



LQAS HOUSEHOLD SURVEY AWERIAL IDP SETTLEMENT 2014

Lakes State, Republic of South Sudan

Government of the Republic of South Sudan, Humanitarian Innovation Fund and the Liverpool School of Tropical Medicine (LSTM).

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CONTENTS

Contents	3
List of Tables and Figures.....	5
List of Abbreviations	6
Acknowledgements	7
Executive Summary	8
Introduction.....	10
Background to the Survey.....	10
Aim and Survey Objectives	12
Sample and Survey Methodology.....	12
LQAS Sample Design	12
Target Groups and Survey Indicators	14
Survey Questionnaires.....	14
Ethical Approval.....	15
Interview Locations, Household and Respondent Selection	16
Training and Fieldwork	17
Data Processing and Analysis.....	19
LQAS survey findings	19
Summary of Indicators: Aerial IDP Settlement	21
Demographic Characteristics of Respondents.....	29
Living Conditions and Violence	29
Food Support	30
Material and Psycho-social Support	30
Antenatal Care	30
Tetanus toxoid Injection	31
Intermittent Preventative Treatment (IPT)	32
PMTCT.....	32
HIV Testing.....	33
institutional delivery.....	34
Umbilical Cord Care	35
Postnatal Care.....	35
Infant Feeding and Complementary Feeding Practices	36
Contraceptive Use	37
Vitamin A Supplementation	37

Childhood Immunization	37
Water and Sanitation.....	39
Use of Improved Water Sources.....	39
Hand Washing Practices	39
Use of Improved Sanitation Facility.....	40
Diarrhoea, Fever, and Suspected Pneumonia	41
Prevalence of Diarrhea, Suspected Pneumonia and Fever.....	41
Care Seeking Behavior for Diarrhea, Suspected Pneumonia and Fever	42
Diarrhoea Case Management.....	43
Malaria Case Management.....	43
Suspected Pneumonia Case Management	44
Knowledge of Danger Signs of Diarrhoea, Malaria and Pneumonia.....	46
LLIN Ownership and Use.....	46
CONCLUSIONS	49
RECOMMENDATIONS	49
REFERENCES.....	51
Annex 1: A Detailed Description of LQAS	52
Annex 2: LQAS Survey Indicators.....	53
Annex 3: Data Collection Teams	57
Annex 4: Findings by Supervision Area.....	58

List of Tables and Figures

Table 1	Survey Locations by Supervision Area	13
Table 2	Survey Universes by Group of Respondents	16
Figure 1	Proportion of mothers of children 0-11 months attending Antenatal Care during last pregnancy	28
Figure 2	Proportion of mothers of children 0-11 months who identify all means of MTCT of HIV, Know the risk of MTCT and identify at least two ways of preventing MTCT of HIV	30
Figure 3	Proportion of mothers of children 0-11 months who took an HIV test at ANC and received the test result	31
Figure 4	Proportion of mothers of children 0-11 months who gave birth in a health facility and received postpartum check-up in first 6 weeks after delivery	32
Figure 5	Proportion of children 12-23 months fully immunized before their first birthday	35
Figure 6	Proportion of households with a designated place for hand washing where water and soap are present and household heads who know at least 4 critical moments to practice hand washing with soap	37
Figure 7	Prevalence of Diarrhea, Pneumonia and Fever in the last two weeks preceding the survey	39
Figure 8	Proportion of children 0-59 months with diarrhea, or fever or pneumonia in the last two weeks whose mother sought and received treatment from appropriate provider of children 0-59 months	41
Figure 9	Proportion of households who own at least one LLIN and mothers and children 0-11 months who slept under a LLIN the night preceding the survey	43

List of Abbreviations

ACT	Artemisinin-based Combination Therapy
ANC	Antenatal Care
CA	Catchment area
CHW	Community Health Worker
DG	Director General
DIP	Detailed Implementation Plan
HIF	Humanitarian Innovation Fund
IP	Implementing Partner
IDPs	Internally Displaced Persons
IPT	Intermittent Preventive Treatment
LATH	Liverpool Associates in Tropical Health
LQAS	Lot Quality Assurance Sampling
LSTM	Liverpool School of Tropical Medicine
LLIN	Long Lasting Insecticide Net
MOH	Ministry of Health
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organization
NSP	National Strategic Plan
PHC	Primary Health Care
PMTCT	Prevention of Mother to Child Transmission
PPS	Probability Proportionate to Size Sampling
SA	Supervision Area
SMOH	State Ministry of Health
WB	World Bank
WHO	World Health Organization

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We feel confident that the information from this report will be effectively used by decision makers to improve health status in Awerial IDP settlement.

During humanitarian crises the performance and impact of health interventions are usually monitored by routine reports and measures of mortality and morbidity, followed by specific actions and blanket interventions to identify and then control the situation. This approach often assumes that health seeking behaviour and the needs of the population are uniform across the refugee or IDP community. For more robust data, organisations regularly use complex methods such as cluster sampling surveys, which require significant resources and time.

Using a small sample LQAS survey in an IDP settlement in South Sudan, this project planned to identify areas in the camp where there was a need for intensifying efforts and care, but at a much more reasonable cost than more conventional survey methodologies. Plus, the results would be available at a much faster rate than more complex surveys. The final result should contribute to an improvement in care to IDPs by allowing stakeholders to provide services based on more firm evidence.

South Sudan is a fragile state recovering from a 20 years' conflict which received its independence in 2011. In December 2013, inter-ethnic violence broke out throughout the country resulting in the displacement of thousands of people. Many of them crossed the Nile from Jonglei state into Awerial county, Lakes state, where an unplanned IDP settlement was quickly established. The provision of health services in Awerial is the task of Lakes state MOH, who were quickly overwhelmed by the large number of IDPs, and so numerous NGOs and other partners were recruited, each often operating in selected areas of the settlement. Previous evidence has shown that access to services and health behaviour by refugees and IDPs are by no means uniform, even in small camps. So it was felt imperative that a survey methodology be adapted to provide results in real time that would also be less expensive than other types of surveys. Lot Quality Assurance Sampling (LQAS) would fulfil these criteria.

Following standard LQAS survey methodology and discussions with Lakes state MOH, the IDP settlement area was subdivided into six non-overlapping supervision areas (SA), each corresponding to a zone under a paramount chief, and used for planning health care services and food distribution by various UN organisations and NGOs. Achievement of targets for various indicators would be determined for each indicator and an average coverage for the whole IDP area could then be determined by pooling the results from all SAs. Six teams of data collectors (one per SA) were trained over five days and then spent six days in the field collecting data at nineteen interview locations for each SA, which were selected randomly using Probability Proportionate to Size Sampling (PPS).

The LQAS household survey measured an important set of core indicators, defined as per national and international standards, to assess knowledge, practice and accessibility to health services by the following six targets groups:

1. Mothers of children 0-11 months.
2. Mothers of children 12-23 months.
3. Household heads
4. Mothers with children 0-59 months with fever in the previous two weeks.
5. Mothers with children 0-59 months with diarrhoea in the previous two weeks.
6. Mothers with children 0-59 months with suspected pneumonia in the previous two weeks.

The indicators being measured were classified under antenatal care, delivery and postnatal care, childhood immunisation, water and sanitation, prevalence of major childhood illnesses, HIV/AIDS in mothers, as well as the state of general living conditions, material support and food supply.

For all the agreed survey indicators, two levels of analysis were done. The first was a classification at the SA level to identify poorly performing SAs, which would be those in most need of support. This classification was done by setting a decision rule according to weighted catchment area average coverage, below which an SA would be classified as not reaching the catchment area average coverage for that indicator. The second level of analysis aggregated the results of all the SAs in the catchment area to reach a coverage estimate for the whole IDP settlement.

The results of the survey showed that average coverage for the chosen health indicators were very wide-ranging, sometimes mirroring those seen in national surveys and the routine health management information system (HMIS), but also some were above or below the national averages. As expected, coverage was above average for indicators requiring easy access to a health facility of some kind since these were more numerous in the area due to the emergency situation. These included indicators such as first ANC visit, tetanus toxoid injections for pregnant women, delivery in a health facility and/or by skilled birth attendant, vaccination coverage for children, and health seeking behaviour by mothers with sick children. However, within these overall coverages there were under performing SAs, indicating areas of the settlement that were not receiving the same standard of care as other areas. SA3 in particular was often below the decision rule target for a number of indicators, which it would be appropriate for the SMOH and partners in this area to investigate further.

The coverage of childhood immunisation was generally above the national averages, which also should not come as a surprise since vaccination coverage is one of the major inputs for organisations dealing with humanitarian emergencies and so immunisation in the area is not solely reliant on the routine EPI. The same goes for health seeking behaviour since so many health providers are established in a relatively small area, especially compared with the situation many of the IDPs faced back home in Jonglei state.

Surprisingly, the number of children who received ORS for diarrhoea was well below the national average (56% as opposed to 79% in the 2013 HMIS and 72% in the 2013 rapid health facility assessment), as was the proportion of mothers who could correctly demonstrate the preparation of ORS. These particular results indicate a general failing in health care provision and warrant further investigation by the specific providers in the areas they operate in. Correct treatment for malaria was another indicator which fell below the national coverage, although this may be due to the fact that many of the NGOs do not follow the national guidelines for treatment options. Fortunately, LQAS can help pinpoint which particular areas are underperforming in these indicators so that remedial action can be focused in these areas by the respective humanitarian organisation.

As well as SAs that consistently score below average, there were also one or two which seemed to regularly score above average. However, no one SA was consistently better or worse than any other, often painting a confusing picture with good scores for areas such as ANC, childhood vaccination and material support, but performing relatively poorly for HIV services and sanitation. Further in depth analysis of the results should be able to provide health care providers in Awerial county with very useful information as to what aspects of their services are not working well in the particular area they serve, and where they need to improve. This is probably the major strength of the LQAS method used in this project.

INTRODUCTION

BACKGROUND TO THE SURVEY

South Sudan is a fragile, post-conflict state recovering from over twenty years of war. In December 2013 conflict erupted again throughout the country resulting in the displacement of an estimated one million people. Many of these Internally Displaced People (IDP) crossed the Nile from Jonglei state, one of the states most affected by fighting during the crisis, and are currently hosted across the river in Awerial County, Lakes State. There, a network of humanitarian agencies and non-governmental organisations (NGOs) are responsible for the basic needs of the IDPs, in coordination with the Lakes State Ministry of Health (SMOH) and the County Health Department (CHD) of Awerial County.

During humanitarian emergencies, agencies working with refugees and IDPs monitor the impact of the health interventions they deliver using a combination of routine reports and estimates of mortality and morbidity. These are then usually followed by blanket interventions, such as mass immunisation, for the IDP/refugee area as a whole. These types of actions work on the assumption that access to, and utilisation of health care, as well as health seeking behaviour and quality of services in the area are uniform. Furthermore, the

assumption is that measures of morbidity (mainly of communicable diseases for epidemic detection and control) and mortality, are an appropriate marker to alert agencies about impending health problems such as outbreaks of communicable disease (e.g. cholera or measles). However, none of these actions is particularly useful for uncovering poor performance of health agencies or the reasons for low uptake of specific health services by the affected population, and usually by the time the number of deaths reaches crisis levels it's too late. There is therefore, a "reactive" culture to control the situation rather than "action" to provide services adapted to the population needs and prevent health problems breaking out in the area occupied by the refugees/IDPs and their host population.

The current health monitoring systems for refugees and IDPs have a number of flaws. Firstly, by nature refugee camps especially are known to shelter diverse, heterogeneous populations so their health seeking behaviour is unlikely to be uniform. Secondly, large refugee camps or IDP settlements tend to exceed the basic capacity of agencies working on the ground and, therefore, the access and utilisation of services is likely to vary between different areas of the camp resulting in low coverage for preventive services in some sections. In addition, for certain basic services such as water provision, a first come first served basis is the norm. And finally, the priorities of refugees/IDPs may be diverse and hence their participation in health education or health promotion activities unpredictable.

When there is a need to measure actual performance of health services most organisations use cluster surveys which are usually reserved for situations when the IDPs/refugees are living among the host community. Cluster surveys are complex, often expensive, and require considerable resources and time before results yielding useful information can be provided.

The lack of information in real time results in blanket interventions that may improve the situation at high cost, or temporarily, as the root of the problem may not be known and target interventions cannot be planned. Valuable resources are "wasted" when targeted solutions could have been identified earlier to adapt health services accordingly. Additionally, any routine health information system in the camps or settlements usually operates in parallel with the host country's Health Management Information System (HMIS) and does not allow the MOH to monitor the activities of agencies providing health services to refugees and IDPs. Any information collected by agencies working in the settlement is often not collected using the MOH's HMIS format and so cannot be included in the national database of the MOH. This information is therefore unavailable for planning, which is vitally important when donors and agencies reduce support, and the host country has to provide health care to a population which is likely to remain in the area for a protracted period of time.

In two recent pilot studies supported by LSTM amongst refugees in two camps in Unity and Upper Nile states of South Sudan, the results showed that access to services and health behaviour are by no means uniform even in relatively small camps with service provision

and performance unlikely to be identical. Based on these results LSTM proposed to apply Lot Quality Assurance Sampling (LQAS) methodology to assess in real time, the health status of populations in refugee camps/IDP settlements, and provide real time information to agencies so that they may adapt and improve health services.

