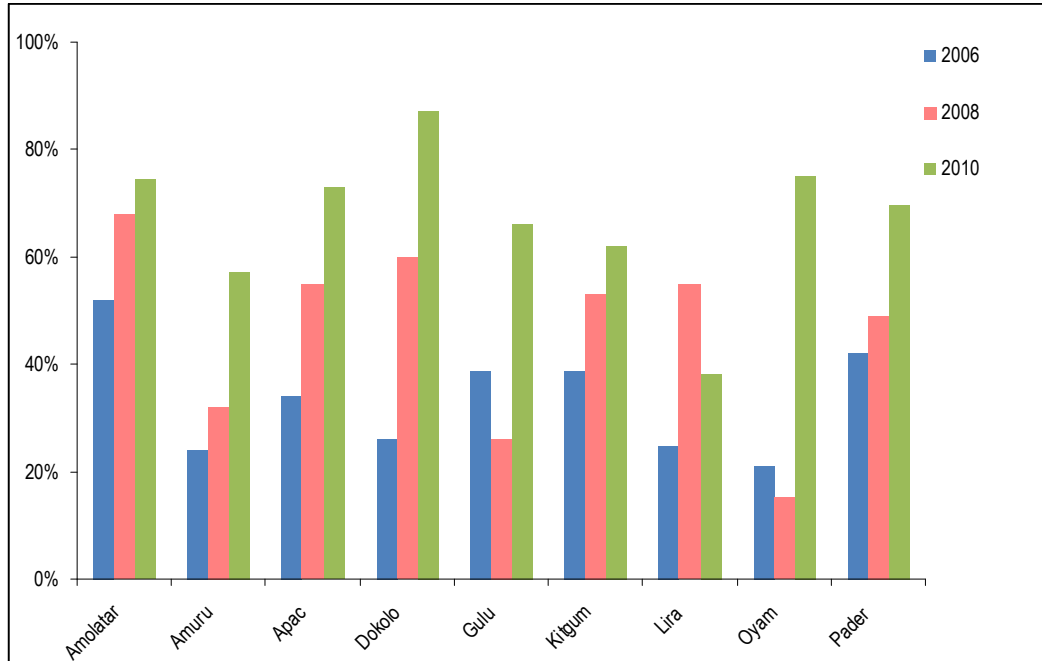
The percentage of children under 5 years old sleeping under a treated mosquito net also increased to 63% in 2010 compared to 46% in 2008. This shows that the large majority of nets currently in use in the region are the long-lasting pre-treated ones.

3.3.2 Indoor Residual Spraying (IRS)

To expand its malaria control activities, the Uganda National Malaria Control Strategic Plan 2005–2010 included indoor residual spraying (IRS) as one of the major malaria control interventions. Following this, IRS activities were conducted between December 2009 and May 2010 targeting six priority districts, namely Apac, Amuru, Gulu, Oyam, Pader, and Kitgum.

With respect to the proportion of households that were sprayed with insecticide to kill mosquitoes by community workers in the region, findings revealed a general increase from 45.4% in 2008 to 65.8% in 2010. Large differences were found between Amolatar District, Lira and Dokolo at 2% and the rest of the districts. The highest rate was recorded in Kitgum (95%) and Pader (87%) districts.

3.3.3 Malaria Management

The recommended treatment for malaria in children under 5 years old in Uganda is Artemisinin-based Combination Therapy (ACT) administered within 24 hours from the onset of fever. The percentage of children under five who had fever in the last two weeks preceding the survey was 48.8% (N=1710). Variability in this indicator from 2006 to 2010 was not found to be significant. Results for the 2010 survey showed that while the percentage receiving any anti-malarial by the same or next day decreased from 2006 to 2010, there has been a great improvement in delivery

of ACT compared to 2008, as displayed in Figure 5.

