

# UNHCR STANDARDISED EXPANDED NUTRITION SURVEY (SENS) GUIDELINES FOR REFUGEE POPULATIONS

## MODULE 6: MOSQUITO NET COVERAGE



A PRACTICAL STEP-BY-STEP GUIDE

VERSION 2 (2013)



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## KEY MESSAGES

- Data on the ownership and utilisation of mosquito nets, more importantly long-lasting insecticidal net (LLINs), are essential to collect in refugee settings where malaria is endemic and LLINs are used as one of the malaria control strategy.
- Coverage surveys should preferably be carried out in the high malaria transmission season when LLIN usage is often higher and LLIN utilisation more important.
- Coverage surveys should be conducted at the household level to obtain the level of LLIN coverage (ownership and utilisation).
- This module is intended to provide nutrition survey coordinators and survey workers with an overview of how a rapid LLIN mosquito net coverage survey should be conducted, how data should be collected and analysed, and how results should be presented and used. It is assumed that the malaria LLIN coverage module will be conducted in coordination with a standard nutrition survey, and possibly with other modules related to nutrition, anaemia, food security, and Water, Sanitation and Hygiene (WASH).
- This module is not intended to replace the role of a complete stand-alone malaria LLIN mosquito net coverage survey implemented after an LLIN distribution campaign, or a malaria indicator survey.
- This module is intended to inform the nutrition survey teams about the common challenges faced while conducting a rapid LLIN mosquito net coverage survey and includes standardised guidance and survey tools on the following:
  - Profiling the household
  - Standard questionnaire to use
  - Assessing mosquito nets
  - Standard procedures to follow for training, data collection, data handling and quality assurance
  - Standard tables and figures to include in final SENS report

## DEFINITION OF SOME KEY TERMS

**Malaria:** a group of diseases caused by any of four different microorganisms called plasmodia (*Plasmodium falciparum*, *vivax*, *ovale*, and *malariae*), which are transmitted by certain species of mosquitoes. Malaria is found mostly in tropical and subtropical regions of the world. It can cause anaemia due to haemolysis of red blood cells.

**Insecticide-treated net (ITN):** an insecticide-treated net is a mosquito net that repels, disables, and / or kills mosquitoes coming into contact with insecticide on the netting material. There are two categories of ITNs: conventionally treated nets and long-lasting insecticidal nets.

**Conventionally treated net:** a conventionally treated net is a mosquito net that has been treated by dipping in a WHO approved-insecticide treatment. It should be re-treated after three washes, or at least once a year with recommended insecticide to ensure its continued insecticidal effect.

**Long-lasting insecticidal net (LLIN):** WHO defines a long-lasting insecticidal net as a factory-treated mosquito net made with netting material that has insecticide incorporated within or bound around the fibres. The net must retain its effective biological activity without re-treatment for at least 20 WHO standard washes<sup>1</sup> under laboratory conditions and three years of recommended use.

**Universal Coverage (UC):** all people at risk from malaria are protected, thanks to locally appropriate vector control methods such as insecticide-treated nets (ITNs) , indoor residual spraying (IRS) where appropriate, and, in some settings, other environmental and biological measures;<sup>2</sup>. In the case of ITNs, coverage refers to all at risk populations sleeping under an ITN.

**Indoor Residual Spraying (IRS):** IRS is the application of long-acting chemical insecticides on the walls and roofs of all houses and domestic animal shelters in a given area, in order to kill the adult vector mosquitoes that land and rest on these surfaces. The primary effects of IRS towards curtailing malaria transmission are: *i)* to reduce the life span of vector mosquitoes so that they can no longer transmit malaria parasites from one person to another, and *ii)* to reduce the density of the vector mosquitoes.<sup>3</sup>

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<sup>1</sup> See WHOPES website for more information: <http://www.who.int/whopes/en/>

<sup>2</sup> Roll Back Malaria's Global Strategic Plan 2005 – 2015.

<sup>3</sup> WHO 2006, Use of indoor residual spraying for scaling up global malaria control and elimination WHO Position Statement.

## OBJECTIVES AND TARGET GROUPS

*The main objective of a coverage survey is to assess the level of ownership and utilisation of mosquito nets in the following categories:*

1. All household members (including children under 5, pregnant women and other household members);
2. Children under 5 years of age; and
3. Pregnant women.

***Things to note:***

- Past mosquito net distributions mainly targeted children under-5 years and pregnant women because, in malaria endemic countries, they are the most at risk. However, new net distributions are now targeting people of all ages including all women (whether pregnant or not) due to a greater overall beneficial effect. It is believed that the more mosquito nets there are, the more likely people will use them and the greater the impact on vector control will be.

*Objectives should be worded as follows in the survey protocol and report:*

1. To determine the ownership of mosquito nets (all types and LLINs) in households.
2. To determine the utilisation of mosquito nets (all types and LLINs) by the total population, children 0-59 months and pregnant women.
3. To determine the household coverage of indoor residual spraying (*OPTIONAL QUESTION, ONLY IF IRS IMPLEMENTED IN THE LAST 6 MONTHS*).

## INDICATORS

### *Specific Objectives- 1:*

- To measure the proportion of households which own at least one mosquito net
- To measure the proportion of households which own at least one long-lasting insecticidal net
- To measure the average number of long-lasting insecticidal net per household
- To measure the average number of persons per long-lasting insecticidal net

### *Specific Objectives- 2:*

- To measure the proportion of the total population who slept under a mosquito net last night
- To measure the proportion of the total population who slept under a long-lasting insecticidal net last night
- To measure the proportion of children 0 – 59 months who slept under a mosquito net last night
- To measure the proportion of children 0 – 59 months who slept under a long-lasting insecticidal net last night
- To measure the proportion of pregnant women who slept under a mosquito net last night
- To measure the proportion of pregnant women who slept under a long-lasting insecticidal net last night

### *Specific Objective- 3:*

- To determine the household coverage of indoor residual spraying (*OPTIONAL*)

## DATA COLLECTION

### MEASUREMENT METHODS

- Mosquito net coverage variables are assessed using interviews with the head of household (male or female) or in their absence a responsible adult (preferably over the age of 18 years) and through direct observation of the mosquito nets in the household.
- A list is made of the number of mosquito nets available for sleeping under and the household members who normally sleep there.
- The type of mosquito net (LLIN, ITN, conventional) is determined by observation of the net, and its brand name and manufacturer on the tag.
- A summary table of mosquito net coverage indicators is manually calculated after data collection has been completed.
- In order for the measurement methods to be reliable, it is vital that the questions are asked exactly as they are written and that any modification is agreed with all the surveyors so that the methodology is as standardised as possible.
- The types of common mosquito nets used must be investigated prior to the training (investigate net distributed in mass distributions from health centres in Antenatal Care Clinics and EPI campaigns, as non-food items and those available for purchase). Photographs of the nets and their TAGS should be taken to train surveyors on how to identify the different types of nets.

## MATERIAL NEEDED

- Mosquito net coverage questionnaires: 1 per household surveyed (always carry extra copies).
- The SENS mosquito net coverage questionnaire is shown in **Annex 1** or see SENS Pre-Module tool: [**Tool 9-Full SENS Questionnaire**].
- Pictorial guide on how to assess and identify the type of mosquito net; see **Annex 2**.



## ETHICAL CONSIDERATIONS

- A standard mosquito net coverage questionnaire will be administered with the consent of the householder. Refer to **SENS Pre-Module Step 13** for guidance on approaching households and seeking informed consent.

## STANDARD PROCEDURES AND QUALITY ASSURANCE

- A standard questionnaire on mosquito net ownership and utilisation will be administered on a sample of households (refer to **SENS Pre-Module Step 8** for guidance).
- A questionnaire is administered to the household even if there are no eligible children for the nutrition survey.
- The same definition of the household (appropriate to the context<sup>4</sup>) should be used by all survey teams and in all subsequent surveys.
- The respondent should be the head of household (male or female) whenever possible, and in their absence a responsible adult (preferably over the age of 18 years).

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<sup>4</sup> In refugee settings, a household is typically defined as a group of people who live together and routinely eat out of the same pot.

- The respondent will provide a listing of the household members indicating their sex and age category [ $<5$ ,  $\geq 5$ ,] and for women aged 15-49 years, their pregnancy status. The exact age of household members is not needed for the mosquito net coverage assessment.
- The questionnaire will only be filled in for a household member who slept in the household the night before. Household members who are away and who did not sleep in the household last night, or short-term visitors to the households will not be accounted for.
- The number of mosquito nets in the household and the brand of the net should be ascertained by direct observation.
- Individual use of mosquito nets will be based on respondent interview and self-report.

