

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

**MODULE 6:
MOSQUITO NET COVERAGE**

A PRACTICAL STEP-BY-STEP GUIDE

VERSION 3 (2018)





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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 strategies.
- SENS surveys assessing mosquito net coverage should preferably be carried out in the high malaria transmission season when LLIN usage is often higher and LLIN utilisation more important.
- SENS surveys assessing mosquito net coverage 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 managers and survey teams 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 a LLIN distribution campaign, or a malaria indicator survey.
- This module is intended to inform the SENS 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 the final SENS report.

Definition of some key terms

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.

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.¹

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.

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 washes² under laboratory conditions and three years of recommended use.

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.

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^{3 4}. In the case of ITNs, coverage refers to all at risk populations sleeping under an ITN.

1 WHO 2006, Use of indoor residual spraying for scaling up global malaria control and elimination. WHO Position Statement.

2 See WHOPES website for more information: <https://www.who.int/whopes/resources/en/>

3 [Roll Back Malaria's Global Strategic Plan 2018-2020](#)

4 Roll Back Malaria Partnership's *Action and Investment to defeat Malaria 2016-2030-for a malaria-free world*.

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 in the last 6 months/12 months (**SENS recommendation**: include this indicator only if IRS implemented in the last 6 months/12 months).

Things to note:

- The frequency of the spraying cycle will depend on the malaria transmission patterns of the area and the residual effect of the insecticide formulation chosen. Spray rounds should ideally be completed in less than 2 months and just before the transmission season. In endemic areas with perennial transmission, two rounds of spraying in 6-month cycles may be recommended to ensure that there is adequate year-round coverage with residual insecticides. If the transmission pattern exhibits bimodal peaks, spraying rounds should target the peaks. In areas with one seasonal transmission, one spray round, in yearly cycles before the period of transmission, should be enough to have an impact on malaria transmission.

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 (LLIN).
- To measure the average number of LLIN per household.
- To measure the average number of persons per LLIN.

Specific Objectives- 2:

- To measure the proportion of the total population who slept under a mosquito net (all types) last night.
- To measure the proportion of the total population who slept under an LLIN last night.
- To measure the proportion of children 0-59 months who slept under a mosquito net (all types) last night.
- To measure the proportion of children 0-59 months who slept under an LLIN last night.
- To measure the proportion of pregnant women who slept under a mosquito net (all types) last night.
- To measure the proportion of pregnant women who slept under an LLIN last night.

Specific Objective- 3:


- To determine the household coverage of indoor residual spraying in the last 6 months/12 months (if applicable).

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.
- The key mosquito net coverage variables are automatically calculated after data collection has been completed in order to derive the indicators (this is manually calculated if paper-based surveys are used).
- 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 nets distributed during the last mass distributions from health centres in Antenatal Care Clinics and vaccination 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.
- During training, participants can be asked to assess their own mosquito nets they have in their household. This might help to complete the list of nets available in the survey context.

Material needed

- SENS mosquito net coverage questionnaires: 1 per household surveyed.
- Technical forms for MDC surveys. Paper questionnaires for paper-based surveys (always carry extra copies).
- The SENS mosquito net coverage questionnaire is shown in **Annexes 1-2** or see SENS Pre-Module tools: [**Tool 11**-Full SENS Questionnaire] and [**Tool 12**-Full SENS Questionnaire with Instructions]. 
- Pictorial guide on how to assess and identify the type of mosquito net; see **Annex 3**.

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 context⁵) 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).
- The respondent will provide a listing of the household members indicating their sex and age category [<5, 5-14, 15-49, ≥50] 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 be filled in for all household members. If a household member did not sleep in the house the previous night, she/he will be omitted from the analysis.
- 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.

⁵ In refugee settings, a household is typically defined as a group of people who live together and routinely eat out of the same pot.

Training

- The training needs to contain a mix of theory, practical exercises (especially role plays and field practice, see **Annex 4**), 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 survey manager(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 3**.
- A short written or verbal test, see **Annex 4**.