Figure 5: Percent of children under 5 years with fever who were given anti-malarial treatment, by treatment type and by survey year
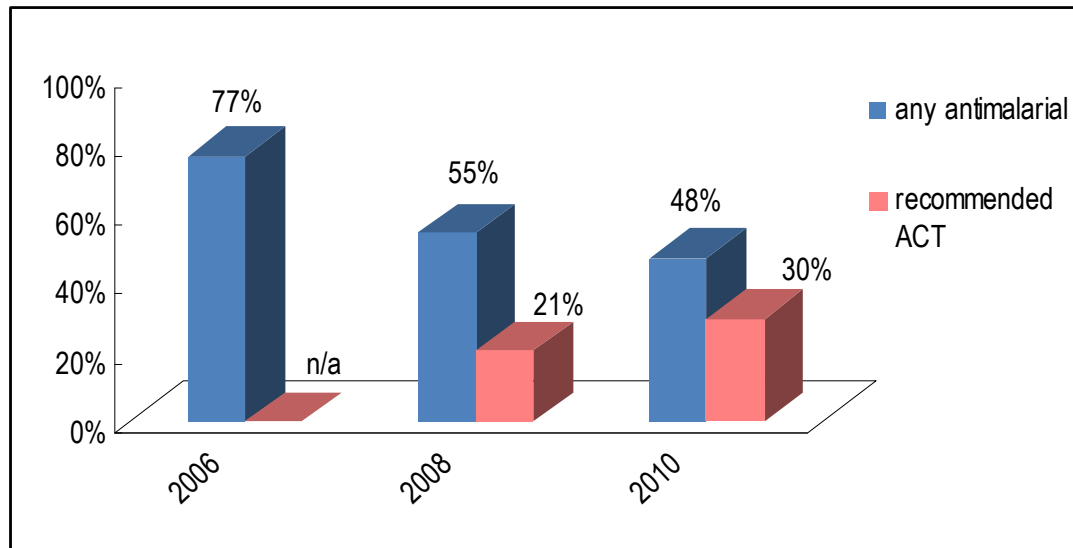

Among the children under 5 years who had fever within the last 2 weeks of the survey in all nine districts, about half of them (48%) had received treatment for malaria by the same or next day of fever onset. This represents a steady decrease since 2006 (77%) and 2008 (55%). This decrease may be explained by several factors, such as: the chronic shortage of anti-malarial drugs, the reduced number of active community medicine distributors (CMDs) and the weaker coordination between the CMDs and health centers (HCs) since the time of resettlement of people back to their original villages from internally displaced person (IDP) camps. More investigation is clearly needed to understand initial treatment practices in the home and the reasons for not seeking prompt treatment for malaria.

Among those who had fever, 47.6% (N=856) of children under 5 years old received some type of anti-malarial treatment by the same or next day. This percentage was a decrease over the 54.8% in 2008. Among the 52.4% who did not receive prompt treatment in 2010, 26% did not receive any anti-malarials and 25% received some anti-malarials but not by the same or next day.

Despite the decrease in receiving any anti-malarial, there was an increase in the percentage of children under five who received the recommended ACT within 24 hours from 20.7% to 29.8%. This may be explained by changes in malaria treatment guidelines as well as better supply of drugs. National malaria guidelines recommend ACT treatment to be provided within 24 hours for all children less than five years of age with fever and also discouraged the use of chloroquine as a mono-therapy. Although this policy was adopted by the Uganda MOH, supplies of ACT were not plentiful enough and many stock outs occurred in 2008. At present, the

availability of ACT has improved but still does not meet the demand and stock-outs still occur. The use of chloroquine decreased substantially from 9.2% in 2008 to 1.5% in 2010.

Figure 6: Percent of children under 5 with fever who received any anti-malarial treatment by the same or next day, by district, 2010
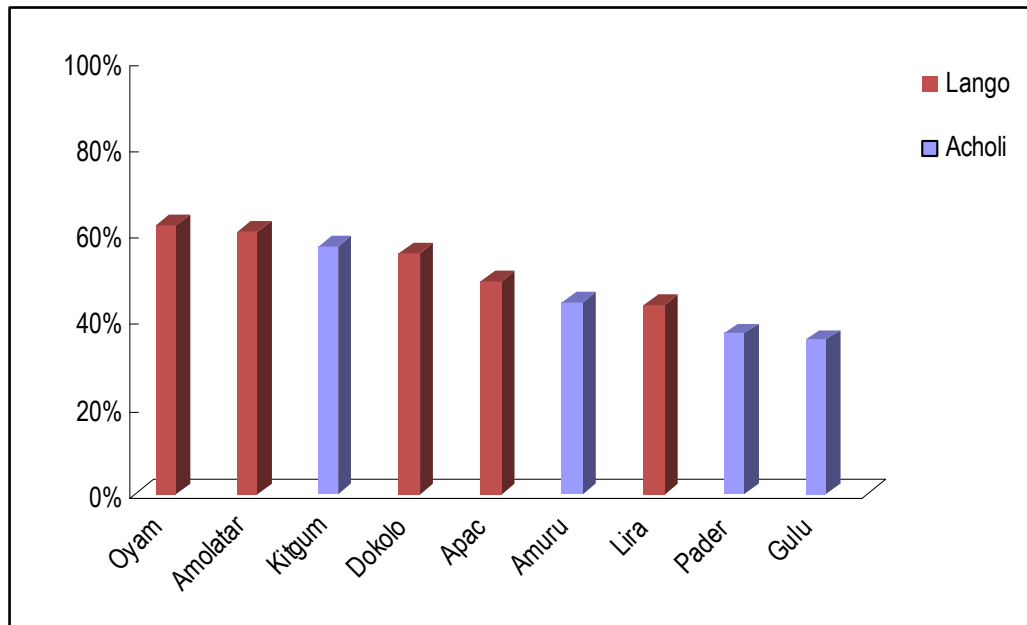
3.4 Reproductive Health (RH)