## TRAINING

- The training needs to contain a mix of theory, practical exercises (especially role plays and field practice, see **Annex 3**), as well as a written or verbal test.
- The questionnaire should be adapted prior to the training by selecting the categories that apply to the specific context (i.e. heading, IRS question). Minor changes to wording / phrases or the use of explanations for questions can be agreed upon with the whole team during the training.
- The training on the SENS Mosquito Net coverage questionnaire will require at least half a day.
- The training manual and pictorial guide on how to assess and identify the type of mosquito nets should be amended prior to the training after a ground assessment of the different types of mosquito nets available.
- Examples of the different mosquito nets available in the survey area should be collected for use during the training. Ask the mosquito net distribution partners if they have any stock that can be used as examples. Mosquito nets available on the retail market can be purchased for demonstration purposes
- It is crucial that the coordinator(s) refresh their skills before beginning the training and read all of the background material provided.

### THEORETICAL COMPONENT

*The theoretical component on the mosquito net coverage module should include:*

- Overview of module, questionnaire and procedure to be followed
- Information on specific mosquito net terms. See definition of some key terms provided above.
- Information to help surveyors distinguish different brands and types of mosquito nets specific to their area; see **Annex 2**.
- A short written or verbal test, see **Annex 3**.

**Things to watch out for:**

- **Table 1** describes the most common errors experienced by survey workers in data collection. These should be emphasised during the training and the survey coordinator(s) and supervisor(s) should focus on these when assessing the teams' performance during supervision visits throughout the survey.

**TABLE 1 COMMON ERRORS AND CHALLENGES IN DATA COLLECTION**

<b>Common errors / challenges</b>	<b>Examples</b>	<b>Solution</b>
<b>Error in the total number of mosquito nets reported not equalling the number of mosquito nets surveyed</b>	There were 3 mosquito nets reported in the household, but information taken on 4 mosquito nets.	The survey teams must clarify with the household the correct response. Supervisors must review questionnaires to watch for these errors.
<b>Challenge where a respondent refuses to let you into the house or to take the mosquito nets out of the house to assess</b>	The respondent does not want to let you in the house, and then refuses to let you see the mosquito nets.	The survey team needs to consider that this household is a refusal for the mosquito net module.
<b>Error where the mosquito nets recorded on the questionnaire are being used for other purposes than that intended (i.e. sleeping under)</b>	The surveyor records the mosquito nets that are being used for fencing, fishing and roofing instead of those used for sleeping.	The training needs to highlight that <b>only</b> mosquito nets that are available for sleeping under are counted. This does not include mosquito nets being used for other purposes.
<b>Error in counting the mosquito nets still in their packaging or being stored</b>	The surveyor does not record these mosquito nets being saved or stored as mosquito nets that are available to sleep under.	The training needs to highlight that those mosquito nets that can be used for sleeping under are counted; this includes mosquito nets that are being saved or stored, including those currently in their packaging.
<b>Challenge where new mosquito net brand names are found on the TAGS</b>	Surveyors do not record the information properly, assuming that it is another one of the brands.	Ensure that interview teams clearly write down the information found on the TAGS, and inform their supervisor of any new brand of nets identified.
<b>Error in recording pregnancy status</b>	A male or child is recorded as being pregnant due to a data recording error.	Make sure that survey teams carefully check their questionnaires for these errors. Supervisors must review questionnaires to watch for these recording errors.

## PRACTICAL COMPONENT

- The practical component should form the main part of the training and should employ role-play and field practice to ensure that surveyors are following standard procedures and that they communicate effectively and respectfully with respondents.

### *Guidance for coordinators*

- **Tables 2-4** provide instructions on the questionnaire and instructions to be given to the surveyors.
- The Mosquito net coverage module training should ensure that surveyors have adequate practice in using the questionnaire.
- Discuss with health partners on the types of mosquito nets used in the area, and the mosquito net distributions that have taken place in the past three years.
- Obtain photographs of the mosquito nets and their TAGS of the different brands being used in the study area. See **Annex 2. In some cases other brands of mosquito nets may be found while conducting the survey. It is important that these are shown to the coordinator by the survey teams.**
- Invite a health partner involved in mosquito net distributions to support facilitation where possible.
- Prepare / translate and back translate the questionnaire: do not change the wording of the questions.
- Asking to see the mosquito nets in use by entering the house may be met with resistance. It will be important to find acceptable ways of asking the respondent to enter the household. In the event that respondents refuse entry into the household, the respondent can be asked if they would not mind bringing their mosquito nets outside to be assessed.
- Some participants will learn more quickly than others and they should be paired with the less able surveyors both in the training and in the field.

### *Basic instructions for survey teams*

- Survey teams need to be trained on interview techniques: introduction, consent, confidentiality etc.
- It is very important that surveyors ask each question exactly as it is written on the questionnaire.
- In addition to the questions, there are statements that appear in grey shaded areas indicating that they are **for completion after the survey by the survey team / supervisor**, and statements that appear in capital letter indicating that they are surveyor instructions and should not be read aloud to the respondent.
- The question may need to be repeated again but the wording should not be changed too quickly as it may be that the respondent did not hear properly or was not concentrating. When a question is unclear, it should be asked again or with slightly different wording but care must be taken not to change the meaning or lead the respondent into giving a specific response.

## QUESTIONNAIRE AND RATIONALE FOR QUESTIONS

- **Tables 2-4** below provide instructions on the questionnaire for adaptation to the local context and highlight special instructions to be given to the surveyors.
- The recommended names and descriptions of the standard variables (as shown in the SENS Mosquito Net Coverage questionnaire shown in **Annex 1**), and the range of correct codes are shown in **Tables 2-4**.
- A standard Epi Info View for data entry is shown in **Annex 4**. Free guidance on the use of Epi Info for Windows and training material on Epi Info can be found at the following site: <http://www.cdc.gov/EpiInfo>

**TABLE 2** EXPLANATION OF QUESTIONS ON IRS AND MOSQUITO NETS (SECTION TN1)

Question number	Suggested variable name	Question	Special instructions
TN4	HHIRS	<p><b>Did you have your house sprayed with insecticide in an indoor residual spraying campaign in the past [INSERT NUMBER BETWEEN 1-6] months?</b></p> <p><b>(OPTIONAL)</b></p> <p>1=Yes 2=No</p>	<p>If no IRS campaign was done in the last 6 months, exclude this question.</p> <p>Indicate the timeframe when the IRS campaign would have occurred on the questionnaire. This number needs to be between 1 months and 6 months only. If an IRS campaign was done more than 6 months ago, exclude this question.</p> <p>Be sure to explain that this is NOT the can of insecticide that can be sprayed in the house.</p>
TN5	MOSNETS	<p><b>Do you have mosquito nets in this household that can be used while sleeping?</b></p> <p>1= Yes 2 = No</p>	<p>If there is a local term for mosquito net, please use this to describe.</p> <p>It is important that it is stressed that the surveyor is interested in nets used for sleeping only. There may be nets that are being used for other purposes, which will not be assessed in this survey.</p>
TN6	NUMNETS	<p><b>How many of these mosquito nets that can be used while sleeping does your household have?</b></p> <p>Number of nets all type</p>	<p>This is the number of mosquito nets, as reported by the respondent. This number will be confirmed by observations and rectified where necessary (see question TN7 below).</p>

Question number	Suggested variable name	Question	Special instructions
<b>TN7</b>	This will not be entered in the database, it is used to validate the previous question on the number of mosquito nets available in the household that can be used while sleeping.	Confirmation of net number	<p>Nets must be observed. Ask the respondent to show you each of the nets that can be used while sleeping.</p> <p>If a net is reported to be in the household but is not observed, do not record it and make sure to correct the answer to question TN6.</p> <p>Record the number of nets of all types (LLIN, ITNs, conventional). If there are more than 4 nets, continue the subsequent questions on nets using additional sheets, indicating the sheet number on the top of the sheet. Make sure to sequentially number the nets on the other questionnaire, i.e. Net#5, Net#6, etc</p>
<b>TN8</b>	This will not be entered in the database, it is used to validate the next question if the net is an LLIN or not.	<p>OBSERVE NET AND RECORD THE BRANDNAME OF NET ON THE TAG. IF NO TAG EXISTS OR IS UNREADABLE RECORD 'DK' FOR DON'T KNOW.</p> <p>Brand name</p>	<p>The Brand names of WHOPES approved LLINs can be found at <a href="http://www.who.int/whopes/en/">http://www.who.int/whopes/en/</a><sup>5</sup></p> <p>Some LLINs are over branded (i.e. given new brand names for marketing purposes) by NGOs, and these brand names need to be assessed prior to the start of the survey.</p> <p>Guidelines for reading tags can be found in <b>Annex 2</b>.</p>
<b>TN9</b>	<p>LNTYPE1 LNTYPE2 LNTYPE3 LNTYPE4 etc. if more than 4 nets.</p> <p>This does not necessarily need to be entered in the database and is optional.</p>	<p>WHAT TYPE OF NET IS THIS? BASED ON THE TAG INDICATE IF THIS IS A LLIN OR OTHER TYPE OF NET OR DON'T KNOW.</p> <p>1 = LLIN 2= Other/DK (don't know)</p>	<p>Based on the recorded information in question TN8 above enter the correct categorization of net. -If the tag is not there or is unreadable record 2 = other/DK</p> <p>Categorizing of nets into LLINs and other nets is not done during the household interview as it takes too much time and mistakes can be made by the surveyor. It is done by the surveyor or supervisor after the interview or at the end of the survey day.</p>
<b>TN10</b>	TOTLN	<p>RECORD THE TOTAL NUMBER OF LLINs IN HOUSEHOLD BY COUNTING THE NUMBER OF '1' IN TN9.</p> <p>Number of LLINs</p>	<p>Based on the observed nets add up the total number of nets that are classified as LLINs.</p> <p>This is not done during the household interview as it takes too much time and mistakes can be made by the surveyor. It is done by the surveyor or supervisor after the interview or at the end of the survey day.</p>

<sup>5</sup> World Health Organization Pesticide Evaluation Scheme (WHOPES) <http://www.who.int/whopes/en/> Long-lasting insecticidal nets.