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 manager(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

Common errors / challenges	Examples	Solution
Error in recording household members in the different SENS modules	The numbers of children under-5 or pregnant women recorded do not match the numbers assessed in the other modules / questionnaires.	The survey teams need to ensure to collect information from all household members in all modules.
Error in the total number of mosquito nets reported not equalling the number of mosquito nets surveyed	There were 3 mosquito nets reported in the household, but information is only taken on 2 mosquito nets.	The survey teams must clarify with the household the correct response. Supervisors must review questionnaires to watch for these errors.
Challenge where a respondent refuses to let you into the house or to take the mosquito nets out of the house to assess	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.
Error where the mosquito nets recorded on the questionnaire are being used for other purposes than that intended (i.e. sleeping under)	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 only mosquito nets that are available for sleeping under are counted. This does not include mosquito nets being used for other purposes.
Error in counting the mosquito nets still in their packaging or being stored	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.
Challenge where new mosquito net brand names are found on the tags	Surveyors do not record the information properly.	Ensure that interview teams inform their supervisor of any new brand of nets identified and record them on the questionnaire in the 'other (please specify)' category.

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 survey managers

- **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 tags of the different brands being used in the study area. See **Annex 3. In some cases other brands of mosquito nets may be found while conducting the survey. It is important that these are shown to the survey manager 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 capital letters 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 instructions

- The Mosquito net coverage SENS questionnaire is shown in **Annex 1** and in **Annex 2**. See SENS Pre-Module tools: [**Tool 11**- Full SENS questionnaire] and [**Tool 12**- Full SENS Questionnaire with Instructions].
- The **Tables 2-4** below provide instructions on the questionnaire for adaptation to the local context, explain the rationale of each question and highlight special instructions to be given to the surveyors.



TABLE 2 MOSQUITO NET COVERAGE MODULE: DETAILS ON THE HOUSEHOLD (SECTION TN1)

Question number/ Section TN1	Variable name	Question	Special Instructions
			These questions need to be asked to the head of the household or, if they are absent, another adult member of the household.
TN1	TN-CONST	<p>Was consent given for conducting the interview?</p> <p>1= Yes 2= No 3= Absent</p>	<p>Ensure that you have introduced the team and informed them about the interview.</p> <p>If a household is absent, the team leader should record this information and determine another time to return on the same survey day and/or before to leave the survey area. The team should revisit an absent household up to two times, if it is logistically feasible, on the same survey day. If they are unsuccessful after this, the household should be recorded as an absence and they should <u>not</u> be replaced with another household.</p> <p>Refer to SENS pre-module tool: [Tool 8- Data collection control sheet] for a model tool to help track the absent households.</p> <p>If answer is “2” (No) or “3” (Absent), stop here for the mosquito net coverage questionnaire.</p>
TN2	TNHH-SIZE	What is the total number of households members?	Record number.
TN3	TOTHH	How many people live in this household and slept here last night?	Record number.
TN4	TOTCH	How many children 0-59 months live in this household and slept here last night?	Record number or type “0” if there aren’t any children below 5 years.
TN5	TOTPW	How many pregnant women live in this household and slept here last night?	Record number or type “0” if there aren’t any pregnant women.

Question number/ Section TN1	Variable name	Question	Special Instructions
TN6	HHIRS	<p>Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past 6/12 months?</p> <p>1= Yes 2= No 3= Don't know</p> <p>(IF APPLICABLE)</p>	<p>This question refers to the past 6 months or to the past 12 months. Adapt the frequency of the spraying cycle to the survey setting. If no Indoor Residual Spraying (IRS) campaign was done in the last 6 months/12 months, exclude this question.</p> <p>Explain that this is not the can of insecticide that can be sprayed in the house.</p>
TN7	MOS-NETS	<p>Do you have mosquito bed nets in this household that can be used while sleeping?</p> <p>1=Yes 2=No 8=Don't know</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. This includes mosquito nets that are being saved or stored, including those currently in their packaging.</p> <p>There may be nets that are being used for other purposes (e.g. fencing, fishing and roofing) and these will not be assessed in this survey.</p> <p>If answer is "2" (no) or "8" (don't know), stop here for the mosquito net coverage questionnaire.</p>
TN8	NUM-NETS	<p>How many of these mosquito bed nets that can be used while sleeping does your household have?</p> <p>Lower limit=1 Upper limit=10</p>	<p>Record reported number. Probe any nets currently not in use that are being saved or stored (still in their package).</p> <p>This is the number of mosquito nets (of all type), as reported by the respondent. This number will be confirmed by observations.</p>