Reproductive health services include access to safe, effective, affordable and acceptable methods of FP and also a continuum of appropriate ANC services that enable women to safely go through pregnancy and child birth (e.g. IPT and PMTCT). The 2010 LQAS interviewed women about whether they had received ANC, received IPT, delivered in health facilities and received FP services.

3.4.1 ANC Attendance

Women who had children younger than 2 years of age were asked questions regarding their last pregnancy. There was a slight increase in the percentage of women who had attended ANC at least once during their last pregnancy, from 91.9% (N=855) in 2008 to 99.5 % (N= 855) in 2010. There was no change in the percentage of pregnant women who attended ANC at least 4 times during their last pregnancy between the two survey years (48.7% in 2010 compared to 48.2% in 2008). There was a significant association between education level and attending ANC at least 4 times, where 59% of those educated at the senior level or higher reported this many visits compared to 43% of those who did not attend school.

The proportion of women who reported having given birth in a health facility also increased from 50% in 2008 to 63% in 2010 (see Figure 7). Qualified staff (i.e. a

doctor, nurse or midwife) assisted 94% of births at the health facility. Of the women who did not deliver at the health facility, 34% delivered at their home and 3% delivered at the TBA's home. The most common reason for having not delivered at a health facility was distance, which was mentioned by over 52% those respondents.

Regionally, there was a significant difference in the proportion of women who gave birth at facilities, with 71% in Acholi compared to 53% in Lango. One reason for these regional differences may be that Acholi region is in general more urbanized than the Lango region. Also, during the conflict years, the Acholi region may have received more attention from NGOs trying to spread public health messages. Additionally, there was a significant association between higher levels of education and the likelihood of delivery at a health facility, with 79% of women with secondary or higher education giving birth at a health facility compared to only 49% of women with no education.

Figure 7: Percentage achieved for 5 RH indicators, by survey year
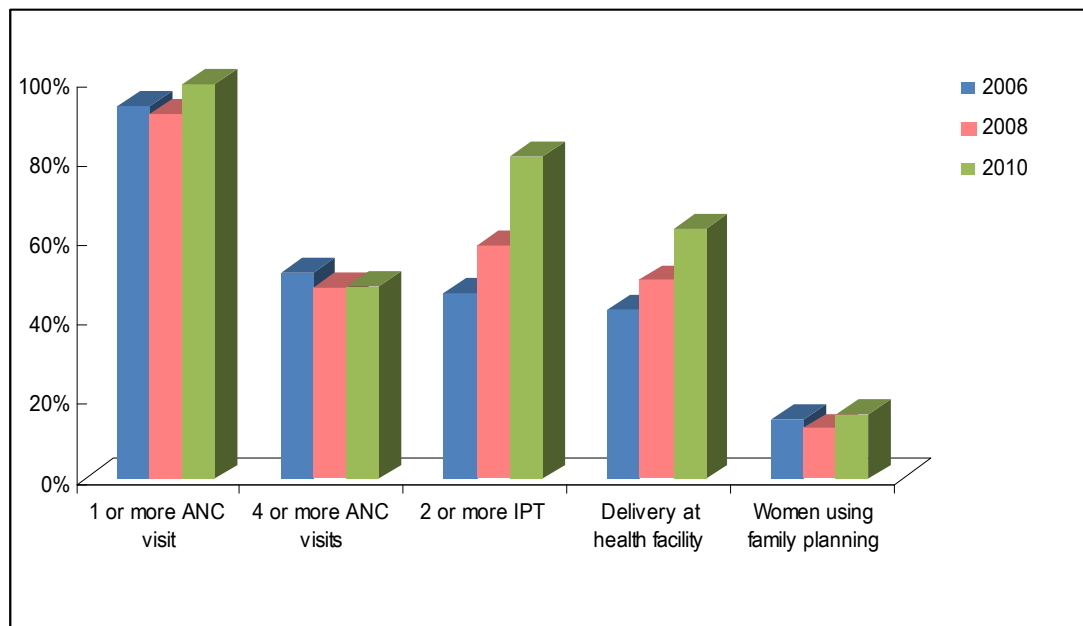
3.4.2 HIV Testing at ANC