**TABLE 3** EXPLANATION OF QUESTIONS ON HOUSEHOLD LISTING AND MOSQUITO NET USE (SECTION TN2)

Column number	Suggested variable name	Question	Special instructions
<b>COL 1</b>	Not entered in the database	<b>Please give me the names of all of the household members (use definition of the household) who live here and who slept in here last night.</b>	All names will be kept confidential. Recording of the names will help with probing in further questions regarding mosquito net use.
<b>COL 2</b>	Not entered in the database	Sex (Male or Female)?  m = Male f= Female	Select the number corresponding to the sex.
<b>COL 3</b>	Not entered in the database	Age in years  < 5 years=0-59 months ≥ 5 years=>59 months	The exact age is not necessary for the assessment of mosquito net coverage. It is only necessary to know whether the household member is below or above 5 years of age (note that the exact age of children between 6-59 months of age and women of reproductive age are important and recorded separately on the anaemia / anthropometry questionnaires). Select the number corresponding to the age bracket ≥5 or <5 as required.
<b>COL 4</b>	Not entered in the database	FOR WOMEN 15-49 YEARS, ASK: Is (NAME) currently pregnant?  1 = Yes 0 = No/DK (don't know) 99=Not Applicable (N/A)  (CIRCLE not applicable '99' if female <15->49 years or male)	Select the number corresponding to the pregnancy status.  Be sure to crosscheck that this is a woman, and of reproductive age.  Cross check the pregnancy status of women in the selected household from the anaemia questionnaire if anaemia is also measured.
<b>COL 5</b>	Not entered in the database	Did (NAME) sleep under a net last night?  1 = Yes 0 = No/DK (don't know)	Ask the respondent if s/he slept under a mosquito net last night. Ask to the respondent about each member of the household. Select the corresponding number of their response.
<b>COL 6</b>	Not entered in the database	ASK THE RESPONDENT TO PHYSICALLY IDENTIFY WHICH OF THE OBSERVED NETS EACH MEMBER SLEPT UNDER. RECORD THE NUMBER CORRESPONDING TO THE NET THEY USED.	Ask the respondent to identify the specific net that s/he slept under. Ask to the respondent about each member of the household.  Record the number that corresponds to the mosquito net identified. If the person did not sleep under a mosquito net, leave this blank.

Column number	Suggested variable name	Question	Special instructions
COL 7	Not entered in the database	<p>BASED ON THE OBSERVED NET BRANDNAME RECORDED (TN8 / TN9) INDICATE IF IT IS AN LLIN OR OTHER / DK (DON'T KNOW)</p> <p>1 = LLIN 2 = Other/DK</p>	<p>Information on the brand name is recorded in TN8 / TN9.</p> <p>This is not done during the household interview as it takes too much time and mistakes can be made by the surveyor. It is done by the surveyor or supervisor after the interview or at the end of the survey day.</p>

**TABLE 4** EXPLANATION OF SUMMARY TABLE OF MOSQUITO NET OWNERSHIP AND UTILISATION

Question number	Suggested variable name	Information	Special instructions
<b>TN1</b> (Section TN1)	TOTHH	Total household size	Record the total number of members who live in the household and who slept in the household last night.
<b>TN2</b> (Section TN1)	TOTCH	Total children 0-59 months in household	Record the total number of children 0-59 months who live in the household and who slept in the household last night.
<b>TN3</b> (Section TN1)	TOTPW	Total pregnant women in household	Record the total number of pregnant women who live in the household and who slept in the household last night.
<b>TN11</b> (Section TN2)	TOTSLPNT	Total number of persons who slept under a net of any type last night	From the household listing (Section TN2) sum the total number of persons who slept under a net last night from the question "Slept under net" (COL5).
<b>TN12</b> (Section TN2)	TOTSLPLN	Total number of persons who slept under an LLIN last night	From the household listing (Section TN2) sum the total number of persons who slept under an LLIN last night from the question "Type of net" (COL7).
<b>TN13</b> (Section TN2)	TOTCHNT	Total number of children 0-59 months who slept under a net of any type last night	From the household listing (Section TN2) sum the total number for children 0-59 months who slept under a net last night from the "Age" question (COL3) and the "Slept under net" question (COL5).
<b>TN14</b> (Section TN2)	TOTCHLN	Total number of children 0-59 months who slept under an LLIN last night	From the household listing (Section TN2) sum the total number for children 0-59 months who slept under a net last night from the "Age" question (COL3) and the "Type of net" question (COL7).
<b>TN15</b> (Section TN2)	TOTPWNT	Total number of pregnant women who slept under a net last night	From the household listing (Section TN2) sum the total number for pregnant women who slept under a net last night from the "Pregnancy status" question (COL4) and the "Slept under net" question (COL5).
<b>TN16</b> (Section TN2)	TOTPWLN	Total number of pregnant women who slept under an LLIN last night	From the household listing (Section TN2) sum the total number for pregnant women who slept under a net last night from the "Pregnancy status" question (COL4) and the "Type of net" question (COL7).

## DATA CLEANING

### DAILY QUESTIONNAIRE CHECK AND OVERSEEING INTERVIEWS

- Supervisors will not have the chance to observe every interview conducted but they are responsible for reviewing every questionnaire for errors.
- This should be done in the field, if possible, so that any problem can be resolved immediately and, if not then, at the end of each day.
- Check that consent was given. If consent was not given, ask the surveyors if they know the reasons. If there are many refusals, understanding why will help clarify any misunderstandings, concerns or misconceptions with the community being surveyed.
- Check for missing data, 'don't know' answers (these should always be minimal) or inconsistencies in data e.g. the mosquito net number given for sleeping under is not one of the possible answers; a male or child under 5 years of age is indicated as being pregnant; the household member slept under a mosquito net last night but no corresponding mosquito net number is given.

### DATABASE CHECK

- Brief guidance on the data cleaning process is provided in **Annex 5** using Epi Info (version 3.5.4 July 2012). Free guidance on the use of Epi Info for Windows and training material on Epi Info can be found at the following site: <http://www.cdc.gov/EpiInfo>

## PRESENTATION OF RESULTS

- Mosquito net coverage results should be descriptive and presented as proportions (with 95% confidence interval where applicable) and means where applicable.
- When presenting the results from several camps with a representative sample drawn from each camp into one report, it is recommended to present results from each camp separately. See SENS Pre-Module tools: [Tool 4b-Dolo SENS Survey Report 2013] and [Tool 5-Dadaab Survey Report 2011].
- When several camps are surveyed with a representative sample drawn from each camp, it is not necessary to report combined results for each indicator; see Annex 6 for the recommended combined indicators to report. See the SENS Pre-Module tool that will automatically generate weighed prevalence results: [Tool 14-Weighting Data Tool].
- All survey reports should present results following the tables and figures shown below.
- Where an exhaustive (census) survey is conducted, confidence intervals should not be presented.



## RESULTS TABLES AND FIGURES

- There are several figures that are recommended to be included in the final SENS report. For a tool that will automatically generate trend graphs see SENS Pre-Module tool: [Tool 12-Trends and Graphs].