Aim and Survey Objectives

The original aim of the study was to provide information on the state of health care services amongst refugees in a long established camp run by UNHCR at Yida, in Pariang County, Unity state. However, following the outbreak of fighting on December 15th 2013 that affected most of South Sudan, Unity state was deemed too dangerous to undertake a survey, so with assistance from the MOH, it was decided instead to move the study to Awerial county, Lakes state, where thousands of IDPs had taken refuge from across the Nile in Jonglei state, which like Unity, had suffered the most unrest since December 15th.

The revised objectives of the study were to:

1. Investigate the use of the LQAS methodology for providing valuable data about the health status, knowledge, health seeking behaviour and coverage of health services in IDP settlements.
2. Conduct a household survey using LQAS methodology to assess knowledge, practice, access, utilisation and health seeking behaviour of IDPs living in Awerial county IDP settlement camp, Lakes state, South Sudan.
3. Provide recommendations to the Ministry of Health and health partners based on real-time data on health service coverage of humanitarian action in Awerial state.
4. Build capacity in monitoring and evaluation within the MOH, Lakes state MOH and other relevant stakeholders involved in provision of health care to the IDP and refugee populations currently in South Sudan.

SAMPLE AND SURVEY METHODOLOGY

LQAS SAMPLE DESIGN

Lot Quality Assurance Sampling (LQAS) is a method for assessing a program by analysing the data produced by a small sample. It was developed in the 1920s for industrial quality control, then adapted in the mid-1980s to assess health programs (MEASURE, Evaluation et al. 1998; Valadez 1991). LQAS works by subdividing a program catchment area into smaller areas that deliver health services, the Supervision Area (SA). A catchment area (CA) consists of a minimum of four SA, although five or six is preferred and was used for this survey.

Typically, LQAS uses a sample size of 19 individuals from each SA. In the case of 5 SA, this results in a sample of 95 respondents from each universe for the entire CA. By combining data from 5 SAs, the LQAS methodology can determine coverage proportions of the entire catchment area with 95% Confidence Intervals of >+10% for multiple indicators. In addition to this, LQAS decision rules can identify SAs that perform below the CA average coverage or pre-selected targets. These areas are then prioritised. Appendix 1 shows a detailed statistical description of LQAS.

This LQAS Household Survey was carried out at the recently created IDP settlements in Awerial County, Lakes State. The IDP settlements in Awerial was divided into six non overlapping Supervision Areas (SAs): five in Mingkaman and one in Kalthok in Puluk Payam.

The division of the Awerial IDP settlement catchment area into SAs was made by NMOH and Lakes State Ministry of Health (SMOH) senior staff in conjunction with local authorities from Awerial County. They identified the name of each particular location and grouped them by SA. The division of SAs was discussed with the Lakes SMOH Director General and other local authorities who agreed with this definition. They took into consideration that each SA had programmatic sense for health program managers.

Each SA was delineated to be under the jurisdiction of a paramount chief. The IDP settlement in Mingkaman was delineated into six such sections used for programming by the World Food Programme (WFP), UNICEF, UNHCR, WHO, Oxfam and other NGOs. However, the population in two of the Mingkaman sections were considered too small to stand alone as SAs and were combined into one SA for LQAS purposes. Thus, the six sections became five SAs. An additional section (SA) Kalthok makes up the IDP settlement in Awerial county.

In summary, each SA is represented by a group of locations where the IDPs are located, while the six SAs as a whole will represent the Awerial IDP settlement catchment area. Table 1 shows the locations that conform each of the six SAs:

Table 1: Survey Locations by Supervision Area

Supervision Areas	Survey Locations
Supervision Area 1	Plan Centre, Anyang Jool Centre, Kuac Ayor Riak Centre, MSF New Site Centre
Supervision Area 2	John Garang Street Centre, SPLM/A Centre, CCM PHCC Centre, White Nile Hotel Centre, Marial Nyilueth Aber Centre, Panhial (1) Centre (highland, Panhial (2) Centre, Ahoou IMC OPD Centre
Supervision Area 3	Whole life Centre, Gai Deng Centre/Chuok-Rotbur), Ahoou IMC OPD Centre
Supervision Area 4	ICRC Centre, Water Bladder (1), Isaac Tuor Abuol, Toker, Boldit, William Amath
Supervision Area 5	SMC Centre. Ayat Centre 16, MSF OPD2 Centre Water Bladder 1, Health link Centre, Mawut Marol Kur Centre
Supervision Area 6	Kal-thok (1) Centre, Kal-thok (2) Centre, Puluk Centre

The Aerial IDP settlement average coverage for each indicator was estimated by pooling results of the respective SAs. Based on the LQAS decision rules, SAs that performed below the Aerial IDP settlement average coverage were identified and treated as priority areas that require special attention.

As per LQAS methodology, the sample size for each target group was 19 per SA. The total sample size for each target group was therefore: $n = 114$ (6 SAs x 19 interviews per SA).

As mentioned above, LQAS allows two levels of analysis. The first is a classification at the SA level to identify priority SAs, those in need of most support. This is done by setting a decision rule using the methodology described in annex 1. The second level aggregates the results of all the SAs in the Catchment Area. The findings for this survey were weighted and a 95% confidence interval calculated. The sample size of 114 interviews per target group means that the confidence interval for the entire catchment area was $\pm 8.2\%$.

Target Groups and Survey Indicators

The LQAS Household Survey measured an important set of core indicators selected by the MOH and stakeholders to assess knowledge, practice and accessibility to health services by the following target groups:

7. Mothers of Children 0-11 months.
8. Mothers of Children 12-23 months.
9. Household Heads
10. Mothers with Children 0-59 Months with Fever in the Last Two Weeks.
11. Mothers with Children 0-59 Months with Diarrhoea in the Last Two Weeks.
12. Mothers with Children 0-59 Months with Suspected Pneumonia in the Last Two Weeks.

Survey respondents must be IDPs who have lived in Aerial IDP settlement after December 15th 2013. People who have lived there longer and were not IDPs were not eligible to be interviewed.

The survey indicators were defined as per national and international standard recommendations. The final list of indicators was revised and approved by the MOH authorities. Appendix 2 presents a complete list of indicators.

SURVEY QUESTIONNAIRES

A questionnaire was developed for each target group to assess their knowledge, practices and health service accessibility. The questionnaires focused on the following modules:

- ANC, delivery and postnatal care
- IPT
- TT injection
- Family planning
- Breastfeeding and complementary feeding
- Childhood Immunization
- Maternal and child Vitamin A
- PMTCT and HIV Testing
- Ownership and use of LLINs
- Care giver knowledge of danger signs in children
- U5
- Care seeking behavior for suspected pneumonia, diarrhea and malaria
- Prevalence of pneumonia, diarrhea and malaria
- Water and sanitation, including water supply, latrine coverage, hand washing practices
- Living conditions and violence
- Food Support
- Material and psychosocial support

LSTM prepared the draft survey questionnaires, which were discussed and pretested with NMOH and SMOH senior staff. The final version was approved by the MOH authorities. Key terms of the final version of questionnaires were translated into Dinka and then back translated into English for Dinka speaking inhabitants.

During the LQAS Trainings, the key terms were discussed with the data collection teams to ensure consensus in their understanding and consistency in its use. Both data collectors and supervisors were required to be fluent in both the local language and English.

As mentioned above, collectively, the questionnaires for all the six types of respondents are referred to as a set of questionnaires.

Ethical Approval

The Ethical Committee at the Ministry of Health for the Republic of South Sudan and the LSTM Research Ethical Committee reviewed and approved the implementation of this LQAS Household Survey. Individual consent was obtained before starting each interview. All potential respondents were asked to participate in the interview and a consent form was read to them in the language that they understood. Respondents were informed that the

survey is a voluntary exercise and they could withdraw at any time or not answer certain questions. The informed consent forms were included as part of the questionnaires. Each interview in this survey was conducted in private and the information collected was treated in the strictest confidential manner.

Interview Locations, Household and Respondent Selection

The 19 interview locations in each SA were selected using Probability Proportionate to Size sampling (PPS). This selection was based on population data provided by MOH and Lakes State MOH senior staff who visited Awerial IDPs settlements.

In each interview location, a starting household was randomly selected using segmentation sampling approach. This works as follows:

- Using landmarks, the sample village is divided into segments containing a roughly equal number of households.
- Each segment is given a number and one of them is chosen at random using a random number table.
- One household is chosen at random using a random number table. This household is not surveyed - the survey team carry out their first questionnaire at the next nearest household (if any of the survey universes is available and willing to take part in the survey).

There may be respondents from more than one target group in the same household. For this survey, one respondent was allowed from group 1 (universes 1-3) and one from group 2 (universes 4-6) (see Table 2 below). For example, a mother with a child 0-11 months could be interviewed in the same household as a child 0 to 59 months with fever in the last two weeks (this was also permitted if the same 0-11 month child was the child who had had fever). However, a child 0-11 months and a child 12-23 could not be combined in the same house, nor a child with diarrhoea in the last two weeks and a child with fever or suspected pneumonia.

Table 2: Survey Universes by Group of Respondents

Group 1	<p>1. Mothers of children 0-11 months</p> <p>2. Mothers of children 12-23 months</p> <p>3. Household Heads</p>
Group 2	<p>4. Mothers of children 0-59 months with fever in the last two weeks</p>

5. Mothers of children 0-59 months with diarrhoea in the last two weeks
6. Mothers of children 0-59 months with suspected pneumonia in the last two weeks

The six target groups together make up a set of questionnaires. At each interview location, a set of questionnaires was carried out. Therefore, in each SA 19 sets of questionnaires were completed. After selecting a random starting point, the data collectors moved from household to household until they found a respondent from each target group in the 'set'. Criterion for selecting the next household was the next nearest door. The data collector continued from house to house until the whole questionnaire set had been completed. This procedure is known as "Parallel Sampling".

TRAINING AND FIELDWORK

A five-day-LQAS training workshop was conducted by LSTM to train 18 participants: 12 interviewers, 4 SMOH Supervisors and 2 MOH M&E staff (See Appendix 3).

The training was based on the "Assessing Community Health Programs" publications: a) A Trainer's Guide; and b) A Participant's Manual and Workbook. The training covered the following:

- Uses of surveys
- Random sampling
- Using LQAS sampling for surveys
- Selecting interview locations using PPS
- Selecting households and respondents
- Field practical for numbering and selecting households
- Reviewing the survey questionnaires and interviewing skills
- Field practical for selecting households, selecting respondents and interviewing
- Preparation of data collection plans

Six data collection teams were formed. Each SA team consisted of two interviewers, who were responsible for completing 19 sets of interviews in their respective SA. Three SMOH supervisors and two NMOH supervisors supervised the data collection process in the field. The data collection teams were selected by the Lakes State MOH Director General of Health.

The data collection process took place between 11th and 16th August 2014, over a period of 6 days. Supervision of survey activities was critical to assure good quality data. LSTM, MOH and SMOH staff supervised and provided technical support during the survey

implementation to ensure an adequate random selection of households and respondents, and a correct administration of questionnaires in each SA.

Data Processing and Analysis

The data manager and survey supervisors cross checked and verified the data gathered for validity and accuracy. The database was handled by MOH M&E staff and LSTM. Double data entry was carried out for all of the questionnaires using CSPro software. Data was cleaned using an automated program to correct errors, referring to the questionnaires as and when needed.

For all the agreed survey indicators, two levels of analysis were used. The first was a classification at the SA level, to identify priority SAs, (those in need of most support). This was done by setting a decision rule according to weighted catchment area average coverage. The second level aggregates the results of all the SAs in the catchment area. As stated above, the results were weighted with the population size of each SA and a 95% confidence interval calculated.

The MOH in conjunction with LSTM will present the LQAS Survey findings to stakeholders. We are confident that the information from this report will be effectively used to plan and implement activities and strategies to improve the health status in Awerial IDP settlements.

LQAS SURVEY FINDINGS

The major findings of this assessment are presented below, along with brief commentary. These findings show coverage point estimates with the respective confidence intervals for the Awerial IDP settlement as a whole. Appendix 4 presents survey findings by Supervision Area, where priority indicators can be easily identified for each of them.