Additional survey questions were asked regarding testing for HIV during ANC. The percentage of women who were offered an HIV test during ANC increased from 74.2% in 2008 to 89.3% in 2010. Similarly the percentage of women who tested for HIV during ANC increased from 70.8% in 2008 to 87.5% in 2010. Of the 855 women who were interviewed and had been pregnant at least 2 years prior to the survey, there was a significant increase in the proportion of those who tested and received their HIV results during ANC from 66.6% in 2008 to 84.2% in 2010.

There was also found to be a significant difference in education level for women who received an HIV test, where 91.6% of those educated at the senior level or

higher reported having tested for HIV at ANC compared to 86.2% of those who did not attend school. Regionally, testing was done in ANC at a significantly higher level in the Acholi region compared to the Lango region, 96.8% and 83.4%, respectively. The same potential reasons are possible interpretations of regional differences, the Acholi region being more urbanized and having received more health interventions during the conflict period.

The survey also assessed disclosure of HIV results by pregnant women to their partners. Of the total of 855 women interviewed, about 8 in every 10 (80.7%) reported having tested, received and disclosed their results to their partners. This represents an increase over the 61.6% shown in 2008. Overall, among those who had been tested, only 3.3% reported not having received their HIV test results, showing a decrease from the 4.2% of 2008.

A new indicator that was measured for this survey was the percentage of pregnant woman at ANC whose partners were also tested. The overall result was 57.5% with Kitgum and Pader districts showing the highest coverage at 79% and 74%, respectively, while the lowest was found in Apac with 41%. It was also found that there was a significant difference in women who reported their partners were tested at ANC between youth and non-youth, 64.4% and 56.9%, respectively.

Overall, the PMTCT testing cascade showed an improvement over the 2008 results for women who tested, those who received their test result and those who disclosed them to their partners (see Figure 8).

Figure 8: Percentage change in PMTCT testing cascade indicators, by survey year
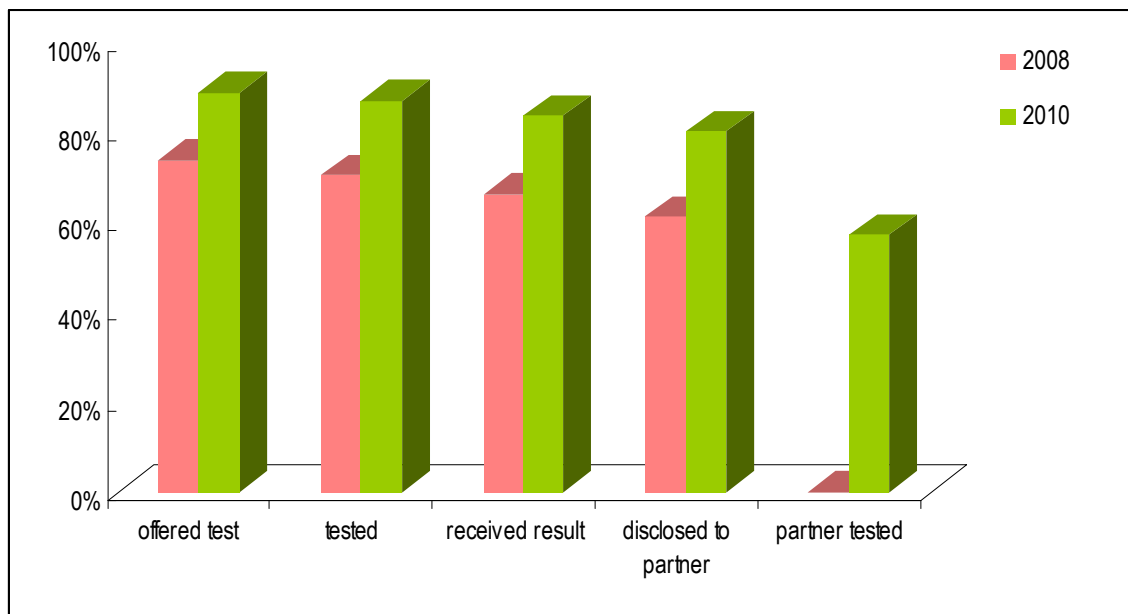
3.4.3 Malaria prevention in pregnancy (IPT)