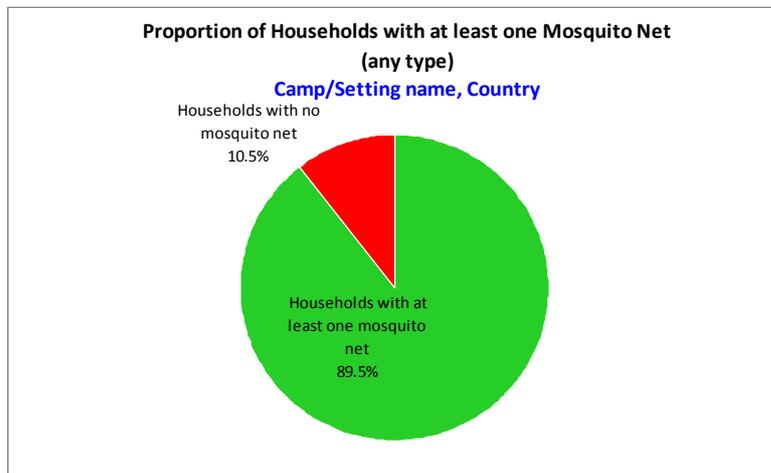
**TABLE 5 MOSQUITO NET COVERAGE SAMPLING INFORMATION**

Household data	Planned	Actual	% of target
Total households surveyed for mosquito net coverage		<i>[only include household with data; exclude absent household and refusals]</i>	

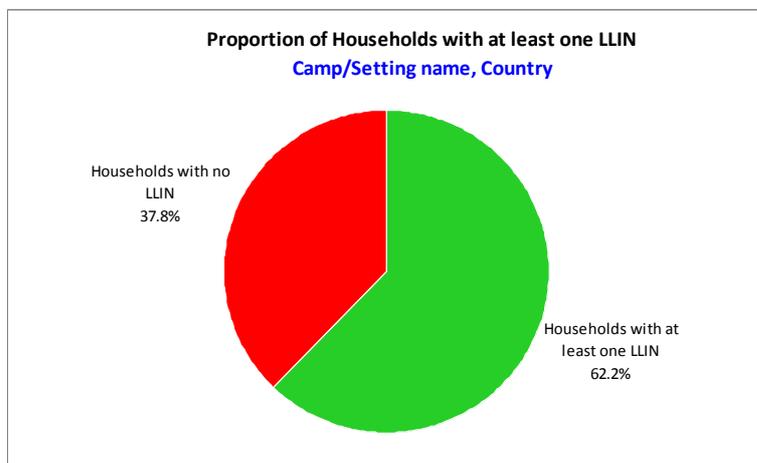
**TABLE 6 HOUSEHOLD MOSQUITO NET OWNERSHIP**

	Number/total	% (95% CI)
<b>Proportion of total households owning at least one mosquito net of any type</b>		
<b>Proportion of total households owning at least one LLIN</b>		

**FIGURE 1 HOUSEHOLD OWNERSHIP OF AT LEAST ONE MOSQUITO NET (ANY TYPE) (THIS FIGURE CAN BE AUTOMATICALLY GENERATED BY USING SENS PRE-MODULE TOOL 12 – TRENDS AND GRAPHS)**



**FIGURE 2 HOUSEHOLD OWNERSHIP OF AT LEAST ONE LLIN (THIS FIGURE CAN BE AUTOMATICALLY GENERATED BY USING SENS PRE-MODULE TOOL 12 – TRENDS AND GRAPHS)**



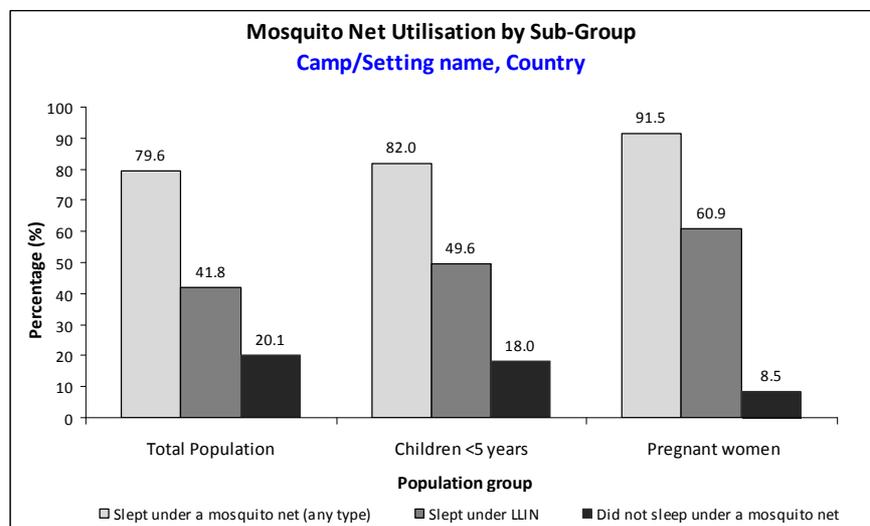
**TABLE 7 NUMBER OF NETS**

Average number of LLINs per household	Average number of persons per LLIN
Mean	Mean

**TABLE 8 MOSQUITO NET UTILISATION. NOTE THAT IT IS NOT REQUIRED TO INCLUDE CONFIDENCE INTERVALS FOR THESE INDICATORS AS THEY ARE COMPLEX TO CALCULATE.**

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Total No=	%	Total No=	%	Total No=	%
Slept under net of any type	No	%	No	%	No	%
Slept under LLIN	No	%	No	%	No	%

**FIGURE 3 MOSQUITO NET UTILISATION BY SUB-GROUP (THIS FIGURE CAN BE AUTOMATICALLY GENERATED BY USING SENS PRE-MODULE TOOL 12 – TRENDS AND GRAPHS)**



**TABLE 9 INDOOR RESIDUAL SPRAYING HOUSEHOLD COVERAGE (OPTIONAL)**

	Number/total	% (95% CI)
Proportion of households covered by IRS		

## DATA ANALYSIS

### ANALYSIS PROCEDURES

- The first step in the data analysis process is to classify the categories into more easily manageable variables that relate to the indicators you are trying to measure. This involves recoding *some* of the responses into ‘new’ variables. **Table 10** provides some guidance on the analysis procedure and on the use of Epi Info software.
- Make sure that the data has been cleaned before starting the analysis process.
- Brief guidance on using Epi Info software for analysis is provided below. Refer to **Annex 5** for standard analysis commands using Epi Info (version 3.5.4 July 2012). Free guidance on the use of Epi Info for Windows and training material on Epi Info can be found at the following site: <http://www.cdc.gov/EpiInfo>

**TABLE 10** SUMMARY TABLE OF CALCULATION TO DETERMINE MOSQUITO NET (ALL TYPES AND LLIN) OWNERSHIP AND COVERAGE OF IRS CAMPAIGN

QUESTION	REPORTED RESULTS (ORIGINAL VARIABLE NAMES)	ACTION
<p><b>TN4. Did you have your house sprayed with insecticide in an indoor residual spraying campaign in the past [insert number between 1-6] months? (OPTIONAL)</b></p> <p>1=Yes 2=No</p>	<p>Proportion of households covered by IRS (HHIRS)</p>	<p>No recoding needed. Run the 'Frequencies'/'Complex Sample Frequencies' command on the variable termed HHIRS to fill out <b>Table 9</b>.</p> <p>The frequency of answer 1 ('Yes') is reported.</p>
<p><b>TN5. Do you have mosquito nets in this household that can be used while sleeping?</b></p> <p>1= Yes 2 = No</p>	<p>Proportion of households owning at least one mosquito net of any type (MOSNETS)</p>	<p>No recoding needed. Run the 'Frequencies'/'Complex Sample Frequencies' command on the variable termed MOSNETS to fill out <b>Table 6</b>.</p> <p>The frequency of answer 1 ('Yes') is reported.</p>
<p><b>TN10. RECORD THE TOTAL NUMBER OF LLINs IN HOUSEHOLD BY COUNTING THE NUMBER OF '1' IN TN9.</b></p> <p>Number of LLINs</p>	<p>Proportion of households owning at least one LLIN (TOTLN)</p>	<p>Define a new variable for ownership of at least one LLIN (HHLN). Recode TOTLN to HHLN using the 'If' command: (1) LN or (2) no LN.</p> <p>(1) LN [answer <math>\geq</math> 1] (2) No LN [anything else: answer 0 or answer missing]</p> <p>Run the 'Frequencies'/'Complex Sample Frequencies' command on the variable termed HHLN to fill out <b>Table 6</b>. The frequency of answer 1 ('LN') is reported.</p>

**TABLE 11** SUMMARY TABLE OF INDICATOR DEFINITIONS AND CALCULATION USED TO DETERMINE MOSQUITO NET (ALL TYPES AND LLINS) OWNERSHIP AND UTILISATION OF THE TOTAL POPULATION, CHILDREN 0-59 MONTHS AND PREGNANT WOMEN

Indicator Name	Definition	Calculation, variable names and remarks
1. Average number of LLINs per household	The average number of LLIN nets per household found in the survey	Numerator: Total number of LLINs observed during survey (TOTLN) <u>Divided by</u> Denominator: Total number of households surveyed (HH)  Run the 'Means' command on the variable termed TOTLN to fill out <b>Table 7</b> . The Mean value given is used.
2. Average number of persons per LLIN	The average number of persons per LLIN found in the survey	Numerator: Total number of people in the surveyed households (TOTHH) <u>Divided by</u> Denominator: Total number of LLIN observed during survey (TOTLN)  Run the 'Means' command on the variables termed TOTHH and TOTLN to generate the data you need to fill out <b>Table 7</b> . The Total value given for each variable is used in a hand calculation (numerator / denominator).
3. Total population (all ages) who slept under a net of any type	Proportion of total population (all ages) who slept under a net of any type last night	Numerator: Total number of persons who slept under a net of any type (TOTSLPNT) <u>Divided by</u> Denominator: Total number of people in the surveyed households (TOTHH)  Run the 'Means' command on the variables termed TOTHH and TOTSLPNT to generate the data you need to fill out <b>Table 8</b> . The Total value given for each variable is used in a hand calculation (numerator / denominator).
4. Total population (all ages) who slept under a LLIN	Proportion of total population (all ages) who slept under a LLIN last night	Numerator: Total number of persons who slept under a LLIN (TOTSLPLN) <u>Divided by</u> Denominator: Total number of people in the surveyed households (TOTHH)  Run the 'Means' command on the variables termed TOTHH and TOTSLPLN to generate the data you need to fill out <b>Table 8</b> . The Total value given for each variable is used in a hand calculation (numerator / denominator).