Summary of Indicators: Awerial IDP Settlement

		Coverage	95% Confidence Interval		
<i>Living conditions and violence</i>					
1	Proportion of Households registered as displaced in Awerial	81.8%	71.7%	-	91.8%
2	Proportion of female-headed Households	73.2%	62.3%	-	84.1%
3	Proportion of Households living in a tent	2.2%	0.0%	-	4.8%
4	Proportion of Households living in a plastic shelter	94.9%	91.2%	-	98.5%
5	Proportion of Households with family members who went missing during displacement (dead/ injured/ abducted/ left with family members/ lost during displacement)	33.0%	21.5%	-	44.4%
6	Proportion of Households with at least a family member affected by any type of disability (e.g. no sight, no hearing, cannot walk, psychological trauma)	14.5%	6.8%	-	22.3%
7	Proportion of Households with at least one family member who needed health attention due to violence/ injuries since arrival in Awerial	5.6%	0.2%	-	11.0%
8	Proportion of households heads who would seek advice or treatment at health facility in case any of their family members fall sick	96.7%	94.5%	-	99.0%
<i>Food support</i>					
9	Proportion of Households who have received a food ration card since arrival in Awerial (card seen)	96.3%	91.5%	-	100.0%
10	Proportion of Households who received food support during last month in Awerial	89.2%	83.1%	-	95.3%
<i>Material and psycho-social support</i>					

11	Proportion of Households who received material support since arrival in Awerial	72.2%	61.5%	-	82.9%
12	Proportion of Household heads who reported that their family members received psycho-social support since arrival in Awerial	17.5%	10.8%	-	24.3%

Antenatal care

13	Proportion of mothers of infants 0-11 months who attended at least one ANC visit during their last pregnancy	88.0%	80.7%	-	95.3%
14	Proportion of mothers of infants 0-11 months who attended at least four ANC visits during their last pregnancy	16.2%	7.5%	-	25.0%
15	Proportion of mothers of infants 0-11 months who attended their first ANC visit during first trimester of pregnancy	50.4%	38.6%	-	62.2%
16	Proportion of mothers of infants 0-11 months who were attended at least once during last pregnancy by skilled health provider	71.4%	61.1%	-	81.8%

TT Injection

17	Proportion of mothers of infants 0-11 months who received two or more doses of TT during their last pregnancy or 5 doses during life time	68.8%	57.8%	-	79.9%
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Intermittent Prophylactic Therapy

18	Proportion of mothers of infants 0-11 months who received 2 doses of IPT during last pregnancy	25.7%	14.9%	-	36.6%
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PMTCT and HIV testing

19	Proportion of mothers of infants 0-11 months who took a HIV test as part of ANC during their last pregnancy	29.5%	19.9%	-	39.0%
20	Proportion of mothers of infants 0-11 months who took a HIV test as part of ANC during their last pregnancy and received their test result.	24.3%	16.8%	-	31.8%

21	Proportion of mothers of infants 0-11 months who know that HIV can be transmitted from an infected mother to her baby	24.1%	16.6%	-	31.6%
22	Proportion of mothers of children 0-11 months who correctly identify all three means of mother-to-child transmission of HIV	7.5%	1.9%	-	13.1%
23	Proportion of mothers of infants 0-11 months who know that the risk of transmitting the HIV from an infected mother to her child can be prevented	10.3%	5.4%	-	15.3%
24	Proportion of mothers of infants 0-11 months who correctly identify at least two ways of preventing mother to child transmission of HIV	75.9%	68.4%	-	83.4%

Institutional delivery

25	Proportion of mothers of infants 0-11 months who gave birth at a health facility	20.1%	10.7%	-	29.6%
26	Proportion of mothers of infants 0-11 months attended during delivery by skilled birth attendant	21.8%	12.3%	-	31.2%

Umbilical cord care

27	Proportion of mothers of infants 0-11 months who practiced appropriate umbilical cord care after birth	51.8%	40.8%	-	62.8%
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Postnatal care

28	Proportion of mothers of infants 0-11 months who had at least one postpartum check-up during the first 6 weeks after delivery	7.4%	1.7%	-	13.0%
29	Proportion of mothers of infants 0-11 months who report that their infant received postnatal care within the first 6 weeks of childbirth (regardless of place of delivery)	3.3%	0.5%	-	6.1%

Infant feeding

30	Proportion of infants 0-11 months who were put to the breast within one hour of birth	37.7%	26.6%	-	48.9%
31	Proportion of infants 0-11 months who were exclusively breast-fed during the first 6 months of life	70.7%	59.5%	-	81.9%
32	Proportion of children 12-23 months who received foods from at least 4 food groups during the previous day (7 food groups: grains, roots & tubers/legumes & nuts/dairy products/fresh foods/eggs/vitamin A rich fruits & vegetables/other fruits & vegetables)	16.2%	6.5%	-	25.9%
33	Proportion of children 12-23 months who had at least the minimum dietary diversity and the minimum meal frequency (for their age) during the day preceding the survey	2.4%	0.0%	-	7.0%

Contraceptive use

34	Proportion mothers of children 12-23 months who are using a modern method of contraception	1.0%	0.0%	-	2.0%
35	Proportion of mothers 12-23 months who were already pregnant by the time of the survey	19.7%	9.6%	-	29.7%

Vitamin A supplement

36	Proportion of children 12-23 months who received a vitamin A supplement in the last 6 months	42.3%	30.8%	-	53.7%
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Childhood Immunization

37	Proportion of children 12-23 months who have vaccination card (seen or reported)	80.2%	70.3%	-	90.1%
38	Proportion of children 12-23 months who have received BCG vaccine	76.2%	65.5%	-	86.8%
39	Proportion of children 12-23 months who have received DPT1/Penta 1 before their first birthday	80.8%	70.9%	-	90.8%
40	Proportion of children 12-23 months who have received DPT3/Penta 3 before their first birthday	5.8%	0.3%	-	11.3%

41	Proportion of children 12-23 months who have received OPV3 before their first birthday	79.3%	69.0%	-	89.6%
42	Proportion of children 12-23 months who have received measles vaccine before first birthday	67.3%	56.2%	-	78.5%
43	Proportion of children 12-23 months fully immunised before their first birthday	6.4%	0.9%	-	12.0%
44	Proportion of children 12-23 months fully immunized after their first birthday	27.0%	17.1%	-	36.9%

Water supply

45	Proportion of Households using an improved drinking water source	74.8%	67.7%	-	82.0%
46	Proportion of households using an adequate treatment method for drinking water	62.6%	56.2%	-	69.1%
47	Proportion of Households who live within 15 minutes walking distance from main source of drinking water	80.8%	70.6%	-	91.0%

Hand washing practices

48	Proportion of Households with a designated place for hand-washing where water and soap are present (observed by data collector)	12.2%	5.9%	-	18.5%
49	Proportion of Households heads who know at least four critical moments to practice hand washing with soap	98.7%	97.6%	-	99.9%

Sanitation coverage

50	Proportion of Household heads who report that household members usually practice open defecation	37.8%	27.4%	-	48.3%
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51	Proportion of Household heads who report that household members usually use an improved sanitation facility	54.6%	43.8%	-	65.4%
52	Proportion of Household heads who report that household members share the same latrine with other families	55.3%	44.5%	-	66.1%

Prevalence of diarrhoea, suspected pneumonia and fever

53	Prevalence of diarrhoea among children 0-11 months in the last two weeks	28.9%	18.6%	-	39.2%
54	Prevalence of diarrhoea among children 12-23 months in the last two weeks	28.8%	18.7%	-	39.0%
55	Prevalence of suspected pneumonia among children 0-11 months in the last two weeks	24.8%	17.4%	-	32.2%
56	Prevalence of suspected pneumonia among children 12-23 months in the last two weeks	23.3%	14.3%	-	32.4%
57	Prevalence of fever among children 0-11 months in the last two weeks	25.9%	18.5%	-	33.4%
58	Prevalence of fever among children 12-23 months in the last two weeks	39.4%	28.5%	-	50.2%

Care Seeking Behaviour for pneumonia, diarrhoea and malaria

59	Proportion of children 0-59 months with suspected pneumonia in the last two weeks for whom treatment was sought from appropriate health provider	94.5%	91.9%	-	97.1%
60	Proportion of children 0-59 months with suspected pneumonia in the last two weeks who received an appropriate antibiotic (as per national guidelines)	63.7%	53.1%	-	74.3%
61	Proportion of children 0-59 months with fever in the last two weeks for whom treatment was sought from appropriate health provider	94.5%	91.9%	-	97.1%
62	Proportion of children 0-59 months with fever in the last two weeks who were treated with an appropriate antimalarial (as per national guidelines) from an appropriate provider within 24 hours of the onset of symptoms	24.5%	17.7%	-	31.2%
63	Proportion of children 0-59 months with diarrhea in the last two weeks for whom treatment was sought from appropriate health provider	88.7%	82.6%	-	94.9%
64	Proportion of children 0-59 months with diarrhea in the last two weeks who received treatment with ORS	55.6%	44.0%	-	67.1%

65	Proportion of children 0-59 months with diarrhea in the last two weeks who received treatment with ORS and Zinc	25.0%	15.19%	-	34.9%
66	Proportion of mothers of children 0-59 months with diarrhoea in the last two weeks who can correctly demonstrate how to prepare ORS	14.7%	7.7%	-	21.8%

Knowledge of danger signs of diarrhoea, malaria and pneumonia

67	Proportion of mothers of children 0-11 months who know at least two danger signs of diarrhoea	53.8%	42.6%	-	65.0%
68	Proportion of mothers of children 0-11 months who know at least two danger signs of malaria	64.0%	53.0%	-	75.0%
69	Proportion of mothers of children 0-11 months who know at least two danger signs of pneumonia	78.7%	69.0%	-	88.4%

LLIN coverage

70	Proportion of Households that own at least one mosquito net	95.3%	90.4%	-	100.0%
71	Proportion of mothers of children 0-11 months who slept under a LLIN the night preceding the survey	77.9%	68.9%	-	86.9%
72	Proportion of children 0-11 months who slept under a LLIN the night preceding the survey	77.9%	68.9%	-	86.9%

Demographic Characteristics of Respondents

This survey included demographic characteristics from all respondents, including age, marital status and whether the respondent had ever received any schooling. If the respondent had received any schooling, then they were asked to read a sentence to assess literacy.

The four variables for each universe were analysed and there was not much difference in the distributions for any of them. Therefore, all universes were added to present in this section the average score across all universes, which are as follow.

Around 87.4% of respondents had not received any schooling. Only 0.9% of respondents had completed secondary school, compared with 10.4% who had completed primary school. Those respondents who had received any schooling were then assessed for levels of literacy by being asked to read the sentence: "I am going home to cook food". This sentence was also written in major local languages (Dinka and Local Arabic). The data collector would then grade the respondent as being able to read the whole sentence, only parts of it or none at all. Only 2.2% of respondents could read the whole sentence, 3.7% of respondents could read sentence partly and 6.6% of them could not read the sentence at all.

Very few mothers of children were less than 20 years old (10.5%). The majority of mothers (79.4%) were between 20 and 40 years old. The majority of respondents were married (95.2%); and 3.8% of respondents were widowed.

Living Conditions and Violence

About eighty two percent of households in the survey area revealed that they were registered with the authorities as displaced, with SA2 reporting a much lower proportion than the other five supervision areas. However, despite being in the settlement for many months most households (94.9%) were still living under plastic sheeting, with only about 2% provided with a tent. Seventy three percent of households were female-headed – a not uncommon feature of IDP settlements and refugee camps. A third of households (33.0%) reported that one or more family members had gone missing during the displacement and about 15% of households reported at least one family member affected by some sort of disability, including psychological trauma. Fortunately, only a relatively small proportion of households (5.6%) reported having at least one family member who needed some sort of attention due to violence or injuries sustained since arrival in the settlement. Finally, a sizable proportion of household heads (96.7%) said they would seek medical attention if any family member fell sick.

Food Support

Apart from medical support and security, the other most important element for the care of IDPs is the provision of food, particularly for children. And to ensure that food is distributed fairly, then most IDPs are provided with a ration card when registering. During the survey, household heads were asked whether or not they had received a food ration card upon arrival in Awerial IDP settlement. If they responded “yes” to this question, then they were asked to show the respective card. Most of them (96.3%) reported that they had received a food ration card and they were able to produce it. However, only 89.2% of them reported that they had received any food support during the previous month in Awerial, meaning that 7.1% had not received food support during the month preceding the survey.

MATERIAL AND PSYCHO-SOCIAL SUPPORT

Because most IDPs have had to rapidly uproot from their homes due to acts of violence and/or war, a lot of them arrive with only the bare minimum of possessions and a lot of them are under great stress when they reach shelter in rapidly formed settlements. Therefore, it is important that some sort of material and psycho-social support is available, as well general health care. Although 72.2% of household heads reported that they had received some sort of material support since arrival in Awerial settlement, as with tents and food the previous month, only 17.5% of households reported that a family member had received some sort of psycho-social support since arrival in the IDP settlement. However, there was no indication as to whether this covered all those who need psycho-social support or only all those who sought it.

ANTENATAL CARE

The aim of antenatal care is to achieve the optimal health outcome for the mother and the baby. The World Health Organization (WHO) safe motherhood protocol recommends that pregnant women without complications should have at least four Antenatal Care (ANC) visits.

In this survey, mothers of children 0-11 months were asked whether or not they had received ANC during last pregnancy, number of ANC visits during last pregnancy, months of pregnancy during the first ANC visit, and who provided the ANC service? This question was asked to estimate the proportion of mothers of children 0-11 months who were attended at least once during their last pregnancy by skilled personnel (doctor, nurse, or midwife).