As part of the ANC package, it is recommended that IPT is administered to every pregnant woman during their second and third trimesters. ANC remains an important service outlet for IPT administration and for dissemination of information on malaria prevention during pregnancy. Nonetheless, there are missed opportunities in providing eligible pregnant mothers with IPT, including: facility workload, insufficient supplies and limited number of clinic days offered. The indicator on IPT coverage showed a marked increase from 58.8% in 2008 to 69.5% in 2010. However, it has to be noted that this is one of the indicators most prone to recall bias. Mothers may have reported full malaria treatment, deworming tablets or any other treatment as being malaria prophylaxis. The approach to consult the ANC card could have been helpful in verifying the appropriateness of the information collected, but it was not clearly proposed to all interviewers and therefore was not universally adopted in the survey.

3.4.4 Family Planning (FP)

This study asked women to report on their use of modern FP methods which were considered to include: sterilization, oral and injectable contraceptives, implants and intrauterine devices (IUDs). Any other methods were not considered as modern. Condoms were analyzed as a stand-alone category.

When asked about their current usage of FP, 16.3% of all women interviewed reported using a modern method (compared to 12.7% in 2008) and 3% reported using condoms. Dokolo district showed the highest coverage with 20%, while Pader showed the lowest coverage with 11%. Higher levels of education were significantly associated with the use of modern family planning methods; only 12% of those who did not go to school were using compared to 19% of those who attained secondary education and above.

The low coverage levels of FP service utilization in Northern Uganda could be attributed to a number of factors, including, but not limited to: lack of knowledge, stock outs of consumables when services are sought, inadequate integration of FP with HIV services, limited male involvement in service uptake and negative cultural beliefs towards condom use.

3.5 Water and Sanitation

The survey also examined some few indicators on access of respondents to safe water and availability of sanitation facilities in the households.

One of the selected households in a remote area of Kitgum district

Overall, 79% of respondents (n=3,428) reported using a safe water source (which includes boreholes, protected springs, public taps) as their main source of drinking water, with the majority of them (62%) using a borehole. However, participants were asked to mention their main source, which does not exclude the possibility that other non-safe water sources may be occasionally used.

A high proportion of respondents (86%) indicated that drinking water for the household was being stored in traditional clay pots, where water can be maintained cool for longer. Pots are usually preferred to other containers like jerrycans, although they are more susceptible to water contamination in the process of transferring that water into mugs or glasses for consumption. Half of respondents also reported to use a safe water source when collecting water for other domestic uses.

Regarding sanitation, 72% of respondents reported having a toilet facility in their households, with over two thirds of them having a toilet with no concrete slab. To make reporting more accurate, interviewers were asked to observe toilet facilities in the household and record what they actually observed. Almost 4 out of 10 respondents with some toilet facility indicated that the toilet is shared with other neighboring households.

4.0 Limitations

As with all cross-sectional surveys, the 2010 LQAS survey had some limitations. Although during the training of the interviewers much emphasis was placed on standardization of approaches and uniformity, is it possible that the style of asking questions and the extent of probing for answers may have been different across interviewers, introducing some potential measurement bias, in particular in translating the questions into local languages.

Since respondents were asked to report on information from their past, such as episodes of illness or previous utilization of health services, it is also possible that their responses did not accurately reflect their experiences due to recall bias. Response bias may also have been of concern in this survey as respondents might have intentionally reported on their own behavior or experiences incorrectly based on a perceived desirability of responses rather than actual knowledge or practices.