TABLE 3 MOSQUITO NET COVERAGE MODULE: OBSERVATION OF BED NETS (SECTION TN2)

Question number/ Section TN2	Variable name	Question	Special Instructions
			These questions need to be asked for each bed net used for sleeping reported by the respondent.
TN9	NETOBS	Can the bed net be observed? 1= Yes 2= No	Ask respondent to show you the net in the household. If answer is “2” (no), go to TN12.
TN10	NET-BRAND	What is the brand of the net observed? 01= DAWAPLUS 02= DURANET 03= INTERCEPTOR 04= LIFENET 05= MAGNET 06= MIRANET 07= OLYSET 08= PANDANET 09= PERMANET 10= ROYALSENTRY 11= SAFENET 12= VEERALIN 13= YALE 14= YORKKOL 15= Insecticide treated net (ITN) #1 16= ITN Name #2 17= ITN Name #3 96= Other (please specify) 98= Unidentifiable / Don't know	Adapt list to local setting before survey. The list shown here contains all LLIN brand names recommended by the World Health Organization as of April 2016 (see WHOPES Recommendations for updates). The Brand names of WHOPES approved LLINs can be found at https://www.who.int/pq-vector-control/prequalified-lists/en/ ¹ 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. In most settings there will be other types of nets that are non-LLIN, those are referred to as ITN. Guidelines for reading tags can be found in Annex 3 of SENS mosquito net module. Look at the tag on the net. If there is none or is unreadable, select ‘Unidentifiable / don’t know’. If answer is “96” (Other, please specify), go to TN11.
TN11	BRAN-DOTH	If other, please specify the brand name of net	If after the survey, it is noted that some of these brand names represent LLINs, it will be necessary to combine those with the other LLINs identified. Consult regional/HQ offices for support on how to proceed with analysis.
	TOTLN		The total number of long-lasting insecticidal nets (LLINs) in the household is automatically calculated in MDC surveys. Refer to Annex 1 of SENS mosquito net module for guidance on how to manually calculate this number in paper-based surveys.

TABLE 4 MOSQUITO NET COVERAGE MODULE: SURVEY OF HOUSEHOLD MEMBERS (SECTION TN3)

Question number/ Section TN3	Variable name	Question	Special Instructions
			These questions need to be asked for each household member who lives in the household and slept in the household last night.
TN12	HHMID	ID of household member	Include as many persons as there are in the household. The ID number is automatically generated in MDC surveys starting at 1.
TN13	HHMSEX	What is the sex of the household member? m= Male f= Female	
TN14	HHMAGE	How old is the household member? 1= <5 years 2= ≥5 years	
TN15	HHM-PREG	Is the household member currently pregnant? 1= Yes 2= No 8= Don't know	In MDC surveys, this question is automatically skipped if female <15 - >49 years or male.
TN16	SLPNET	Did the household member sleep under a net last night? 1= Yes 2= No 8= Don't know	
TN17	SLP-BRAND	Select the brand of the net under which the household member slept Responses from TN10 shown here. Example: NETBRAND1 - PERMANET NETBRAND2 - PERMANET NETBRAND3 - Unidentifiable/Don't know NETBRAND4 – OLYSET	Ask the respondent to physically identify which of the observed nets s/ he slept under.

Question number/ Section TN3	Variable name	Question	Special Instructions
TN18	TOT-SLPNT	Total of household members who slept under a net of any type	<p>These variables (TN18-TN23) are the mosquito net summary given automatically in MDC survey for use during data analysis.</p> <p>In paper-based surveys, refer to Annex 1 for further guidance on how to calculate these variables.</p>
TN19	TOT-SLPLN	Total of household members who slept under an LLIN	
TN20	TOT-CHNT	Total of children under 5 who slept under a net of any type	
TN21	TOTCH-LN	Total of children under 5 who slept under an LLIN	
TN22	TOTP-WNT	Total of pregnant women who slept under a net of any type	
TN23	TOTP-WLN	Total of pregnant women who slept under an LLIN	

Data review

- Refer to SENS Pre-module Tool: [**Tool 15**- Standard Operating Procedure (SOP) for SENS data management] for guidance on how to conduct these checks.