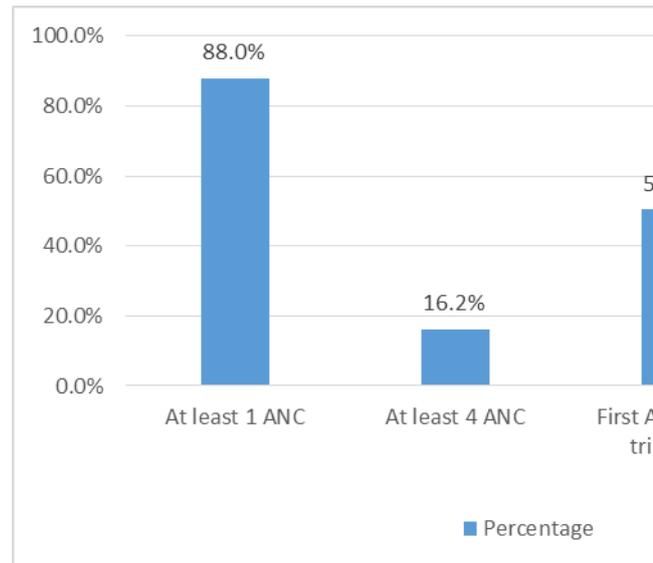


Figure 1: Proportion of mothers of children 0-11 months attending antenatal care during last pregnancy

Initial utilisation of ANC services is relatively high in Awerial IDP settlements, 88.0% of mothers of children 0-11 months attended at least one ANC visit during last pregnancy. Despite the high proportion of mothers attending 1 ANC, only 50.4% of them attended their first ANC visit during first trimester of pregnancy, meaning that almost 38.0% of pregnant women started ANC after the first trimester of pregnancy. In other words, many women in Awerial IDP settlement do not access ANC services during the first trimester of their pregnancy. Figure 1 below illustrates this situation.

The ANC protocol in South Sudan, which is based on the WHO recommendations, calls for a minimum of 4 ANC visits. However, this survey revealed that in Awerial IDP settlement only 16.2% of mothers who go to ANC 1 carry on to ANC 4. Moreover, the survey showed that only 71.4% of mothers of infants 0-11 months were attended at least once during last pregnancy by skilled health provider. This situation shows that mothers are missing an important opportunity to receive other effective services such as TT injections, IPT treatment, counselling and PMTCT, and HIV testing.

TETANUS toxoid Injection

Neonatal tetanus is a leading cause of neonatal death in developing countries where a high proportion of deliveries are conducted at home or in places where hygienic conditions may be poor. Tetanus toxoid (TT) injections are given to pregnant women to prevent deaths from maternal and neonatal tetanus, which can result when sterile procedures are not followed in cutting the umbilical cord after delivery.

In this LQAS survey, TT protection was assessed as the proportion of mothers of infants 0-11 months who have had two TT injections in their last pregnancy, or five during life time.

LQAS survey findings show that 68.8% of mothers of infants 0-11 months received two or more doses of TT during their last pregnancy or had life time immunity. As mentioned above only 16.2% of mothers of children of 0-11 months attended at least four antenatal care visits; which suggests that opportunities to vaccinate pregnant women are being missed in Awerial IDP settlement.

Intermittent Preventative Treatment (IPT)

In South Sudan, the strategy of Intermittent Preventative Treatment (IPT) for prevention of malaria during pregnancy has been implemented since 2006. IPT is currently defined as having taken at least two treatment doses of an effective antimalarial drug during routine antenatal care visits starting from the second trimester and a month apart. Recent policy recommendations from the WHO point to benefits of more than two doses of IPT for prevention of malaria during pregnancy, including at each ANC visit from the second trimester of gestation (WHO 2012).

In South Sudan, Sulfadoxine-Pyrimethamine (SP), also known as SP Fansidar, is currently the recommended drug for IPT. The main purpose of this intervention is to put 100% of all pregnant women on IPT by 2015. IPTp is being implemented by the Ministry of Health in all public health facilities, faith-based facilities, and private health facilities.

In this survey, mothers of children 0-11 months were asked whether they took any medicine during their last pregnancy to prevent getting malaria. The survey also collected information on the number of doses of SP/Fansidar taken during last pregnancy.

This survey shows that only 25.7% of the respondents received two or more doses of IPT during their last pregnancy. Therefore, the country has to make extra efforts to achieve the goal of putting 100% of all pregnant women on IPT by 2015.

PMTCT

In this survey, mothers of children 0-11 months were asked if they know that HIV can be transmitted from an infected mother to her baby. They were also asked if they could mention the means of mother to child transmission of HIV. In addition they were asked whether the risk of HIV transmission from an infected mother to her baby can be reduced. If

they responded “yes” to this question, then they were asked to mention the ways of preventing MTCT of HIV.

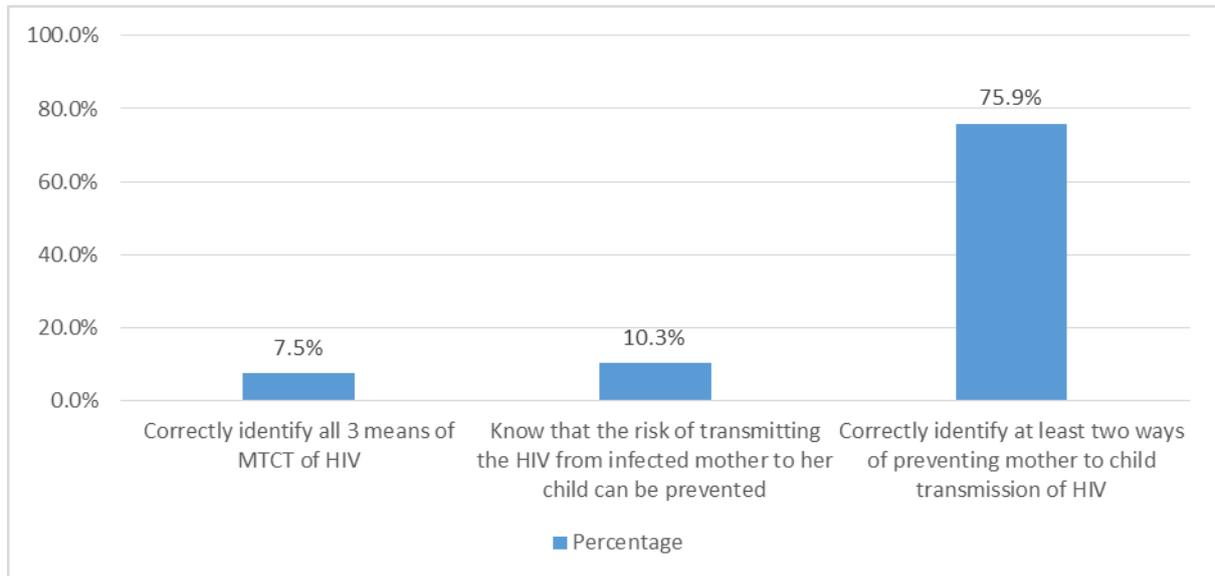


Figure 2: Proportion of mothers of children 0-11 months who identify all means of MTCT of HIV, Know the risk of MTCT and identify at least two ways of preventing of MTCT of HIV

Almost a quarter of the surveyed mothers of infants 0-11 know that HIV can be transmitted from an infected mother to her baby. However, only 7.5% of them were able to cite all three means of mother to child transmission of HIV. Though only 10.3% of the respondents consider that the risk of HIV transmission from an infected mother to her baby can be reduced, three thirds of them (75.9%) were able to mention at last two ways of preventing MTCT of HIV (see figure 2).

HIV TESTING

Knowing one’s HIV status is essential in helping individuals make specific decisions to reduce the risk of contracting and transmitting HIV by adopting safer sex practices.

To assess the coverage of HIV testing services, mothers of children 0-11 months were asked whether they were tested for HIV as part of their ANC during last pregnancy. If they responded that they had been tested for HIV, respondents were asked whether they had received the results of their last test.

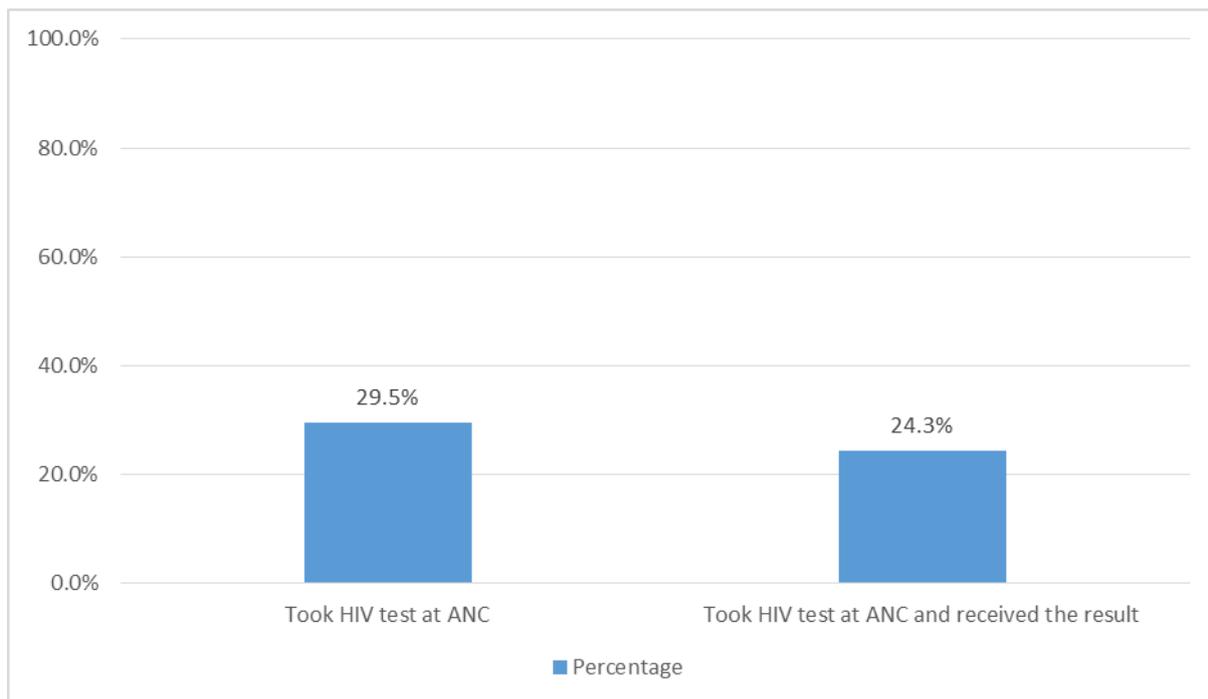


Figure 3: Proportion of mothers of children 0-11 months who took an HIV test at ANC and received the test result.

In Awerial IDP settlements, approximate 30% of mothers of infants 0-11 months took an HIV test as part of ANC during their last pregnancy. However, as shown in figure 3, only 24.3% of them received their test result.

INSTITUTIONAL DELIVERY

Increasing the number of births delivered in health facilities is an important factor in reducing deaths arising from the complications of pregnancy. The expectation is that if a complication arises during delivery, a skilled health care provider can manage the complication and/or refer the mother to the next level of care. In addition to place of birth, assistance during childbirth is an important variable that influences the birth outcome and the health of the mother and infant.

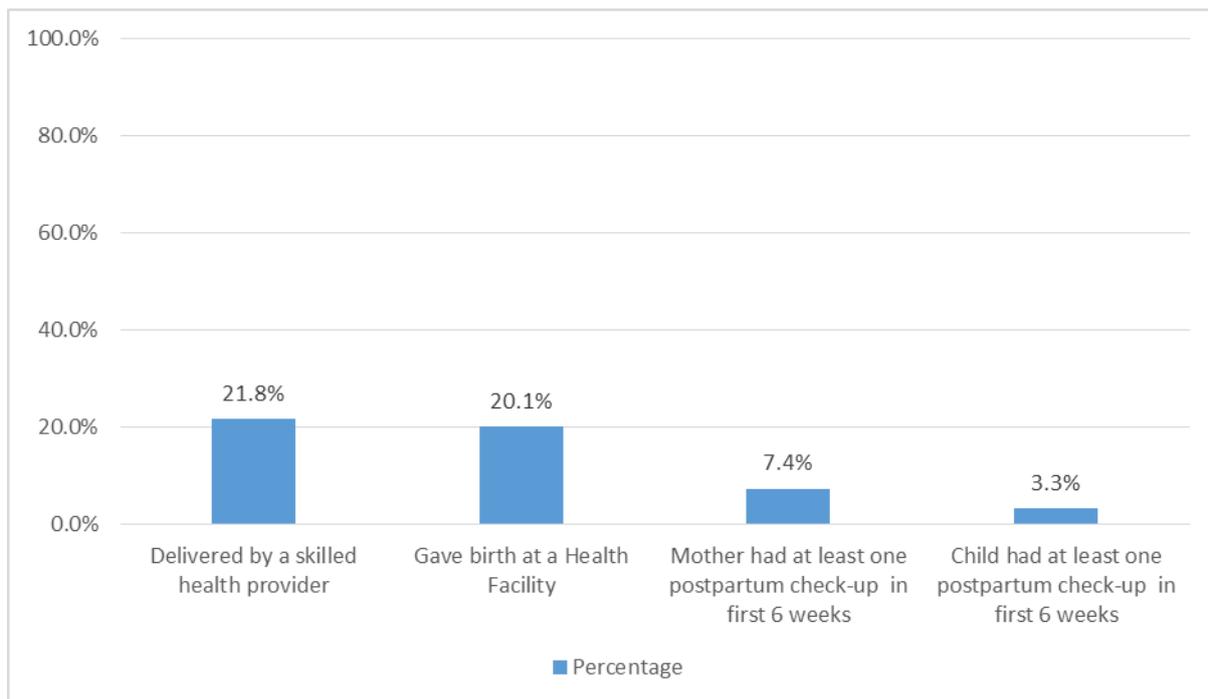


Figure 4: Proportion of mothers of children 0-11 months who gave birth in a health facility and received postpartum check-up in first 6 weeks after delivery

This survey showed that close to one fifth (20.1%) of mothers of infants 0-11 months gave birth at health facility during their last pregnancy, which is related with the low proportion of mothers of infants 0-11 months who attended at least four ANC visits during their last pregnancy (16.2%). Moreover, only 21.8% of mothers of infants 0-11 months were attended by skilled birth attendant during their last delivery. This means that almost 80% of the deliveries were not assisted by qualified staff (see figure 4).