Whenever possible, interviewers were instructed to observe items like bed nets and toilet facilities. However, information like ante-natal attendance, HIV testing during pregnancy and malaria intermittent presumptive treatment were not systematically verified against the ANC card, except in case of contradicting answers. Similarly, the details of the treatment given to children with history of fever were not confirmed with respective medical forms, thus possibly contributing to erroneous categorization of the medicines prescribed.

For sake of consistency and comparability, the 2010 LQAS survey has used the same SAs and districts used in 2008 and 2006. However, the selection of two supervision areas from the municipality of Gulu district may have affected its general district results, since two thirds of respondents were from an urban setting. Additionally, the use of old district boundaries has not met the obvious needs of newly created districts to identify sub-district areas whose low performance represent a priority for urgent and tailored interventions.

Interpreting the findings of cross-sectional surveys always poses the challenge of attribution of the results. In a dynamic environment like the health sector in Northern Uganda where many organizations operate and many factors influence people's health knowledge and behaviors, it would also be difficult to attribute survey findings or indicators' trends solely to particular interventions. In most cases, the findings of this survey and those conducted in 2006 and 2008, are a result of not only the efforts undertaken by the NUMAT Programme but many of the other efforts to improve the health system in Northern Uganda over the past five years.

5.0 Recommendations and Conclusions

Overall, the performance of most HIV indicators in the 2010 LQAS survey showed improvements from the 2008 findings. In particular, knowledge about where to receive an HIV test and uptake of the test itself both showed significant increases. Nevertheless, the pattern was not uniform across the whole region. The differences across districts should be taken into account by health officials in order to identify those areas that were found to be below average. Careful planning will be necessary to tailor interventions to improve testing knowledge and access, while sustaining efforts to keep a high coverage of eligible people regularly tested for HIV.

Special attention should also be made to those HIV indicators that did not show improvements from the previous survey results. For example, the proportion of those able to mention all three ways of preventing HIV infection in 2010 did not differ greatly from what was found in 2008. No change in this indicator reflects a commonly-held belief that the Ugandan population has perhaps become less vigilant in the fight against HIV/AIDS as evidenced by HIV prevalence rates that have ceased to decline as rapidly in recent years and in some cases have actually risen in some areas. There has been concern that the early successes of Uganda's campaign to address the disease are no longer being seen. There is a need to refocus preventive interventions and to integrate them more within various sectors. Information on HIV transmission and prevention should be provided through diversified venues and outside institutional settings like schools and health facilities.

The 2010 results for malaria are promising – most households now possess at least one long lasting treated insecticide mosquito bed-net and children less than five years old benefit from this by sleeping under them at night. However, these achievements need to be sustained in order to better contribute to the control of malaria and the protection of vulnerable populations in conjunction with vector control interventions and appropriate case management. Focus should also be put on efforts to continue the upward trend (from 21% in 2008 to 30% in 2010) in the percentage of children under five years old with fever who receive ACT within 24 hours. as these results are by far below the target of 60% set by the Abuja Declaration.

Reproductive health indicators were also found to have significant signs of improvement in this survey, particularly attendance to ANC, access to PMTCT services and deliveries in health facilities by qualified medical personnel. Also the provision of IPT for malaria has generally improved. But FP utilization appeared to stagnate throughout the region, indicating that efforts being employed are not yet sufficient for a wider acceptance and uptake of FP methods.

Ultimately, the LQAS approach proved to be helpful and effective in providing health-related information to be used at local level. Its ultimate goal was to inform

decision makers and to offer an updated picture for planning purposes. If consistently repeated, it also provides with trend data that can assist in effectively monitoring the allocation of resources and evaluating the accomplishments and contributions of specific projects to the overall.

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Appendix 2: District Specific Results (Acholi region)