Daily questionnaire check and overseeing interviews - for consistency, completeness and missing data

- The survey manager and supervisors will not have the chance to observe every interview conducted but they are responsible for reviewing every questionnaire for errors. Reviewing questionnaires 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.
- While in the field or at the end of each field work day, look at the filled forms on the smartphones (or the questionnaires if a paper-based survey was conducted) from each team and follow the procedure described below:
 - Check that consent was given for the interview (variable: TNCONST). 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 and ‘don’t know’ answers (these should always be minimal). If there are missing values, the survey teams should be told the next day to be more careful and not miss any question. If there is a significant number of ‘don’t know’ answers for certain teams, the survey manager or supervisor(s) should accompany the teams the next day to the field to check on the way they conduct the interviews.

Database check

- Brief guidance on the data review process is provided in **Annex 5** using Epi Info 7 and in the SENS Pre-module Tool: [**Tool 15**- Standard Operating Procedure (SOP) for SENS data management].
- 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, results can be presented two different ways: i) reporting results for each indicator from each camp separately or ii) combining results from all camps into one table per indicator. See SENS Pre-Module tools: [Tool 19- Dolo SENS Report 2017] and [Tool 20b- Jordan SENS Report 2016].
- When several camps are surveyed with a representative sample drawn from each camp, it is sometimes necessary and important to report 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. See the SENS Pre-Module tool that will automatically generate weighed prevalence results for proportions and means: [Tool 21- 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 if all households are sampled for a specific SENS module. If sub-sampling was done for the mosquito net module in an exhaustive survey, then confidence intervals should 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 17- 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 LIST OF MOSQUITO NET BRAND NAME OBSERVED DURING ASSESSMENT

	Brand name
LLIN mosquito net brands observed during the survey	<ul style="list-style-type: none"> - <i>[insert brandname]</i> - <i>[insert brandname]</i> - <i>[insert brandname]</i> - ...
Non-LLIN mosquito net brands observed during the survey	<ul style="list-style-type: none"> - <i>[insert brandname]</i> - <i>[insert brandname]</i> - <i>[insert brandname]</i> - ...

TABLE 7 HOUSEHOLD MOSQUITO NET OWNERSHIP

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

FIGURE 1 HOUSEHOLD OWNERSHIP OF AT LEAST ONE LLIN (THIS FIGURE CAN BE AUTOMATICALLY GENERATED BY USING SENS PRE-MODULE TOOL 17 – TRENDS AND GRAPHS)

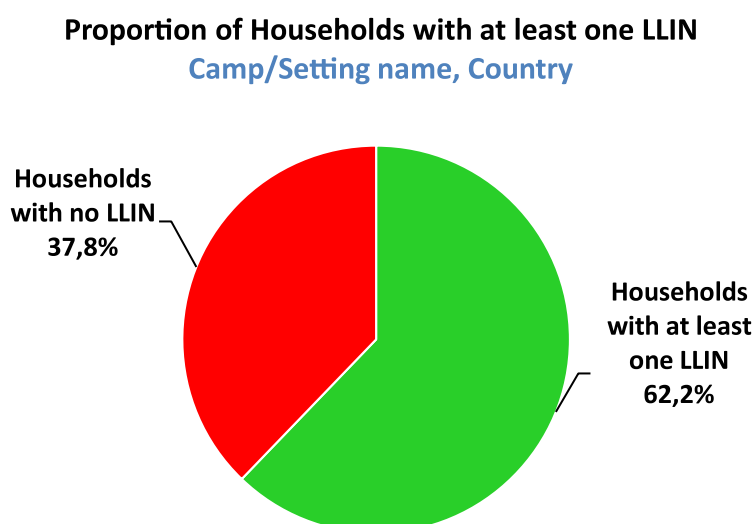


FIGURE 2 PROPORTION OF HOUSEHOLD OWNING AT LEAST ONE LLIN FROM 2015 TO 2018 (THIS FIGURE CAN BE AUTOMATICALLY GENERATED BY USING SENS PRE-MODULE TOOL 17- TRENDS AND GRAPHS)