Indicator Name	Definition	Calculation, variable names and remarks
5. 0-59 months who slept under a net of any type	Proportion of children 0-59 months who slept under a net of any type last night	<p>Numerator: Total number of 0-59 months who slept under a net of any type (TOTCHNT)  <u>Divided by</u>  Denominator: Total number of 0-59 months in the surveyed households (TOTCH)</p> <p>Run the 'Means' command on the variables termed TOTCH and TOTCHNT to generate the data you need to fill out <b>Table 8</b>. The Total value given for each variable is used in a hand calculation (numerator / denominator).</p>
6. 0-59 months who slept under a LLIN	Proportion of children 0-59 months who slept under a LLIN last night	<p>Numerator: Total number of 0-59 months who slept under a LLIN (TOTCHLN)  <u>Divided by</u>  Denominator: Total number of 0-59 months in the surveyed households (TOTCH)</p> <p>Run the 'Means' command on the variables termed TOTCH and TOTCHLN to generate the data you need to fill out <b>Table 8</b>. The Total value given for each variable is used in a hand calculation (numerator / denominator).</p>
7. Pregnant women who slept under a net of any type	Proportion of pregnant women who slept under a net of any type last night	<p>Numerator: Total number of pregnant women who slept under a net of any type (TOTPWNT)  <u>Divided by</u>  Denominator: Total number of pregnant women in the surveyed households (TOTPW)</p> <p>Run the 'Means' command on the variables termed TOTPW and TOTPWNT to generate the data you need to fill out <b>Table 8</b>. The Total value given for each variable is used in a hand calculation (numerator / denominator).</p>
8. Pregnant women who slept under a LLIN	Proportion of pregnant women who slept under a LLIN last night	<p>Numerator: Total number of pregnant women who slept under a LLIN (TOTPWLN)  <u>Divided by</u>  Denominator: Total number of pregnant women in the surveyed households (TOTPW)</p> <p>Run the 'Means' command on the variables termed TOTPW and TOTPWLN to generate the data you need to fill out <b>Table 8</b>. The Total value given for each variable is used in a hand calculation (numerator / denominator).</p>

## COMMON ERRORS AND CHALLENGES IN DATA ANALYSIS

**Table 12** describes the most common errors experienced by survey coordinators/supervisors when conducting the final data analysis.

TABLE 12 COMMON ERRORS AND CHALLENGES IN DATA ANALYSIS

Common errors	Examples	Solution
<b>Miscalculating the denominator for the proportion of households owning at least one LLIN</b>	The total number of households owning at least one mosquito net of any type is used as the denominator when calculating the proportion.	Use the total number of households surveyed as the denominator.
<b>Not taking into consideration a weighting factor when combining results from several camps</b>	When surveying several camps with a representative sample drawn from each camp, combining the samples from all camps to calculate the overall results without taking into consideration a weighting factor.	For a tool that will automatically generate weighed results, see SENS Pre-Module tool: [Tool 14-Weighting Data Tool]. 
<b>Reporting mosquito net results according to certain aggregates of clusters</b>	Reporting the mosquito net results per groups of cluster.	Do not disaggregate cluster surveys according to clusters in the presentation of results. All clusters merged together from all section / blocks of the camp are representative of the camp as a whole and should not be disaggregated.
<b>Reporting a change in the mosquito net indicators without any evaluation of whether the observed change is statistically significant or real</b>	Using the point estimate results of two surveys (e.g. 63% vs. 69%) and concluding that there has been a change in e.g. coverage of IRS campaign between two years without looking at the confidence intervals or conducting a statistical test.	Assess whether the confidence intervals overlap and conduct a statistical test using the CDC IERHB calculator. See SENS Pre-Module tool: [Tool 13-CDC Calculator twosurveys]. 

## USE OF RESULTS

### CLASSIFICATION OF PUBLIC HEALTH PROBLEM AND TARGETS

#### *Universal Coverage Thresholds*

- A mass effect has been shown on the mosquito population and on malaria transmission when universal coverage (all persons sleeping under an ITN) is achieved, and the most at risk populations, children <5 and pregnant women in high transmission areas, are better protected when all age groups are covered by ITNs. A Cochrane review of ITNs concluded that, when universal coverage is achieved, ITNs reduce all-cause child mortality by 17% on average compared with no nets, in sub-Saharan Africa<sup>6</sup>.
- Achieving coverage rates above 60% of the total population can result in community-wide benefits<sup>7</sup>.

#### *International Targets*

- **Roll Back Malaria:** 80% of people at risk from malaria are protected, thanks to locally appropriate vector control methods such as insecticide-treated nets (ITNs), indoor residual spraying (IRS) where appropriate and, in some settings, other environmental and biological measures;<sup>8</sup>
- **UNHCR:** >80 % of households with at least one LLIN / ITN. >75% of refugee camps in malaria endemic areas have access to prevention measures (insecticide treated nets/spraying) and culturally appropriate information, education and communication<sup>9</sup>.
- **UNHCR:** 2 persons / LLIN is currently the quantification of the number of persons per LLIN.

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<sup>6</sup> Lengeler C. Insecticide-treated mosquito nets and curtains for preventing malaria. *Cochrane Database of Systematic Reviews*, 2000, (2):CD000363(update *Cochrane Database of Systematic Reviews*, 2004, (2): CD000363).

<sup>7</sup> Killeen GF et al. Preventing childhood malaria in Africa by protecting adults from mosquitoes with insecticide-treated nets. *PLoS Medicine* 2007, 4(7): e229. and Hawley WA et al. Community-wide effects of permethrin-treated bed nets on child mortality and malaria morbidity in western Kenya. *American Journal of Tropical Medicine and Hygiene*, 2003, 68:121–127.

<sup>8</sup> Roll Back Malaria's Global Strategic Plan 2005 – 2015.

<sup>9</sup> UNHCR's Strategic Plan for Malaria Control 2008 – 2012.

### Millennium Development Goals- Malaria is critical to three of the MDGs:

- Goal 4. Child health Target: Target 4: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate.
- Goal 5. Maternal health: Malaria control includes specific prevention during pregnancy to improve both maternal and foetal health.
- Goal 6. Combating HIV/AIDS and other diseases Target 6c: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases. To reduce the incidence of malaria and the number of malaria deaths, efforts will be made to increase both the proportion of children under five years of age sleeping under insecticide-treated bed nets and the proportion of children under-five years of age with fever who are treated with appropriate antimalarial drugs.

### KEY MESSAGES

- There will be key information observed on mosquito net use and maintenance while you are conducting the survey, and it will be apparent that some households are not appropriately using and maintaining their mosquito nets.
- There are several key messages that can be recommended to be disseminated following the nutrition survey based on observations made during data collection:
  - **NET USE:** Households should be informed of the importance of hanging their nets and sleeping under a net every night to prevent malaria. They should be explained that: pregnant women and children <5 are at the greatest risk of malaria illness and death.
  - **NET REPAIRS:** If nets have many holes in them, households should be explained that nets need to be repaired if they are going to stop mosquitos from biting. They should try to repair the holes by stitching, patching or knotting.

## RECOMMENDATIONS

- The rapid LLIN coverage results are to assist public health partners working in refugee settings to better plan their malaria control programming. The results can assist in determining if:
  - A hang-up campaign is necessary to put unused LLINs over sleeping surfaces so that they are more likely used;
  - Increased BCC is necessary for targeted groups who are not sleeping under their LLINs;
  - A redistribution of LLINs is necessary to achieve ownership of sufficient LLINs to reach Universal Coverage;
  - Recent distribution campaigns or routine delivery succeeded in sustaining or increasing ownership and utilisation of LLINs;
  - Recent IRS campaign succeeded in reaching sufficient coverage rate of households.

## REFERENCES

Alliance for Malaria Prevention (2008) A toolkit for developing integrated campaigns to encourage the distribution and use of long lasting insecticide-treated nets.  
<http://www.allianceformalariaprevention.com/resources-view.php?categoryID=7>

Measure DHS, MACRO ICF (2008) Malaria Indicator Survey Guidelines  
[http://rbm.who.int/toolbox/tool\\_MISToolkit.html](http://rbm.who.int/toolbox/tool_MISToolkit.html)

UNHCR (2008) UNHCR Strategic Plan for Malaria Control 2008-2012  
<http://www.unhcr.org/488597e02.html>

WHO (2010) The World Malaria Report: Chapter 2 Targets and Chapter 4 Vector Control.  
[http://www.who.int/malaria/world\\_malaria\\_report\\_2010/en/index.html](http://www.who.int/malaria/world_malaria_report_2010/en/index.html)

# ANNEXES



## ANNEX 1 - SENS MOSQUITO NET COVERAGE QUESTIONNAIRE



See SENS Pre-Module **Tool 9** for the full SENS Questionnaire.