NUMAT LQAS Survey Indicators	Amuru	Gulu	Kitgum	Pader
HIV/AIDS				
% of adults who have ever taken an HIV test	87%	93%	89%	88%
% of adults who have tested for HIV test results in last 1 year	72%	80%	83%	77%
% of adults who have tested and received their HIV test results in last 1 yr	72%	78%	82%	76%
% of adults who know a place to obtain condoms	69%	83%	76%	56%
% of adults who can mention the 3 major ways of HIV/AIDS prevention	55%	62%	83%	50%
% of adults able to reject all the major HIV/AIDS misconceptions	47%	62%	58%	57%
% of adults with comprehensive knowledge about HIV/AIDS	26%	40%	51%	31%
% of adults who know where they can be tested for HIV	96%	98%	97%	95%
ITN & IRS				
% of households with any mosquito net	76%	76%	82%	87%
% of households with treated mosquito net	74%	74%	78%	84%
% of under-5s sleeping under any mosquito net a night before survey	60%	69%	66%	73%
% of under-5s sleeping under a treated mosquito net a night before survey	57%	66%	62%	70%
% of households that were sprayed with insecticide to kill mosquitoes	94%	87%	95%	95%
MALARIA MANAGEMENT				
% of under-5s who had fever in the last 2 weeks preceding the survey	63%	46%	52%	60%
(Of those who had fever): % who received any anti-malarial within 24 hours	44%	36%	57%	37%
(Of those who had fever): % who received ACTs within 24 hours	31%	22%	44%	26%
REPRODUCTIVE HEALTH				
% of pregnant women attending ANC at least once during last pregnancy	98%	100%	99%	99%
% of pregnant women attending ANC at least 4 times	38%	45%	50%	56%
% of women receiving two or more doses of IPT	72%	74%	75%	72%
% of deliveries (in the last 2 years) that took place in a health facility	58%	76%	82%	67%
% of women 15-49 years currently using modern family planning methods	33%	37%	33%	19%
PMTCT				
% of women who were offered an HIV test during ANC in last 2 years	94%	99%	99%	95%
% of women tested for HIV during ANC in last 2 years	94%	99%	96%	95%
% of women tested and received their HIV test results in last 2 years	92%	96%	93%	94%
% of women tested, received and disclosed their results to their partners	87%	91%	91%	90%
% of partners who tested	67%	49%	79%	74%

Appendix 3: District Specific Results (Lango region)

NUMAT LQAS Survey Indicators	Amolatar	Apac	Dokolo	Lira	Oyam
HIV/AIDS					
% of adults who have ever taken an HIV test	79%	62%	74%	77%	71%
% of adults who have tested for HIV test results in last 1 year	67%	48%	64%	59%	58%
% of adults who have tested and received their HIV test results in last 1 yr	65%	46%	62%	58%	57%
% of adults who know a place to obtain condoms	74%	59%	63%	69%	53%
% of adults who can mention the 3 major ways of HIV/AIDS prevention	70%	45%	59%	45%	48%
% of adults able to reject all the major HIV/AIDS misconceptions	43%	33%	45%	47%	41%
% of adults with comprehensive knowledge about HIV/AIDS	31%	14%	28%	24%	24%
% of adults who know where they can be tested for HIV	96%	89%	93%	92%	91%
ITN & IRS					
% of households with any mosquito net	89%	89%	95%	49%	84%
% of households with treated mosquito net	88%	85%	95%	48%	82%
% of under-5s sleeping under any mosquito net a night before survey	76%	76%	90%	39%	77%
% of under-5s sleeping under a treated mosquito net a night before survey	75%	73%	87%	38%	75%
% of households that were sprayed with insecticide to kill mosquitoes	2%	92%	2%	2%	88%
MALARIA MANAGEMENT					
% of under-5s who had fever in the last 2 weeks preceding the survey	51%	37%	61%	47%	39%
(Of those who had fever): % who received any anti-malarial within 24 hours	61%	49%	56%	44%	62%
(Of those who had fever): % who received ACTs within 24 hours	34%	27%	30%	29%	33%
REPRODUCTIVE HEALTH					
% of pregnant women attending ANC at least once during last pregnancy	98%	100%	98%	100%	100%
% of pregnant women attending ANC at least 4 times	37%	39%	57%	54%	51%
% of women receiving two or more doses of IPT	59%	59%	69%	68%	77%
% of deliveries (in the last 2 years) that took place in a health facility	50%	55%	42%	58%	63%
% of women 15-49 years currently using modern family planning methods	29%	30%	32%	28%	25%
PMTCT					
% of women who were offered an HIV test during ANC in last 2 years	87%	80%	80%	81%	92%
% of women tested for HIV during ANC in last 2 years	85%	77%	77%	79%	90%
% of women tested and received their HIV test results in last 2 years	83%	71%	76%	74%	89%
% of women tested, received and disclosed their results to their partners	80%	65%	74%	74%	84%
% of partners who tested	63%	41%	62%	47%	57%