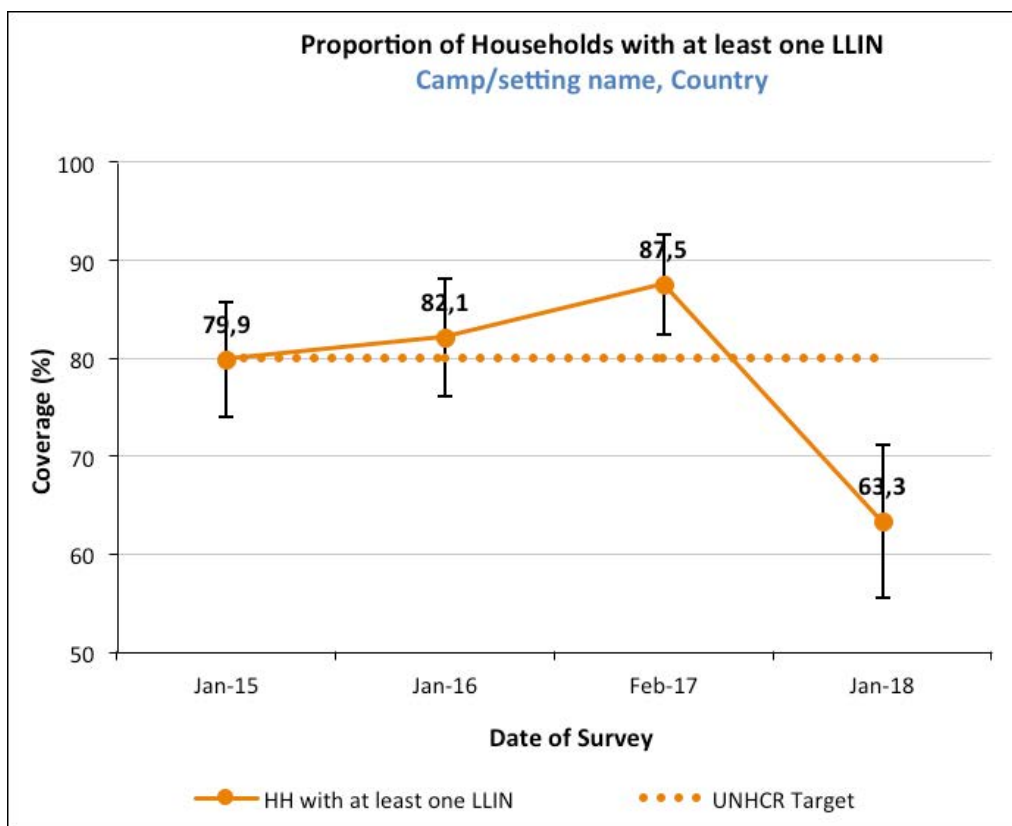


TABLE 8 NUMBER OF NETS

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

TABLE 9 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 Number=	%	Total Number=	%	Total Number=	%
Slept under net of any type						
Slept under LLIN						

FIGURE 3 MOSQUITO NET UTILISATION BY SUB-GROUP (THIS FIGURE CAN BE AUTOMATICALLY GENERATED BY USING SENS PRE-MODULE TOOL 17 – TRENDS AND GRAPHS)