No	QUESTION	ANSWER CODES			
<b>SECTION TN1</b>					
<b>TN1</b>	How many people live in this household and slept here last night? INSERT NUMBER <b>TOTHH</b>				_ _
<b>TN2</b>	How many children 0-59 months live in this household and slept here last night? INSERT NUMBER <b>TOTCH</b>				_ _
<b>TN3</b>	How many pregnant women live in this household and slept here last night? INSERT NUMBER <b>TOTPW</b>				_ _
<b>TN4</b>	Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past  _  months? (OPTIONAL) <b>HHIRS</b>	Yes .....	1	No .....	2  _
<b>TN5</b>	Do you have mosquito nets in this household that can be used while sleeping? <b>MOSNETS</b>	Yes .....	1	No .....	2  _  <b>IF ANSWER IS 2 STOP NOW</b>
<b>TN6</b>	How many of these mosquito nets that can be used while sleeping does your household have? INSERT NUMBER <b>NUMNETS</b>	IF MORE THAN 4 NETS, ENTER THE NUMBER AND USE ADDITIONAL NET QUESTIONNAIRE SHEETS ENTERING THE NUMBER OF THE NETS SEQUENTIALLY AT THE TOP.			_  Nets
<b>TN7</b>	ASK RESPONDENT TO SHOW YOU THE NET(S) IN THE HOUSEHOLD. IF NETS ARE NOT OBSERVED → CORRECT TN6 ANSWER	NET # _	NET # _	NET # _	NET # _
<b>TN8</b>	OBSERVE NET AND RECORD THE BRANDNAME OF NET ON THE TAG. IF NO TAG EXISTS OR IS UNREADABLE RECORD 'DK' FOR DON'T KNOW.				
<b>TN9</b>	<b>For surveyor/supervisor only (not to be done during interview):</b>  WHAT TYPE OF NET IS THIS? BASED ON THE TAG INDICATE IF THIS IS A LLIN OR OTHER TYPE OF NET OR DK.	1=LLIN 2=Other/DK  _  <b>LNTYPE1</b>	1=LLIN 2=Other/DK  _  <b>LNTYPE2</b>	1=LLIN 2=Other/DK  _  <b>LNTYPE3</b>	1=LLIN 2=Other/DK  _  <b>LNTYPE4</b>
<b>TN10</b>	<b>For surveyor/supervisor only (not to be done during interview):</b>  RECORD THE TOTAL NUMBER OF LLIN IN HOUSEHOLD BY COUNTING THE NUMBER OF '1' IN TN9. <b>TOTLN</b>				_  LLINs

SECTION TN2											
Line no	Household members	Sex	Age	Pregnancy status	Slept under net	Which net	Type of net				
#	COL1	COL2	COL3	COL4	COL5	COL6	COL7				
	Please give me the names of the household members who live here and who slept here last night	Sex m/f	Age years	FOR WOMEN 15-49 YEARS, ASK: Is (NAME) currently pregnant?  (CIRCLE NOT APPLICABLE OR N/A '99' IF FEMALE <15- >49 YEARS OR MALE)  Yes No/DK N/A	Did (NAME) sleep under a net last night?  Yes No/DK	ASK THE RESPONDENT TO PHYSICALLY IDENTIFY WHICH OF THE OBSERVED NETS THEY SLEPT UNDER.  WRITE THE NUMBER CORRESPONDING TO THE NET THEY USED.	<b>For surveyor/ supervisor only:</b>  BASED ON THE OBSERVED NET BRANDNAME RECORDED (TN8), INDICATE IF IT IS AN LLIN OR OTHER / DON'T KNOW (DK)  LLIN OTHER/DK	1	2		
01		m f	<5 ≥5	1 0 99	1 0	___	1 2				
02		m f	<5 ≥5	1 0 99	1 0	___	1 2				
03		m f	<5 ≥5	1 0 99	1 0	___	1 2				
04		m f	<5 ≥5	1 0 99	1 0	___	1 2				
05		m f	<5 ≥5	1 0 99	1 0	___	1 2				
06		m f	<5 ≥5	1 0 99	1 0	___	1 2				
07		m f	<5 ≥5	1 0 99	1 0	___	1 2				
08		m f	<5 ≥5	1 0 99	1 0	___	1 2				
09		m f	<5 ≥5	1 0 99	1 0	___	1 2				
10		m f	<5 ≥5	1 0 99	1 0	___	1 2				
11		m f	<5 ≥5	1 0 99	1 0	___	1 2				
12		m f	<5 ≥5	1 0 99	1 0	___	1 2				
13		m f	<5 ≥5	1 0 99	1 0	___	1 2				
14		m f	<5 ≥5	1 0 99	1 0	___	1 2				
15		m f	<5 ≥5	1 0 99	1 0	___	1 2				

Mosquito net summary (for surveyor / supervisor only, not to be done during interview)						
	Total household members		Total <5		Total Pregnant	
<b>Slept under a net of any type</b>	Count the number of '1' in COL5	<b>TN11</b>  __ __  <b>TOTSLPNT</b>	For children < 5 (COL3 is '<5'), count the number of '1' in COL5	<b>TN13</b>  __ __  <b>TOTCHNT</b>	For pregnant women (COL4 is '1'), count the number of '1' in COL5	<b>TN15</b>  __ __  <b>TOTPWNT</b>
<b>Slept under an LLIN</b>	Count the number of '1' in COL7	<b>TN12</b>  __ __  <b>TOTSLPLN</b>	For children <5 (COL3 is '<5'), count the number of '1' in COL7	<b>TN14</b>  __ __  <b>TOTCHLN</b>	For pregnant women (COL4 is '1'), count the number of '1' in COL7	<b>TN16</b>  __ __  <b>TOTPWLN</b>

## ANNEX 2 - PICTORIAL GUIDE ON MOSQUITO NET

### PICTORIAL GUIDE TO IDENTIFYING MOSQUITO NET TYPES

There are several World Health Organization Pesticide Evaluation Scheme (WHOPES) Nets approved as Long-lasting insecticide treated nets (LLINs). Each of these mosquito nets has a brand name TAG, as do insecticide treated nets (ITN) and conventional nets. In order to determine if a net is an LLIN or not, you will look for the brand name TAG and refer to the updated listing of WHOPES approved LLINs at <http://www.who.int/whopes/en/>.

**This version of the guide shows the TAGS of mosquito nets WHOPES approved as of January 2011. The coordinator will be required to update the Pictorial Guide with images of the TAGS of LLINs and other ITN or conventional nets found in their survey area. Note that often LLINs are rebranded with a new brand name for social marketing (e.g. OLYSET is called SUPANET X-TRA), so look carefully for the brand name and manufacturer to determine if it is an LLIN or not.**

### READING BRAND NAME TAGS

When you are looking at the mosquito net:

- Look at the seam (where the sides of the mosquito nets are sewn together), between the roof and the walls, and at the walls for the TAG.
- Read and record the information on the TAG looking for the brand name and the manufacturer e.g. OLYSET – Sumitomo.
- If you cannot read the TAG, please write “Don’t know”
- If there is no TAG, please write “Don’t know”
- If you do not recognize the name on the TAG from the guide provided, record the manufacturer name and brand name, and inform your **supervisor / coordinator** so that they can look at the new brand found (if possible also take a photo of the TAG).

### READING THE TAG

**STEP 1:** Have the respondent show you the mosquito net.



**STEP 2:** Look over the seams in the mosquito net to find the manufacturer's TAG.



**STEP 3:** Read the TAG and record the brand name.



**TABLE 13** EXAMPLES OF THE TAGS, BRAND NAMES AND MANUFACTURERS

<b>Brand name</b>	OLYSET®		
<b>Manufacturer</b>	Sumitomo Chemicals and/or A to Z textiles		
<b>Specifications</b>	Polyethylene Fabric LLIN		
<b>Brand name</b>	Netprotect®		
<b>Manufacturer</b>	Bestnet		
<b>Specifications</b>	Polyethylene Fabric. LLIN		
<b>Brand name</b>	Interceptor®		
<b>Manufacturer</b>	BASF The Chemical Company		
<b>Specifications</b>	Polyester Fabric. LLIN		
<b>Brand name</b>	Permanet® 2.0 Permanet® 2.5 Permanet® 3.0		
<b>Manufacturer</b>	Vestergaard-Frandsen		
<b>Specifications</b>	Polyester Fabric. LLIN		
<b>Brand name</b>	DawaPlus® 2.0		
<b>Manufacturer</b>	Tana Netting Co. Ltd		
<b>Specifications</b>	Polyester Fabric. LLIN		
<b>Brand name</b>	DuraNet		
<b>Manufacturer</b>	Clarke Mosquito		
<b>Specifications</b>	Polyethylene. LLIN		

## ANNEX 3 - TRAINING IDEAS

### MATERIALS REQUIRED

- Example mosquito nets
- 10 copies of the questionnaire per surveyor
- 1 copy of the pictorial guide for identifying mosquito net types and assessment
- Pens
- Notebooks
- Clipboards

### EXERCISES

#### Exercise 1: The questionnaire

- Divide participants into pairs and ask them to go through the questionnaire taking turns to be the respondent and the surveyor.
- Ask them to note any problem they have as they go along. Discuss in plenary.