Umbilical Cord Care

Questions to assess appropriate umbilical cord care were asked to mothers of infants 0-11 months, even if she did not deliver at health facility. The survey showed that only 51.8% of mothers of the respondents practiced appropriate umbilical cord care after birth.

Postnatal Care

A large proportion of maternal and neonatal deaths occur during the first 24 hours after delivery. Postnatal care is important for the mother, in checking whether there are

complications arising from the delivery and providing the mother with information on how to care for herself and her child.

In this survey, mothers of children 0-11 months were asked whether they received a postpartum check-up. They were also asked how long after delivery the first check-up took place, who did the check-up (physician, nurse, midwife, TBA, or CHW), and where the first check-up took place. In South Sudan, it is recommended that all mothers receive a postpartum check on their health within seven days of delivery. Subsequent visits are recommended at six days and six weeks.

This survey showed that only 7.4% of mothers of infants 0-11 months received a post natal check-up within six weeks of delivery and only 3.3% of them reported that their infants received a post natal check-up within six weeks of delivery. This means that a much lower proportion of mothers are receiving a post-partum check on their health within six days of delivery. Therefore, actions should be taken to achieve that a significant larger proportion of mothers and infants receive postnatal care as an important way for checking whether there are complications arising from the delivery and providing the mother with information on how to care for herself and her child.

Infant Feeding and Complementary Feeding Practices

Information on infant and child feeding practices was collected in two types of questionnaires (0 to 11 months old, and 12 to 23 months old). The questions used for this survey focused mainly on breastfeeding and complementary feeding practices. They included: initiation of breastfeeding within an hour after birth; exclusive breastfeeding for the first six months of life; feeding frequency and diversity, and a composite indicator minimum acceptable diet.

WHO recommends the initiation of breastfeeding within the first hour of birth while exclusive breastfeeding is recommended for all children under 6 months of age. In this survey, mothers of children 0-11 months were asked to indicate how long after birth it took them to first put their last born baby to the breast. They were also asked some key questions to determine whether or not they had exclusively breastfed their children before reaching 6 months of age. Survey results revealed that 70.7% of infants were exclusively breastfed during the first six months of life. However, only 37.7% of them were put the breast within one hour of birth.

Mothers of children 12-23 months of age were asked what foods they had fed their children in the previous 24 hours and their responses were assessed from a detailed list of nutritious foods on the questionnaire. The survey found that only 16.2% of children 12-23 months had

received foods from at least 4 groups during the previous day and only 2.4% of them received at least the minimum dietary diversity and the minimum meal frequency for their age during the day preceding the survey.

Contraceptive Use

The use of modern methods of contraception is extremely low in Aerial IDP settlements. Only 1% of mothers of children 12-23 months who were not already pregnant reported the use of methods such as condom, pill, IUD, sterilization, diaphragm, injection, or implant. Of the mothers surveyed 19.7% were already pregnant.

Vitamin A Supplementation

Vitamin A supplementation, particularly in resource poor settings plays a critical role in child survival. For countries with Vitamin A deficiency problems, current international recommendations call for high dose Vitamin A supplementation every four to six months, targeting all children between the ages of 6-59 months.

In South Sudan, based on UNICEF/WHO guidelines, the MOH recommend that children aged 6-11 months and 12-59 months be given one high-dose Vitamin A capsule every six months. Vitamin A capsules for children under five years are linked to immunization services and are given when the child has contact with these services after six months of age.

As a proxy indicator, in this survey, Vitamin A supplementation was assessed among children 12-23 months of age to determine the proportion of children who received a dose of Vitamin A supplementation in the last 6 months according to either the vaccination card or mother's recall.

Survey results show that 42.3% of children 12-23 months of age received a dose of Vitamin A supplementation in the last 6 months. This means that less than a half of children 12-23 months are not having access to one of the single most significant and cost effective ways to prevent blindness in childhood.

Childhood Immunization

Immunizations are among the most successful and cost effective public health interventions. Effective immunization programs play a critical role in reducing morbidity and mortality associated with vaccine preventable diseases. In this survey immunization coverage was

assessed for children 12-23 months of age in order to assess the impact of the EPI programme in the Awerial IDP settlement. To be considered fully immunized a child should receive one dose each of BCG and measles and three doses each of polio and DPT before his/her first birthday.

Although most immunizations were reported on the child's health card, verbal verification of immunization by the mother was counted as a correct response. In the first approach mothers or caretakers of children age 12-23 months old were made to provide the child's immunization card and the interviewer copied directly from the card the date on which each vaccine was received. If there was no vaccination recorded on the card or if the child had no health card a further probe was made for the mothers to recall whether the child had

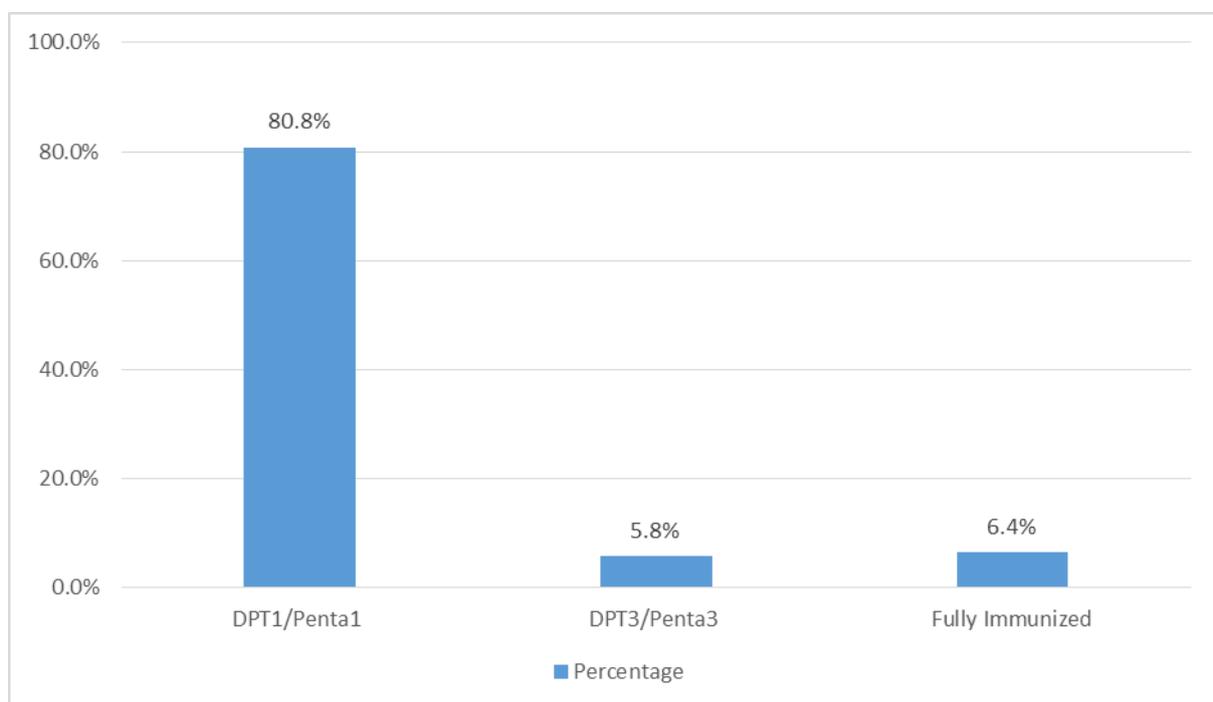


Figure 5: Proportion of children 12-23 months fully immunized before their first birthday.

received each of the recommended vaccinations.

This survey showed that 80.2% of mothers of children 12-23 months were able to show the vaccination card of their child. Moreover, the survey showed relatively high levels of coverage for BCG (76.2%) and DPT1/Penta1 (80.8%). However, the results also revealed that only 5.8% of children 12-23 months received DPT3/Penta3. DPT3 is usually not included in immunization campaigns and therefore, coverage of DPT3 is considered a more stable reflection of the health system's ability to provide routine immunization coverage. This

result is consistent with the extremely low proportion of children 12-23 months who were fully immunized before their first birthday (6.4%) and even with those who were fully immunized after the first birthday (27.0%). However, the coverage of measles vaccination was relatively high, 67.3% of children 12-23 months received measles vaccine before first birthday (see figure 5).

WATER AND SANITATION

The lack of access to and availability of clean water and sanitation affect many aspects of daily life. Areas without adequate supplies of clean drinking water and basic sanitation carry the highest burdens of disease which disproportionately impact children under five years of age. This LQAS survey included questions on access to safe drinking water, access to hygienic sanitation facilities and hand washing practices.

USE OF IMPROVED WATER SOURCES

Safe drinking water is a basic necessity for good health. Unsafe drinking water can be a significant carrier of diseases such as trachoma, cholera, typhoid, and schistosomiasis. Drinking water can also be tainted with chemical, physical and radiological contaminants with harmful effects on human health.

During this survey, the population using improved sources of drinking water were considered those using any of the following types of supply: piped water (into dwelling, compound, yard or plot, neighbour, public tap/standpipe), tube well/borehole, protected well, protected spring and rainwater collection.

On average, 74.8% of households in Awerial IDP settlements use an improved drinking water source and 80.8% of them live within 15 minutes walking distance from main source of drinking water. However, only 62.6% use an adequate treatment method for drinking water. Whilst this is not problematic if households are using improved drinking water sources.

HAND WASHING PRACTICES

Hand washing with water and soap is the most cost effective health intervention to reduce both the incidence of diarrhoea and pneumonia for children under 5 years. It is most effective when this is done by using water and soap after visiting a toilet or cleaning a child, before eating or handling food and before feeding a child.

In this survey, mothers of children 0-11 months of age were asked when they usually washed their hands with soap. Their responses were ticked off when they matched those from a detailed list on the questionnaire. A correct response indicated the mother had mentioned at least two of the critical times in which they normally wash their hands with soap.

Monitoring correct hand washing behaviour at the critical times is challenging. Therefore, this LQAS survey used a reliable alternative to observations or self-reported behaviour to assess the likelihood that correct hand washing practices take place. The data collectors had to observe whether or not the sample household has a specific place where people most often wash their hands, and observe if water and soap are present at a specific place for hand washing.

Though 98.7% of household heads in Awerial IDP settlements know at least four critical moments to practice hand washing with soap, only 12.2% of households had a designated place for hand-washing where water and soap are present (see figure 6).

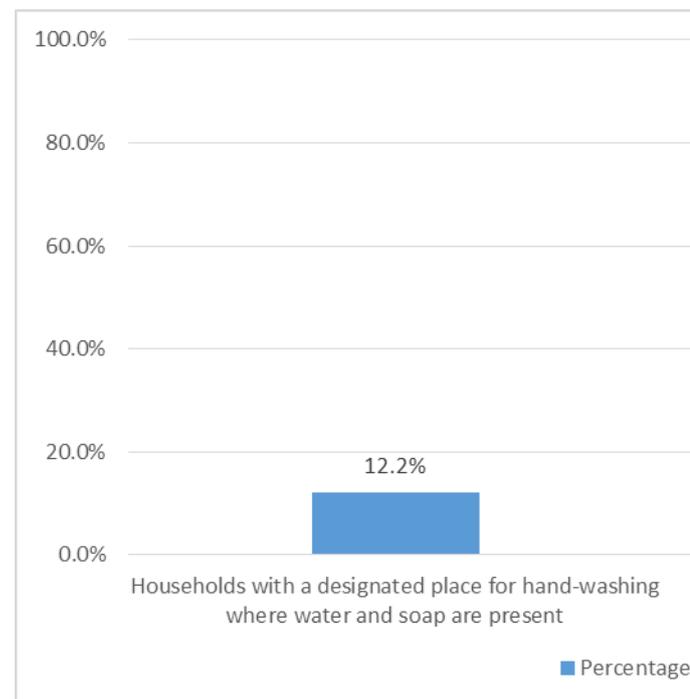


Figure 6: Proportion of households with a designated place for hand washing where water and soap are present and household heads who know at least 4 critical moments to practice hand washing with soap.