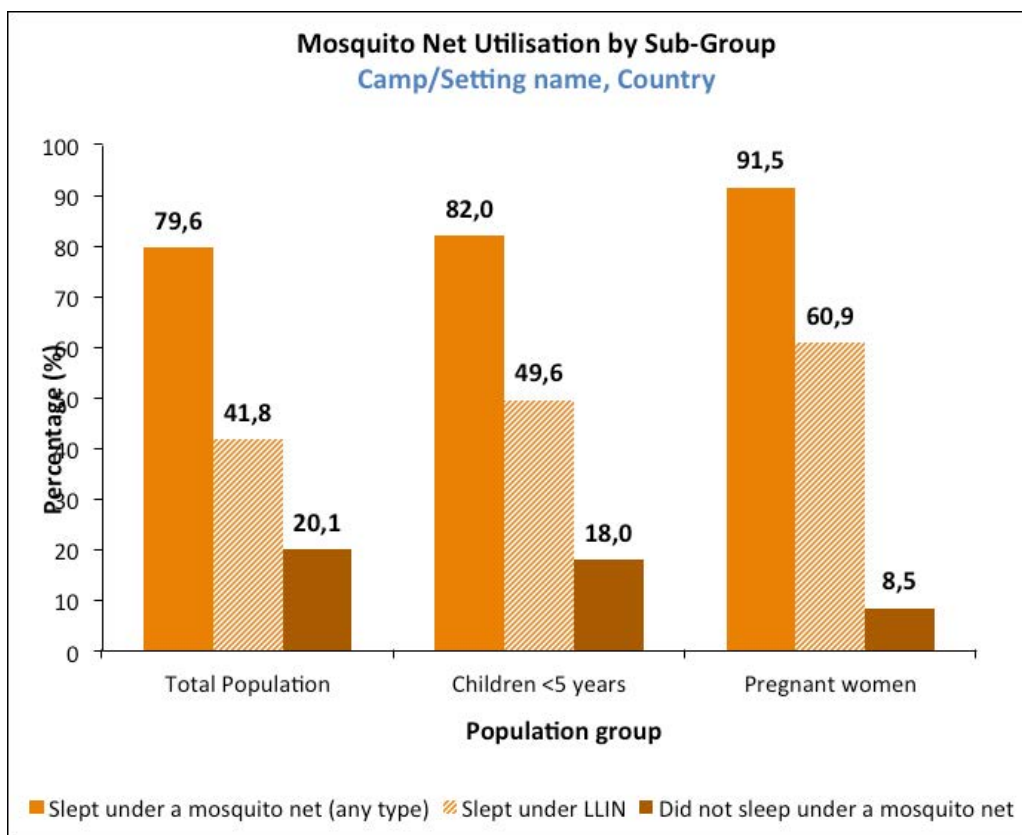


TABLE 10 INDOOR RESIDUAL SPRAYING HOUSEHOLD COVERAGE IN THE LAST 6/12 MONTHS (IF APPLICABLE – ADAPT THE FREQUENCY OF THE SPRAYING CYCLE I.E ANNUAL OR BI-ANNUAL)

	Number/total	% (95% CI)
Proportion of households covered by IRS in the last 6/12 months		

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. **Tables 11-12** provide some guidance on the analysis procedure and on the use of Epi Info software.
- Make sure that the data has been reviewed 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 7. 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 11 SUMMARY TABLE OF CALCULATION TO DETERMINE MOSQUITO NET (ALL TYPES AND LLIN) OWNERSHIP AND COVERAGE OF IRS CAMPAIGN

QUESTION	REPORTED RESULTS (SENS VARIABLE NAMES)	ACTION
<p>TN6. Did you have your house sprayed with insecticide in an indoor residual spraying campaign in the past 6 months?</p> <p>1= Yes 2= No 8= Don't know</p> <p>(IF APPLICABLE)</p>	<p>Proportion of households covered by IRS in last 6 months</p> <p>(HHIRS)</p>	<p>Numerator: Total number of households covered by IRS in last 6 months</p> <p><u>Divided by</u> Denominator: Total number of households surveyed</p> <p>No recoding needed. Run the 'Frequencies'/'Complex Sample Frequencies' command on the variable termed HHIRS to fill out Table 10.</p> <p>Exclude from analysis households with answers 8 (Don't know). The frequency of answer 1 ('Yes') is reported.</p>
<p>TN7. Do you have mosquito bed nets in this household that can be used while sleeping?</p> <p>1= Yes 2= No 8= Don't know</p>	<p>Proportion of households owning at least one mosquito net of any type</p> <p>(MOSNETS)</p>	<p>Numerator: Total number of households owning at least one mosquito net of any type</p> <p><u>Divided by</u> Denominator: Total number of households surveyed</p> <p>No recoding needed. Run the 'Frequencies'/'Complex Sample Frequencies' command on the variable termed MOSNETS to fill out Table 7.</p> <p>Exclude from analysis households with answers 8 (Don't know). The frequency of answer 1 ('Yes') is reported.</p>
<p>TN8, TN9 and TN10. How many of these mosquito bed nets that can be used while sleeping does your household have? Can the bed net be observed? What is the brand of the net observed?</p> <p>Number of LLINs is derived</p>	<p>Proportion of households owning at least one LLIN</p> <p>(TOTLN)</p>	<p>Numerator: Total number of households owning at least one LLIN</p> <p><u>Divided by</u> Denominator: Total number of households surveyed</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 ≥ 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 Table 7. The frequency of answer 1 ('LN') is reported.</p>