#### **Exercise 2: Determining the mosquito net type (this will probably be done by the survey supervisor / coordinator in most nutrition surveys but it can also be done by surveyors)**

- Obtain samples of commonly used mosquito nets from the retail market and mosquito net distribution partners, and compile photographs of the TAGS in a Word document
- Show each of the example mosquito nets and ask the participants to identify the brand name, manufacturer and indicate if it is an LLIN or not.
- Explain that they will need to refer to the pictorial guide for identification of mosquito net type and assessment.
- Ask each surveyor the brand name, manufacturer and type of net of each of the examples of mosquito nets that you have until you are confident that the surveyor can easily identify nets.

## ROLE PLAYING

### Role Play 1

- Divide the participants into their interview teams.
- The coordinator will set up a simulation household with mosquito nets.
- The coordinator takes the role of the respondent and asks each interview team to practice delivering the mosquito net coverage questionnaire and recording their answers.
- The coordinator uses this opportunity to identify the possible pitfalls or to identify issues that might be a problem.
- After each questionnaire, review the answers and discuss any problem identified such as poor communication or showing displeasure at a particular response.
- The other survey teams will take the opportunity to observe their colleagues and contribute with feedback.

### Role Play 2

- Two sets of interview teams will be paired together to practice delivering and answering the questions.
- The coordinator will provide each survey team with a scenario to re-enact where there will be different challenges that may be encountered in the field:
  - Refusal to enter the house to see the mosquito nets
  - Mosquito nets with no TAGS or where the information is difficult to read
  - Respondent delivers conflicting information
  - Large household size and / or large number of mosquito nets in the household
- After the questionnaires have been completed, the coordinator will review the questionnaires with the interview teams and compare them with the scenario given to assess whether the data recording has been performed properly.
- Ask the participants to identify the problems in each role-play once it has been performed and clarify the correct procedure.

## FIELD PRACTICE

- Interview teams will go to the field in a location where the survey will not be taking place.
- Teams will practice the following.
  - Delivering the questionnaire to the household (3 questionnaires)
  - Calculating the summary sheets
- Field practice will assist the coordinator and interview teams in identifying any additional difficulties that may present themselves when in the field.

## TEST

- The questions in the training test shown below can be used as a basis for the written test and can be adapted according to circumstances.
- A passing grade of at least 70% should be achieved to continue as a surveyor.
- The results of the test can help the coordinator to assess which of the surveyors will need more support in the field. The weaker surveyors can also be paired with stronger ones.
- The questions should be given out with a copy of the finalized questionnaire so that participants can refer to this.

**TABLE 14 TRAINING TEST**

Mosquito net Coverage Module	
PRACTICE	
1.	<b>What two characteristics make someone “not applicable” to be pregnant?</b> Answer: Under the age of 15 years and above 49 years and Male.
2.	<b>What do you do if a respondent will not allow you into their house to see their mosquito nets?</b> Answer: Ask the respondent to bring the nets outside for you to look at.
3.	<b>What do you do if the number of mosquito nets the respondent reports does not equal the number of mosquito nets found in their household?</b> Answer: Probe to see the additional nets if the number seen is less than the number reported. Adjust the number of mosquito nets reported if additional nets are found when in the household.
4.	<b>What do you do if you find mosquito nets in the household that are still in their packaging?</b> Answer: These nets should be considered as mosquito nets that can be slept under and should be counted in the total number of mosquito nets in the household that can be slept under (questions TN5-TN8).
5.	<b>How do you identify a mosquito net as an LLIN or NOT?</b> Answer: Find the manufacturers TAG on the mosquito net and record the brand name and manufacturer’s information. Then it is possible to compare this to the WHOPES listing of approved LLINs.
6.	<b>Are mosquito nets that are being used for another purpose: fencing, fishing, covering their plants; considered for inclusion in total number of mosquito nets in the household? Yes or No</b> Answer: No, because they cannot be used for sleeping under.
7.	<b>Are households that do not have any mosquito nets included in this survey? Yes or No</b> Answer: Yes
8.	<b>What do you do if there are more than 4 mosquito nets found in a household?</b> Answer: Use a supplementary mosquito net questionnaire.

## ANNEX 4 - EPI INFO DATA ENTRY

Below is the standard Epi Info view available in the Epi Info mdb file entitled HUN1207TNBUDA in the SENS Mosquito Net Coverage tool: [Tool 1-TN Data]. To access the view, go to the Make View module and open the corresponding View entitled TSENS.



UNHCR SENS-MOSQUITO NET COVERAGE			
Date of interview (dd/mm/yyyy)	<input type="text"/>	Cluster Number	<input type="text"/>
Team Number	<input type="text"/>	HH Number	<input type="text"/>
<b>SECTION TN1</b>			
TN1. How many people live in this household and slept here last night?		<input type="text"/>	
TN2. How many children 0-59 months live in this household and slept here last night?		<input type="text"/>	
TN3. How many pregnant women live in this household and slept here last night?		<input type="text"/>	
TN4. Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past [insert] months?		<input type="text"/>	
TN5. Do you have mosquito nets in this household that can be used while sleeping?		<input type="text"/>	
TN6. How many of these mosquito nets that can be used while sleeping does your household have?		<input type="text"/>	
TN9. What type of net is this?	NET #1 <input type="text"/>	NET #2 <input type="text"/>	NET #3 <input type="text"/> NET #4 <input type="text"/>
TN10. Total number of LLINs		<input type="text"/>	
<b>SECTION TN2</b>			
TN11. Total HH members who slept under a net of any type	<input type="text"/>	TN13. Total <5 who slept under a net of any type	<input type="text"/>
TN15. Total pregnant women who slept under a net of any type		<input type="text"/>	
TN12. Total HH member who slept under an LLIN	<input type="text"/>	TN14. Total <5 who slept under an LLIN	<input type="text"/>
TN16. Total pregnant women who slept under an LLIN		<input type="text"/>	

Editing a View  
TSENS

## ANNEX 5 - EPI INFO ANALYSIS

Below are the standard Epi Info codes to use for analysis. The standard PGM files containing these Epi Info codes can be found in the Epi Info mdb file entitled HUN1207TNBUDA in the SENS Mosquito Net Coverage tool: **[Tool 1-TN Data]**. To access the PGM files, go to the Analyze Data module, Program Editor window and open the corresponding PGM file needed for the analysis.



Refer to the fictitious dataset available for practical purposes; Go to SENS Mosquito Net Coverage **Tool 1**, and see the Excel database HUN\_1207\_TN\_BUDA.

The practical Excel database HUN\_1207\_TN\_BUDA is from a survey using *simple random sampling*.

### DATA CLEANING

Run these commands (together or separately; regardless of the survey design) and make sure that the ranges of the variables entered in the database match the standard codes shown in **Tables 2** and **3** above or that the range is realistic.

**MEANS TOTHH** (note that the range of household size should not exceed 20-25 in most refugee contexts; you should check that no obvious data entry errors occurred, e.g. entering 100 instead of 10)

**MEANS TOTCH** (note that the range of children U5 per household should not exceed 5-7 in most refugee contexts; you should check that no obvious data entry errors occurred, e.g. entering 50 instead of 5)

**MEANS TOTPW** (note that the range of pregnant women per household should not exceed 2-3 in most refugee contexts; you should check that no obvious data entry errors occurred, e.g. entering 20 instead of 2)

**FREQ HHIRS**  
**FREQ MOSNETS**

**MEANS NUMNETS** (note that the number of nets a household has to use for sleeping would not normally exceed the total number of household members in most refugee contexts; you should check that no obvious data entry errors occurred, e.g. entering 30 instead of 3)

**FREQ LNTYPE1**  
**FREQ LNTYPE2**  
**FREQ LNTYPE3**

**FREQ LNTYPE4** (note that you should add more variables if more than 4 nets were observed in some households, e.g. LNTYPE5, LNTYPE6, LNTYPE7 etc)

**MEANS TOTLN** (note that the number of LLIN a household has to use for sleeping would not normally exceed the total number of household members in most refugee contexts; you should check that no obvious data entry errors occurred, e.g. entering 30 instead of 3)

Similarly, with the variables below, check that no obvious data entry errors occurred, e.g. entering 50 instead of 5:

**MEANS TOTSLPNT**  
**MEANS TOTSLPLN**  
**MEANS TOTCHNT**  
**MEANS TOTCHLN**  
**MEANS TOTPWNT**  
**MEANS TOTPWLN**

You should check the missing data in your database and double-check that this was not a data entry oversight. The commands below need to be run separately, one by one. After selecting the variable using the code shown below, use the LIST command to view the specific records with missing data and double-check with the original data collection questionnaire. Then cancel the selected variable by typing SELECT and proceed with checking another variable.