USE OF IMPROVED SANITATION FACILITY

An improved sanitation facility is defined as one that hygienically separates human excreta from human contact. Improved sanitation can reduce diarrhoeal disease by more than a third, and can significantly lessen the adverse health impacts of other disorders responsible for death and disease among millions of children in developing countries. Inadequate disposal of human excreta and personal hygiene is associated with a range of diseases including diarrhoeal diseases and polio.

For the purpose of this LQAS survey, an improved sanitation facility for excreta disposal included flush or pour flush to a piped sewer system, septic tank, or latrine; ventilated improved pit latrine, pit latrine with slab, and composting toilet.

In Awerial IDP settlement, almost 38% of household heads reported that household members usually practice open defecation. However, the survey revealed that the use of improved sanitation facilities is still low: only 54.6% of household heads reported that household members usually use an improved sanitation facility. Moreover, more than a half of household heads (55.3%) reported that household members share the same latrine with other families.

In summary, the survey showed that almost three quarters of the households use improved water sources. Though 98.7% of household heads could mention at least four of the most critical moments to wash their hands, hand washing practices were seen to be at low levels; only 12.2% of households had a designated hand washing facility with soap and water, and 54.6% of households are using improved sanitation facility. This suggests that there are specific needs which should be targeted as priorities.

Diarrhoea, Fever, and Suspected Pneumonia

Prevalence of Diarrhea, Suspected Pneumonia and Fever

This LQAS survey revealed that the prevalence of diarrhoea among children 0-11 months (28.9%) was slightly higher than the one for fever (25.9%) and pneumonia (24.8%). Figure 7 presents these results.

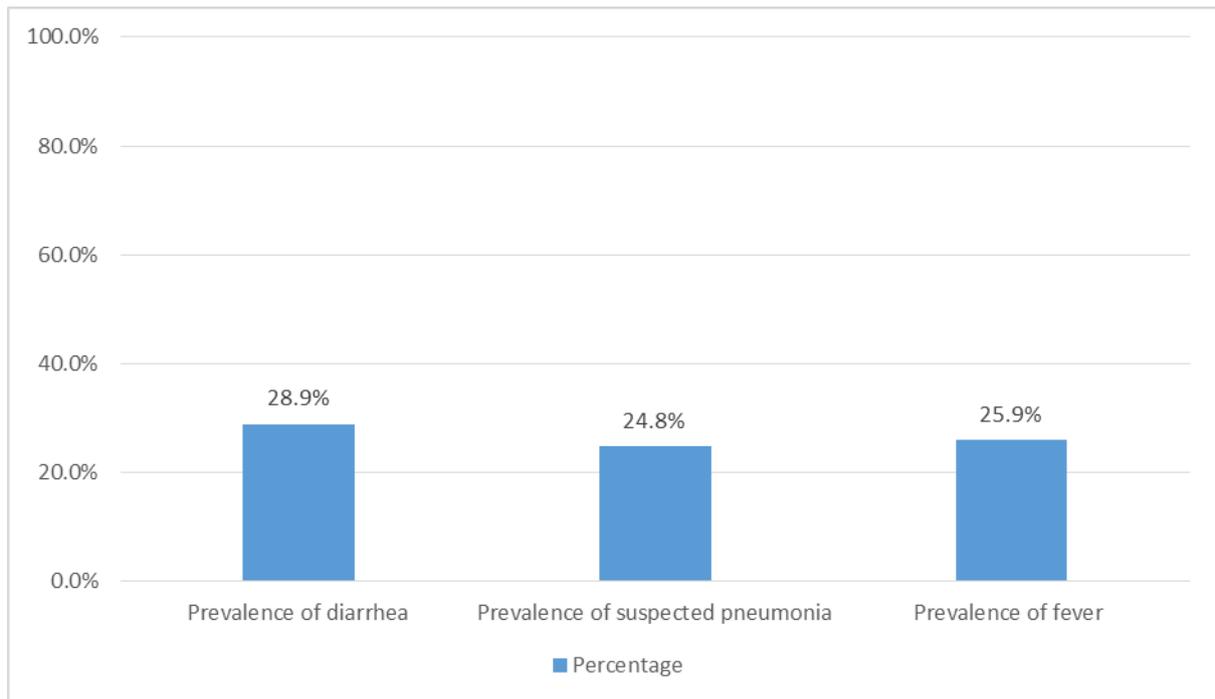


Figure 7: Prevalence of Diarrhoea, Pneumonia and Fever in the last two weeks preceding the survey

Care Seeking Behavior for Diarrhea, Suspected Pneumonia and Fever

Prevention and treatment of diarrhoea, malaria and pneumonia in the under-five-year-age group have been prioritized by the MOH of South Sudan. The mother or care giver must seek appropriate care for the child and the child must receive appropriate care from that care provider. Knowing when to seek care for a sick child does not guarantee a child will receive it.

For the purpose of this LQAS survey, diarrhoea was defined as 3 or more loose or watery stools in a 24 hour period; suspected pneumonia was defined as a child who had cough with fast or difficult breathing, and for whom the caregiver reported that the reason for the fast or difficult breathing was a problem in the chest; fever was taken on the report of the mother or caretaker of children 0-11 months.

Appropriate providers were judged to be any public or private health facility. Inappropriate providers were general stores/shops or herbal/traditional practitioners.

Diarrhoea Case Management

During this survey, mothers were asked whether their 0-11 month-age children had had diarrhoea over the last two weeks preceding the survey. If diarrhoea was reported, the mothers were asked whether they sought advice or treatment for the child at a health facility and what treatment was received.

Thought 88.7% of mothers of children 0-59 months with diarrhoea in the last two weeks sought treatment from an appropriate health provider, only 55.6% of them received treatment with ORS and a much lower proportion of them (25.0%) were treated with ORS and zinc from an appropriate provider. This means that around 63.7% of respondents who sought care from an appropriate provider were not given the national recommended treatment (ORS and zinc) for diarrhoea. The gap suggests that whilst access to appropriate health providers is widespread, access to treatment with ORS and Zinc is still a challenge in Awerial IDP settlement.

Only 14.7% of mothers of children 0-59 months with diarrhoea in the last two weeks were able to correctly demonstrate how to prepare ORS. This is a critical situation because even if the mothers have access to ORS a very few of them know how to prepare it and therefore the risk of morbidity and mortality due to diarrhoea increases.

Malaria Case Management

Mothers of children under five years of age were asked whether their children had had fever over the two weeks preceding the survey. If fever was reported, the mothers were asked whether they sought advice or treatment for the child at a health facility, what type of treatment was taken by the child and whether this was within 24 hours of onset of the fever.

The LQAS survey showed that a very high proportion of mothers with children with fever in the last two weeks (94.5%) sought treatment from an appropriate health provider. However, only 24.5% of them received an appropriate antimalarial (as per national guidelines) from an appropriate provider within 24 hours of the onset of symptoms. This means that 70% of respondents sought care from an appropriate provider, but were not given the appropriate treatment or they did not receive it within 24 hours of the onset of symptoms.

Suspected Pneumonia Case Management

In South Sudan, Acute Respiratory Infection (ARI) is another leading cause of death and morbidity among children under 5 years. Mothers are advised to take children suffering from respiratory distress to a health provider immediately for diagnosis and treatment. In this LQAS survey, mothers of children under 5 years were asked if their child had experienced cough or fast/difficulty in breathing in the two weeks preceding the survey, and if so, what actions were taken.

A very high proportion of mothers with children with suspected pneumonia in the last two weeks (94.5%) sought treatment from an appropriate health provider. However, only 63.7% of them received an appropriate antibiotic (as per national guidelines) from an appropriate provider. This means that around 31.0% of respondents sought care from an appropriate provider, but were not given an appropriate antibiotic.

In summary, prevalence of diarrhoea, fever and pneumonia within the two weeks preceding the survey was reported at around a quarter of all respondents. Overall the three pathologies, the survey showed high levels of care seeking behaviour; around 90.0% or 95.0% of respondents sought care from an appropriate provider when their under-5-year-old child was sick with diarrhoea, fever, or suspected pneumonia. However, it does not necessarily mean that the sick-child is always receiving the appropriate treatment.

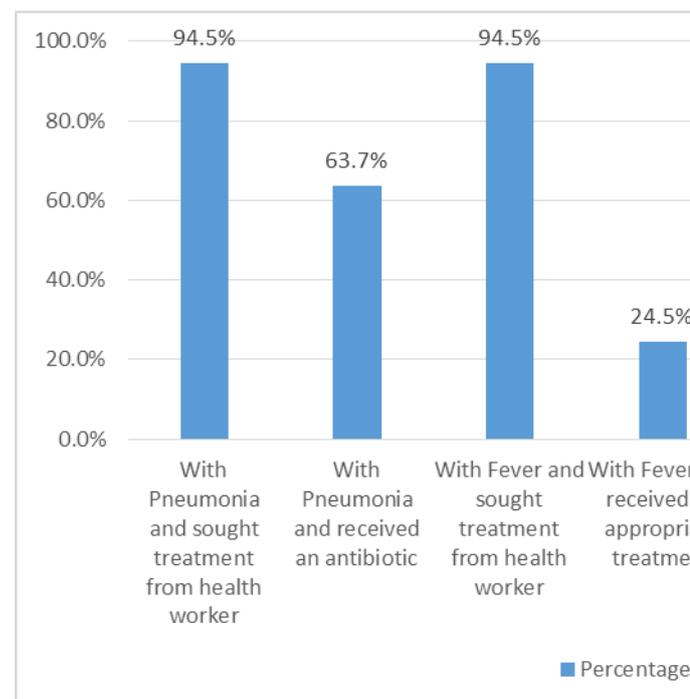


Figure 8: Proportion of children 0-59 months with diarrhoea, or fever or pneumonia in the last two weeks whose mother sought and received treatment from appropriate provider of children 0-59 months

For sick children with pneumonia and fever, 94.5% of respondents sought care for their sick child, while a slightly lower proportion of respondents (88.7%) sought care for their sick child when he or she had diarrhoea (see figure 8). However, only some of them were able to get appropriate treatment:

- 63.7% of children with suspected pneumonia received an appropriate antibiotic (as per national guidelines) from an appropriate provider.
- 66.2% of children with diarrhoea received treatment with ORS and zinc from an appropriate provider.
- 24.5% of children with fever received an appropriate antimalarial (as per national guidelines) from an appropriate provider within 24 hours of the onset of symptoms.

Knowledge of Danger Signs of Diarrhoea, Malaria and Pneumonia

The knowledge of mothers to identify danger signs in their children is crucial in seeking prompt medical attention. In this survey, mothers of children 0-11 months were asked to mention the danger signs that could be observed in children with diarrhoea, fever and pneumonia. A correct answer was judged to be given to these indicators if the respondent could accurately mention at least two danger signs each for these three pathologies (diarrhoea, cough and fever).

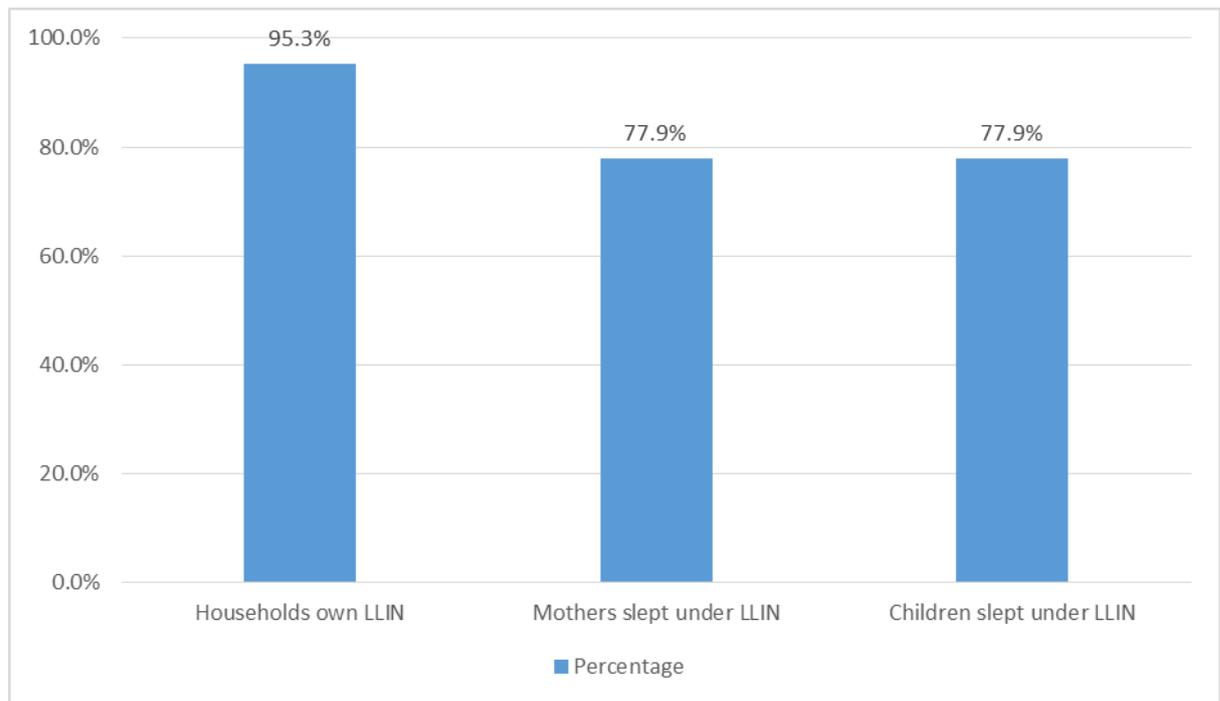
This LQAS survey shows that a higher proportion of respondents are able to recognize at least two danger signs of pneumonia (78.7%) rather than those for fever and diarrhoea. Only 64.0% of respondents could mention at least two danger signs of fever and less than 54% were able to cite at least two danger signs of pneumonia.