**SELECT TOTHH=(.)**  
**SELECT** (this will cancel the selected variable)

**SELECT TOTCH=(.)**

**SELECT TOTPW=(.)**

**SELECT HHIRS=(.)**

**SELECT MOSNETS=(.)**

**SELECT MOSNETS=1 AND NUMNETS=(.)**

**SELECT MOSNETS=1 AND TOTLN=(.)**

**SELECT MOSNETS=1 AND TOTSLPNT=(.)**

**SELECT MOSNETS=1 AND TOTSLPLN=(.)**

**SELECT MOSNETS=1 AND TOTCHNT=(.)**

**SELECT MOSNETS=1 AND TOTCHLN=(.)**

**SELECT MOSNETS=1 AND TOTPWNT=(.)**

**SELECT MOSNETS=1 AND TOTPWLN=(.)**

## DATA ANALYSIS

Results from the practical dataset are illustrated below.

### MOSQUITO NET OWNERSHIP ANALYSIS

#### HOUSEHOLD MOSQUITO NET OWNERSHIP

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	139/211	65.9 (59.1-72.2)
Proportion of households owning at least one LLIN	117/211	55.5 (48.5-62.3)

#### Household ownership of net of any type

#### FREQ MOSNETS

If you are analysing a cluster survey, you need to use the C-Sample commands and the code is as follows:

#### FREQ MOSNETS PSUVAR=CLUSTER

MOSNETS	Frequency	Percent	Cum Percent	
1	139	65.9%	65.9%	
2	72	34.1%	100.0%	
Total	211	100.0%	100.0%	

#### 95% Conf Limits

1 59.1% 72.2%

2 27.8% 40.9%

**Household ownership of LLIN**

DEFINE HHLN

IF TOTLN>=1 THEN

    HHLN="LN"

ELSE

    HHLN="no LN"

END

IF MOSNETS=(.) THEN

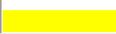
    HHLN=(.)

END

FREQ HHLN

If you are analysing a cluster survey, you need to use the C-Sample commands and the code is as follows:

FREQ HHLN PSUVAR=CLUSTER

HHLN	Frequency	Percent	Cum Percent	
LN	117	55.5%	55.9%	
no LN	94	44.5%	100.0%	
Total	211	100.0%	100.0%	

**95% Conf Limits**

LN 48.5% 62.3%

no LN 37.7% 51.5%

**NUMBER OF NETS ANALYSIS****NUMBER OF NETS**

Average number of LLINs per household	Average number of persons per LLIN
1.7	4.5

**LLIN per household**

The same command is used in simple random surveys and cluster surveys for this indicator.

**MEANS TOTLN**

```

Obs   Total   Mean   Variance Std Dev
139  234.0000  1.6835  1.5223  1.2338
Minimum 25%  Median 75%  Maximum Mode
0.0000 1.0000 2.0000 2.0000  8.0000 1.0000

```

**Persons per LLIN**

The same commands and hand calculations are used in simple random surveys and cluster surveys for this indicator.

**MEANS TOTHH**

```

Obs   Total   Mean   Variance Std Dev
211  1061.0000  5.0284  7.3135  2.7043
Minimum 25%  Median 75%  Maximum Mode
1.0000 3.0000 5.0000 7.0000  14.0000 5.0000

```

**MEANS TOTLN**

```

Obs   Total   Mean   Variance Std Dev
139  234.0000  1.6835  1.5223  1.2338
Minimum 25%  Median 75%  Maximum Mode
0.0000 1.0000 2.0000 2.0000  8.0000 1.0000

```

**Hand calculation:**

Total number of people in surveyed households / Total number of LLIN found in all surveyed households =  $1061 / 234 = \sim 4.5$

**MOSQUITO NET UTILISATION ANALYSIS****MOSQUITO NET UTILISATION**

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Total No= 1061	%	Total No= 227	%	Total No= 24	%
<b>Slept under net of any type</b>	413	38.5	96	41.4	9	37.5
<b>Slept under LLIN</b>	314	29.2	73	31.3	8	33.3

The same commands and hand calculations are used in simple random surveys and cluster surveys for these indicators.

**Total population of all ages**

## MEANS TOTHH

Obs	Total	Mean	Variance	Std Dev	
211	1061.0000	5.0284	7.3135	2.7043	
Minimum	25%	Median	75%	Maximum	Mode
1.0000	3.0000	5.0000	7.0000	14.0000	5.0000

**Proportion of total population who slept under net of any type**

## MEANS TOTSLPNT

Obs	Total	Mean	Variance	Std Dev	
139	409.0000	2.9424	6.4749	2.5446	
Minimum	25%	Median	75%	Maximum	Mode
0.0000	0.0000	3.0000	5.0000	11.0000	0.0000

**Hand calculation:**

Total number of people who slept under a net of any type / Total number of people in the surveyed households=409 / 1061 x 100= ~38.5%

**Proportion of total population who slept under LLIN**

## MEANS TOTSLPLN

Obs	Total	Mean	Variance	Std Dev	
139	310.0000	2.2302	6.7002	2.5885	
Minimum	25%	Median	75%	Maximum	Mode
0.0000	0.0000	1.0000	4.0000	11.0000	0.0000

**Hand calculation:**

Total number of people who slept under a LLIN / Total number of people in the surveyed households=310 / 1061 x 100= ~29.2%

**Total population of 0-59 months**

## MEANS TOTCH

Obs	Total	Mean	Variance	Std Dev	
211	227,0000	1.0758	1.2037	1.0972	
Minimum	25%	Median	75%	Maximum	Mode
0.0000	0.0000	1.0000	2.0000	5.0000	0.0000

**Proportion of total 0-59 months who slept under net of any type**

## MEANS TOTCHNT

Obs	Total	Mean	Variance	Std Dev	
139	94,0000	.6763	.8437	.9185	
Minimum	25%	Median	75%	Maximum	Mode
0.0000	0.0000	0.0000	1.0000	3.0000	0.0000

**Hand calculation:**

Total number of 0-59 months who slept under a net of any type / Total number of 0-59 months in the surveyed households =  $94 / 227 \times 100 = \sim 41.4\%$

**Proportion of total 0-59 months who slept under LLIN**

## MEANS TOTCHLN

Obs	Total	Mean	Variance	Std Dev	
139	71,0000	.5108	.7589	.8712	
Minimum	25%	Median	75%	Maximum	Mode
0.0000	0.0000	0.0000	1.0000	3.0000	0.0000

**Hand calculation:**

Total number of 0-59 months who slept under a LLIN / Total number of 0-59 months in the surveyed households =  $71 / 227 \times 100 = \sim 31.3\%$

**Total population of pregnant women**

## MEANS TOTPW

Obs	Total	Mean	Variance	Std Dev	
211	24.0000	.1137	.1203	.3469	
Minimum	25%	Median	75%	Maximum	Mode
0.0000	0.0000	0.0000	0.0000	2.0000	0.0000

**Proportion of total pregnant women who slept under net of any type**

## MEANS TOTPWNT

Obs	Total	Mean	Variance	Std Dev	
139	9.0000	.0647	.0610	.2470	
Minimum	25%	Median	75%	Maximum	Mode
0.0000	0.0000	0.0000	0.0000	1.0000	0.0000

**Hand calculation:**

Total number of pregnant women who slept under a net of any type / Total number of pregnant women in the surveyed households=9 / 24 x 100= ~37.5%

**Proportion of total pregnant women who slept under LLIN**

## MEANS TOTPWLN

Obs	Total	Mean	Variance	Std Dev	
139	8.0000	.0576	.0546	.2337	
Minimum	25%	Median	75%	Maximum	Mode
0.0000	0.0000	0.0000	0.0000	1.0000	0.0000

**Hand calculation:**

Total number of pregnant women who slept under a LLIN / Total number of pregnant women in the surveyed households=8 / 24 x 100= 33.3%

## INDOOR RESIDUAL SPRAYING ANALYSIS

### INDOOR RESIDUAL SPRAYING HOUSEHOLD COVERAGE

	Number/total	% (95% CI)
Proportion of household covered by IRS	150/211	71.1 (64.5-77.1)

#### FREQ HHIRS

If you are analysing a cluster survey, you need to use the C-Sample commands and the code is as follows:

#### FREQ HHIRS PSUVAR=CLUSTER

HHIRS	Frequency	Percent	Cum Percent	
1	150	71.1%	71.1%	
2	61	28.9%	100.0%	
Total	211	100.0%	100.0%	

#### 95% Conf Limits

1 64.5% 77.1%  
 2 22.9% 35.5%

## ANNEX 6 PRESENTATION OF COMBINED RESULTS

- Weighting the data will need to be done if you have conducted surveys in a number of different camps or areas, and need to combine the results for reporting or planning purposes.
- It is not required to report the combined results for all indicators or to report the confidence intervals for the combined estimates. The table below outlines the indicators that should be reported during a combined analysis and included in the survey report.
- For a tool that will automatically generate weighed prevalence results, see SENS Pre-Module tool: [**Tool 14-Weighting Data Tool**].



### COMBINED HOUSEHOLD MOSQUITO NET OWNERSHIP

<b>Proportion of total households owning at least one mosquito net of any type</b>	%
<b>Proportion of total households owning at least one LLIN</b>	%