LLIN Ownership and Use

In South Sudan, malaria is a major public health problem across the country and the MOH and partners are implementing significant strategies to reduce its consequences at household, community and national level. The use of LLINs is currently considered the most cost-effective method of malaria prevention in high endemic areas, with pregnant women and children under five years as primarily targeted for this method.

In this survey, mothers of children 0-11 months were asked whether they own mosquito nets and, if they responded “yes” to this question, then they were asked to mention the number of mosquito nets available at home.

After determining whether the household had at least one mosquito net, the interviewer asked the respondent if she and her under-one-year-old child had slept under the LLIN the night preceding the survey. The presence of the LLIN, being properly hanging and in good condition, was verified by physical inspection by the survey team. In this way, the survey measured both the proportion of mothers of children under 1 year who had slept under a LLIN the night preceding the survey and the proportion of children under 1 year who had



slept under a LLIN the night preceding the survey.

Figure 9: Proportion of households who own at least one LLIN and mothers and children 0-11 months who slept under a LLIN the night preceding the survey

The results showed that 95.3% of respondents owned at least one LLIN. However, the availability of bed nets at household level does not necessarily mean that recipients are sleeping under the nets. The results revealed that 77.9% of children under one year and their mothers slept under LLIN the night preceding the survey, which means that 17.4% of mothers and children who own at least one LLIN did not sleep under it the night preceding the survey (see figure 9). Therefore, LLIN bed net use still need especial attention in Awerial IDP settlement, as one of the major malaria control and prevention strategies to reduce under-five-years and maternal mortality in South Sudan.

CONCLUSIONS

This extensive survey, using LQAS, to assess the status of the health care services and conditions of IDPs in a settlement in South Sudan has provided useful information on the health status of the population. But probably more importantly it has identified sections of the settlement (supervision areas or SAs in LQAS) where provision of services seem to be lagging behind those in other sections or SAs. For some reason, supervision area 3 seems to have registered the lowest scores more consistently than other areas. These have included low provision of food in the previous month, material and psycho-social support, HIV testing, less deliveries in a health facility, postnatal care, fewer children with pneumonia who received an appropriate antibiotic, fewer children with malaria who received the right anti-malaria treatment, and poor results for most of the indicators for diarrhoea and mothers' knowledge of the use of ORS for diarrhoea. These persistent low coverages indicate that provision of services in this section of the settlement are not as efficient as other areas and warrant further investigation.

It would definitely benefit all agencies providing health care services in the IDP settlement of Awerial county to use the details in Annex 4 to see which particular services are not being provided adequately, or as well as in other supervision areas. These scores would also be of benefit to Awerial county health depart and Lakes state MOH, so that they can monitor health care services being provided by individual stakeholders in the county.

The survey was conducted in a relatively short time, requiring just one week for training of enumerators and a further week for collection of data. Results should therefore be available to health care providers in real time.

RECOMMENDATIONS

- Disseminate the LQAS Survey findings with MOH, SMO authorities, County Health Directors (CHD) and stakeholders working in Awerial IDP settlement and encourage its appropriate use for decision making. Insights and recommendations should be compiled by county/SMOH health staff while reviewing survey findings.
- SMOH DGs and DGDs should intensify efforts in addressing challenges and bridge the gap within Supervision Areas (SAs).
- SMOH DGs and Awerial county staff should analyse contributing factors for both successes and challenges in each SA and to accurately focus the programme activities to improve key indicators.

- Based on the LQAS survey findings, identify programme strategies and activities that need to be adjusted to improve knowledge, practices and access to health services while sustaining efforts to keep a high coverage of key indicators
- Set annual targets for continuous assessment of their own performance and develop a strategic plan to improve the implementation of the programme at the Awerial IDP settlement level.
- The MOH should explore the possibility of using LQAS methodology with its partners implementing health care services to IDPs and refugees.

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ANNEX 1: A DETAILED DESCRIPTION OF LQAS

LQAS classifies Supervision Areas as high or low performance relative to a predetermined target set for an indicator (or in comparison with the average for the indicator for a catchment area). LQAS classifies SAs using a decision rule “d” that optimizes identification of low performance SA. For each SA, a sample of “n” individuals in a client group is evaluated, and a “d” was selected that determines the cut-off number of SA with adequate performance below which the SA is classified as low performance for a specified indicator. The decision rule “d” depends on the sample size, the thresholds for classifying high and low performance, and the selection of two misclassification errors: the probability of misclassifying an area with high coverage as low (α error) and the probability of misclassifying an area with very low coverage as high (β error). SA with intermediate performance are classified as high or low depending on how close they fall to the relevant thresholds. As an example, assume that the target for an indicator (such as measles vaccination coverage) is set at 80%. The upper threshold “ p_U ” is 80% for identifying high (or acceptably) performing SA while the lower threshold, “ p_L ” is 50%; “ p_L ” is normally set 30 percentage points less than “ p_U ”. The sample size “n” and decision rule are selected to ensure α errors of $\leq 10\%$, and β errors $\leq 10\%$ --or more formally:

$$P(X < d \mid n, p_U \geq 80\%) \leq \alpha \leq 0.10$$

$$P(X \geq d \mid n, p_L \leq 50\%) \leq \beta \leq 0.10$$

$$\alpha + \beta \leq 0.20.$$

These conditions yielded an optimum sample size of 19 individuals in the sample with a decision rule of 13 children having received a measles vaccination. The decision rule “d” is selected using the LQAS table. Instruction on how to use the table is provided in the LQAS Training Manual.

Annex 2: LQAS Survey Indicators

LIVING CONDITIONS AND VIOLENCE	
No	INDICATOR
1	Proportion of Households registered as displaced in Awerial
2	Proportion of female-headed Households
3	Proportion of Households living in a tent
4	Proportion of Households living in a plastic shelter
5	Proportion of Households with family members who went missing during displacement (dead/ injured/ abducted/ left with family members/ lost during displacement)
6	Proportion of Households with at least a family member affected by any type of disability (e.g. no sight, no hearing, cannot walk, psychological trauma)
7	Proportion of Households with at least one family member who needed health attention due to violence/ injuries since arrival in Awerial
8	Proportion of households heads who would seek advice or treatment at health facility in case any of their family members fall sick
FOOD SUPPORT	
9	Proportion of Households who have received a food ration card since arrival in Awerial (card seen)
10	Proportion of Households who received food support during last month in Awerial
PSICHO-SOCIAL AND MATERIAL SUPPORT	
11	Proportion of Households who received material support since arrival in Awerial
12	Proportion of Household heads who reported that their family members received psycho-social support since arrival in Awerial
ANTENATAL CARE	
13	Proportion of mothers of infants 0-11 months who attended at least one ANC visit during their last pregnancy
14	Proportion of mothers of infants 0-11 months who attended at least four ANC visits during their last pregnancy
15	Proportion of mothers of infants 0-11 months who attended their first ANC visit during first trimester of pregnancy
16	Proportion of mothers of infants 0-11 months who were attended at least once during last pregnancy by skilled health provider
TT INJECTION	
17	Proportion of mothers of infants 0-11 months who received two or more doses of TT during their last pregnancy or 5 doses during life time
INTERMITTENT PROPHYLACTIC THERAPY	
18	Proportion of mothers of infants 0-11 months who received 2 doses of IPT during last pregnancy

PMTCT AND HIV TESTING	
19	Proportion of mothers of infants 0-11 months who took a HIV test as part of ANC during their last pregnancy
20	Proportion of mothers of infants 0-11 months who took a HIV test as part of ANC during their last pregnancy and received their test result.
21	Proportion of mothers of infants 0-11 months who know that HIV can be transmitted from an infected mother to her baby
22	Proportion of mothers of children 0-11 months who correctly identify all three means of mother-to-child transmission of HIV
23	Proportion of mothers of infants 0-11 months who know that the risk of transmitting the HIV from an infected mother to her child can be prevented
24	Proportion of mothers of infants 0-11 months who correctly identify at least two ways of preventing mother to child transmission of HIV
INSTITUTIONAL DELIVERY	
25	Proportion of mothers of infants 0-11 months who gave birth at a health facility
26	Proportion of mothers of infants 0-11 months attended during delivery by skilled birth attendant
UMBILICAL CORD CARE	
27	Proportion of mothers of infants 0-11 months who practiced appropriate umbilical cord care after birth
POSTNATAL CARE	
28	Proportion of mothers of infants 0-11 months who had at least one postpartum check-up during the first 6 weeks after delivery
29	Proportion of mothers of infants 0-11 months who report that their infant received postnatal care within the first 6 weeks of childbirth (regardless of place of delivery)
INFANT FEEDING	
30	Proportion of infants 0-11 months who were put to the breast within one hour of birth
31	Proportion of infants 0-11 months who were exclusively breast-fed during the first 6 months of life
32	Proportion of children 12-23 months who received foods from at least 4 food groups during the previous day (7 food groups: grains, roots & tubers/legumes & nuts/dairy products/fresh foods/eggs/vitamin A rich fruits & vegetables/other fruits & vegetables)
33	Proportion of children 12-23 months who had at least the minimum dietary diversity and the minimum meal frequency (for their age) during the day preceding the survey
CONTRACEPTIVE USE	
34	Proportion mothers of children 12-23 months who are using a modern method of contraception
35	Proportion of mothers 12-23 months who were already pregnant by the time of the survey
VITAMIN A SUPPLEMENTATION	
36	Proportion of children 12-23 months who received a vitamin A supplement in the last 6 months
IMMUNIZATION	
37	Proportion of children 12-23 months who have vaccination card (seen or reported)
38	Proportion of children 12-23 months who have received BCG vaccine

39	Proportion of children 12-23 months who have received DPT1/Penta 1 before their first birthday
40	Proportion of children 12-23 months who have received DPT3/Penta 3 before their first birthday
41	Proportion of children 12-23 months who have received OPV3 before their first birthday
42	Proportion of children 12-23 months who have received measles vaccine before first birthday
43	Proportion of children 12-23 months fully immunised before their first birthday
44	Proportion of children 12-23 months fully immunized after their first birthday
WATER SUPPLY	
45	Proportion of Households using an improved drinking water source
46	Proportion of households using an adequate treatment method for drinking water
47	Proportion of Households who live within 15 minutes walking distance from main source of drinking water
HAND WASHING PRACTICES	
48	Proportion of Households with a designated place for hand-washing where water and soap are present (observed by data collector)
49	Proportion of Households heads who know at least four critical moments to practice hand washing with soap
SANITATION COVERAGE	
50	Proportion of Household heads who report that household members usually practice open defecation
51	Proportion of Household heads who report that household members usually use an improved sanitation facility
52	Proportion of Household heads who report that household members share the same latrine with other families
PREVALENCE OF DIARRHOEA, SUSPECTED PNEUMONIA AND FEVER	
53	Prevalence of diarrhoea among children 0-11 months in the last two weeks
54	Prevalence of diarrhoea among children 12-23 months in the last two weeks
55	Prevalence of suspected pneumonia among children 0-11 months in the last two weeks
56	Prevalence of suspected pneumonia among children 12-23 months in the last two weeks
57	Prevalence of fever among children 0-11 months in the last two weeks
58	Prevalence of fever among children 12-23 months in the last two weeks
CARE SEEKING BEHAVIOUR FOR PNEUMONIA, DIARRHOEA AND MALARIA	
59	Proportion of children 0-59 months with suspected pneumonia in the last two weeks for whom treatment was sought from appropriate health provider
60	Proportion of children 0-59 months with suspected pneumonia in the last two weeks who received an appropriate antibiotic (as per national guidelines)

61	Proportion of children 0-59 months with fever in the last two weeks for whom treatment was sought from appropriate health provider
62	Proportion of children 0-59 months with fever in the last two weeks who were treated with an appropriate antimalarial (as per national guidelines) from an appropriate provider within 24 hours of the onset of symptoms
63	Proportion of children 0-59 months with diarrhea in the last two weeks for whom treatment was sought from appropriate health provider
64	Proportion of children 0-59 months with diarrhea in the last two weeks who received treatment with ORS
65	Proportion of children 0-59 months with diarrhea in the last two weeks who received treatment with ORS and Zinc
66	Proportion of mothers of children 0-59 months with diarrhoea in the last two weeks who can correctly demonstrate how to prepare ORS
KNOWLEDGE OF DANGER SIGNS OF MALARIA, DIARRHOEA AND PNEUMONIA	
67	Proportion of mothers of children 0-11 months who know at least two danger signs of diarrhoea
68	Proportion of mothers of children 0-11 months who know at least two danger signs of malaria
69	Proportion of mothers of children 0-11 months who know at least two danger signs of pneumonia
LLIN COVERAGE (OWNERSHIP AND USE)	
70	Proportion of Households that own at least one mosquito net
71	Proportion of mothers of children 0-11 months who slept under a LLIN the night preceding the survey
72	Proportion of children 0-11 months who slept under a LLIN the night preceding the survey

Annex 3: Data Collection Teams

#	Name	Position
1	John Mading Mangar	Supervisor
2	Gordon Mayen Kolnyin	Supervisor
3	Ezekiel Muorwel Maker	Supervisor
4	Alier Akuei Paul	Supervisor
5	Valeriano Lagu	Supervisor
6	Esther Keji	Supervisor
7	James Mabor Majok	Enumerator
8	Makuei Ijong	Enumerator
9	Marin Admin Thon	Enumerator
10	Moses Ater Nuer	Enumerator
11	Julia Gabriel Tulba	Enumerator
12	Zechreya Micheal Gwang	Enumerator
13	John Chol Abit	Enumerator
14	Emmanuel Maker Manyok	Enumerator
15	Fermino Saad Arop	Enumerator
16	Simon Madul Butic	Enumerator
17	Mayen David Deng	Enumerator
18	Samuel Makur Manyot	Enumerator

Annex 4: Findings by Supervision Area

The following table shows the priority indicators for each Supervision Area (SA). These indicators are denoted in the table (marked with red). Indicators with very low coverage (marked with yellow) were estimated at less than 30%, which in this case means that the indicator is a priority in all SAs because the catchment area (the Awerial IDP settlement) as a whole is performing low.

The last two columns of this table show the coverage percentage for the whole catchment area and the associated decision rule which is identified in the LQAS table and used to identify SAs that are performing below the catchment area average coverage.

		SA 1	SA 2	SA 3	SA 4	SA 5	SA 6	Coverage	Decision Rule
Living conditions and violence									
1	Proportion of Households registered as displaced in Awerial	18	12	17	19	19	18	81.8%	14
2	Proportion of female-headed Households	12	12	18	15	17	15	73.2%	12
3	Proportion of Households living in a tent	1	0	0	1	1	0	2.2%	NA
4	Proportion of Households living in a plastic shelter	18	19	15	17	17	19	94.9%	16
5	Proportion of Households with family members who went missing during displacement (dead/ injured/ abducted/ left with family members/ lost during displacement)	5	7	5	6	7	2	33.0%	4
6	Proportion of Households with at least a family member affected by any type of disability (e.g. no sight, no hearing, cannot walk, psychological trauma)	2	2	4	3	3	7	14.5%	1
7	Proportion of Households with at least one family member who needed health attention due to violence/ injuries since arrival in Awerial	1	1	1	1	1	2	5.6%	NA
8	Proportion of households heads who would seek advice or treatment at health facility in case any of their family members fall sick	18	19	14	18	19	17	96.7%	19
Food support									
9	Proportion of Households who have received a food ration card since arrival in Awerial (card seen)	18	18	17	19	19	18	96.3%	19
10	Proportion of Households who received food support during last month in Awerial	18	18	9	19	14	18	89.2%	15
Material and psycho-social support									
11	Proportion of Households who received material support since arrival in Awerial	16	13	8	18	13	12	72.2%	12
12	Proportion of Household heads who reported that their family members received psycho-social support since arrival in Awerial	9	1	1	10	2	2	17.5%	1

Antenatal care		SA 1	SA 2	SA 3	SA 4	SA 5	SA 6	Coverage	Decision Rule
13	Proportion of mothers of infants 0-11 months who attended at least one ANC visit during their last pregnancy	17	17	14	17	18	12	88.0%	15
14	Proportion of mothers of infants 0-11 months who attended at least four ANC visits during their last pregnancy	6	3	2	2	4	1	16.2%	1
15	Proportion of mothers of infants 0-11 months who attended their first ANC visit during first trimester of pregnancy	8	11	3	12	9	2	50.4%	7
16	Proportion of mothers of infants 0-11 months who were attended at least once during last pregnancy by skilled health provider	17	14	10	10	17	8	71.4%	12
TT Injection									
17	Proportion of mothers of infants 0-11 months who received two or more doses of TT during their last pregnancy or 5 doses during life time	16	12	12	16	15	5	68.8%	11
Intermittent Prophylactic Therapy									
18	Proportion of mothers of infants 0-11 months who received 2 doses of IPT during last pregnancy	1	6	1	7	4	2	25.7%	1
PMTCT and HIV testing									
19	Proportion of mothers of infants 0-11 months who took a HIV test as part of ANC during their last pregnancy	6	3	3	10	10	2	29.5%	1
20	Proportion of mothers of infants 0-11 months who took a HIV test as part of ANC during their last pregnancy and received their test result	6	1	3	10	10	1	24.3%	1
21	Proportion of mothers of infants 0-11 months who know that HIV can be transmitted from an infected mother to her baby	4	1	9	10	8	4	24.1%	1

		SA 1	SA 2	SA 3	SA 4	SA 5	SA 6	Coverage	Decision Rule
22	Proportion of mothers of children 0-11 months who correctly identify all three means of mother-to-child transmission of HIV	3	1	0	3	0	4	7.5%	NA
23	Proportion of mothers of infants 0-11 months who know that the risk of transmitting the HIV from an infected mother to her child can be prevented	1	0	1	6	4	2	10.3%	NA
<i>Institutional delivery</i>									
25	Proportion of mothers of infants 0-11 months who gave birth at a health facility	12	4	0	1	4	2	20.1%	1
26	Proportion of mothers of infants 0-11 months attended during delivery by skilled birth attendant	15	4	0	3	3	1	21.8%	1
<i>Umbilical cord care</i>									
27	Proportion of mothers of infants 0-11 months who practiced appropriate umbilical cord care after birth	12	13	2	2	10	10	51.8%	8
<i>Postnatal care</i>									
28	Proportion of mothers of infants 0-11 months who had at least one postpartum check-up during the first 6 weeks after delivery	1	1	3	4	0	1	7.4%	NA
29	Proportion of mothers of infants 0-11 months who report that their infant received postnatal care within the first 6 weeks of childbirth (regardless of place of delivery)	1	0	0	3	0	1	3.3%	NA
<i>Infant feeding</i>									
30	Proportion of infants 0-11 months who were put to the breast within one hour of birth	8	7	13	1	8	16	37.7%	5
31	Proportion of infants 0-11 months who were exclusively breast-fed during the first 6 months of life	15	12	14	13	15	18	70.7%	12

		SA 1	SA 2	SA 3	SA 4	SA 5	SA 6	Coverage	Decision Rule
32	Proportion of children 12-23 months who received foods from at least 4 food groups during the previous day (7 food groups: grains, roots & tubers/legumes & nuts/dairy products/fresh foods/eggs/vitamin A rich fruits & vegetables/other fruits & vegetables)	4	6	0	0	0	0	16.2%	1
33	Proportion of children 12-23 months who had at least the minimum dietary diversity and the minimum meal frequency (for their age) during the day preceding the survey	0	1	0	0	0	0	2.4%	NA
Contraceptive use									
34	Proportion mothers of children 12-23 months who are using a modern method of contraception	1	0	2	0	0	0	1.0%	NA
35	Proportion of mothers 12-23 months who were already pregnant by the time of the survey	4	5	1	2	3	3	19.7%	1
Vitamin A supplement									
36	Proportion of children 12-23 months who received a vitamin A supplement in the last 6 months	14	7	6	11	5	11	42.3%	6
Immunization									
37	Proportion of children 12-23 months who have vaccination card (seen or reported)	16	14	12	19	15	17	80.2%	13
38	Proportion of children 12-23 months who have received BCG vaccine	16	13	16	17	14	17	76.2%	13
39	Proportion of children 12-23 months who have received DPT1/Penta 1 before their first birthday	16	14	14	18	16	17	80.8%	14
40	Proportion of children 12-23 months who have received	0	1	0	4	0	0	5.8%	NA

	DPT3/Penta 3 before their first birthday								
		SA 1	SA 2	SA 3	SA 4	SA 5	SA 6	Coverage	Decision Rule
41	Proportion of children 12-23 months who have received OPV3 before their first birthday	17	13	15	19	15	18	79.3%	13
42	Proportion of children 12-23 months who have received measles vaccine before first birthday	12	13	11	14	12	13	67.3%	11
43	Proportion of children 12-23 months fully immunised before their first birthday	0	1	1	4	0	1	6.4%	NA
44	Proportion of children 12-23 months fully immunized after their first birthday	7	4	6	2	11	1	27.0%	1
Water supply									
45	Proportion of Households using an improved drinking water source	6	17	14	3	19	19	74.8%	12
46	Proportion of households using an adequate treatment method for drinking water	17	18	8	0	10	0	62.6%	10
47	Proportion of Households who live within 15 minutes walking distance from main source of drinking water	19	12	18	19	18	16	80.8%	14
Hand washing practices									
48	Proportion of Households with a designated place for hand-washing where water and soap are present (observed by data collector)	1	1	2	0	9	0	12.2%	1
49	Proportion of Households heads who know at least four critical moments to practice hand washing with soap	19	19	18	19	19	16	98.7%	19
Sanitation coverage									
50	Proportion of Household heads who report that household members usually practice open defecation	9	7	10	17	0	0	37.8%	5

51	Proportion of Household heads who report that household members usually use an improved sanitation facility	10	9	8	2	19	19	54.6%	8
		SA 1	SA 2	SA 3	SA 4	SA 5	SA6	Coverage	Decision Rule
52	Proportion of Household heads who report that household members share the same latrine with other families	8	10	7	2	19	17	55.3%	8
<i>Prevalence of diarrhoea, suspected pneumonia and fever</i>									
53	Prevalence of diarrhoea among children 0-11 months in the last two weeks	2	5	4	11	2	11	28.9%	--
54	Prevalence of diarrhea among children 12-23 months in the last two weeks	9	4	5	5	6	12	28.8%	--
55	Prevalence of suspected pneumonia among children 0-11 months in the last two weeks	2	1	6	7	11	10	24.8%	--
56	Prevalence of suspected pneumonia among children 12-23 months in the last two weeks	6	3	5	4	4	15	23.3%	--
57	Prevalence of fever among children 0-11 months in the last two weeks	3	1	7	9	8	15	25.9%	--
58	Prevalence of fever among children 12-23 months in the last two weeks	9	5	11	8	8	18	39.4%	--
<i>Care Seeking Behavior for Pneumonia, Diarrhoea and Malaria</i>									
59	Proportion of children 0-59 months with suspected pneumonia in the last two weeks for whom treatment was sought from appropriate health provider	16	19	10	18	19	16	94.5%	16
60	Proportion of children 0-59 months with suspected pneumonia in the last two weeks who received an appropriate antibiotic (as per national guidelines)	8	13	6	6	18	14	63.7%	10
61	Proportion of children 0-59 months with fever in the last two weeks for whom treatment was sought from appropriate	16	19	10	18	19	16	94.5%	16

	health provider								
		SA 1	SA 2	SA 3	SA 4	SA 5	SA 6	Coverage	Decision Rule
62	Proportion of children 0-59 months with fever in the last two weeks who were treated with an appropriate antimalarial (as per national guidelines) from an appropriate provider within 24 hours of the onset of symptoms	7	1	3	2	14	9	24.5%	1
63	Proportion of children 0-59 months with diarrhea in the last two weeks for whom treatment was sought from appropriate health provider	15	18	11	15	18	17	88.7%	15
64	Proportion of children 0-59 months with diarrhoea in the last two weeks who received treatment with ORS	13	9	10	6	16	15	55.6%	9
65	Proportion of children 0-59 months with diarrhoea in the last two weeks who received treatment with ORS and Zinc	0	4	4	3	10	6	25.0%	1
66	Proportion of mothers of children 0-59 months with diarrhoea in the last two weeks who can correctly demonstrate how to prepare ORS	3	1	0	5	7	0	14.7%	1
Knowledge of danger signs of diarrhoea, malaria and pneumonia									
67	Proportion of mothers of children 0-11 months who know at least two danger signs of diarrhoea	16	9	0	6	18	8	53.8%	8
68	Proportion of mothers of children 0-11 months who know at least two danger signs of malaria	12	10	2	15	19	9	64.0%	10
69	Proportion of mothers of children 0-11 months who know at least two danger signs of pneumonia	17	14	2	15	19	18	78.7%	13

		SA 1	SA 2	SA 3	SA 4	SA 5	SA6	Coverage	Decision Rule
70	Proportion of Households that own at least one mosquito net	17	18	15	19	19	18	95.3%	16
71	Proportion of mothers of children 0-11 months who slept under a LLIN the night preceding the survey	15	16	12	18	12	8	77.9%	13
72	Proportion of children 0-11 months who slept under a LLIN the night preceding the survey	15	16	12	18	12	8	77.9%	13