TABLE 12 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	<p>Numerator: Total number of LLINs observed during survey (TOTLN) <u>Divided by</u> Denominator: Total number of households surveyed (HH)</p> <p>Run the 'Means' command on the variable termed TOTLN to fill out Table 8. The 'Mean' value given is reported.</p>
2. Average number of persons per LLIN	The average number of persons per LLIN found in the survey	<p>Numerator: Total number of people in the surveyed households (TOTHH) <u>Divided by</u> Denominator: Total number of LLIN observed during survey (TOTLN)</p> <p>Run the 'Means' command on the variables termed TOTHH and TOTLN to generate the data you need to fill out Table 8. The 'Total' value given for each variable is used in a hand calculation (numerator / denominator).</p>
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	<p>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)</p> <p>Run the 'Means' command on the variables termed TOTHH and TOTSLPNT to generate the data you need to fill out Table 9. The 'Total' value given for each variable is used in a hand calculation (numerator / denominator).</p>
4. Total population (all ages) who slept under a LLIN	Proportion of total population (all ages) who slept under a LLIN last night	<p>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)</p> <p>Run the 'Means' command on the variables termed TOTHH and TOTSLPLN to generate the data you need to fill out Table 9. The 'Total' value given for each variable is used in a hand calculation (numerator / denominator).</p>
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 Table 9. The 'Total' value given for each variable is used in a hand calculation (numerator / denominator).</p>

Indicator Name	Definition	Calculation, variable names and remarks
6. 0-59 months who slept under a LLIN	Proportion of children 0-59 months who slept under a LLIN last night	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) Run the 'Means' command on the variables termed TOTCH and TOTCHLN to generate the data you need to fill out Table 8 . The 'Total' value given for each variable is used in a hand calculation (numerator / denominator).
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	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) Run the 'Means' command on the variables termed TOTPW and TOTPWNT to generate the data you need to fill out Table 9 . The 'Total' value given for each variable is used in a hand calculation (numerator / denominator).
8. Pregnant women who slept under a LLIN	Proportion of pregnant women who slept under a LLIN last night	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) Run the 'Means' command on the variables termed TOTPW and TOTPWLN to generate the data you need to fill out Table 9 . The 'Total' value given for each variable is used in a hand calculation (numerator / denominator).

Common errors and challenges in data analysis

- **Table 13** describes the most common errors experienced by survey managers/supervisors when conducting the final data analysis.

TABLE 13 COMMON ERRORS AND CHALLENGES IN DATA ANALYSIS

Common errors	Examples	Solution
Miscalculating the denominator for the proportion of households owning at least one LLIN	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.
Not taking into consideration a weighting factor when combining results from several camps	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 21- Weighting Data Tool] . 
Reporting mosquito net results according to certain aggregates of clusters	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.
Reporting a change in the mosquito net indicators without any evaluation of whether the observed change is statistically significant or real	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 18- CDC Calculator two surveys] . 

Use of results

Sustainable Development Goals- Malaria is critical reaching SDG Goal 3, ensure healthy lives and promote well-being for all at all ages:

- Target 3.3: By 2030 end the epidemic of AIDS, tuberculosis, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
- Indicator 3.3.3: Malaria incidence per 1,000 population.

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, insecticide-treated nets were shown to reduce child mortality from all causes by almost one-fifth compared to children sleeping without a net.⁶

International Targets

- **UNHCR:** >80 % of households with at least one LLIN.
- **UNHCR:** 2 persons / LLIN is currently the quantification of the number of persons per LLIN.

⁶ [Pryce J, Richardson M, Lengeler C. Insecticide-treated nets for preventing malaria. Cochrane Database of Systematic Reviews 2018, Issue 11. Art. No.: CD000363. DOI: 10.1002/14651858.CD000363.pub3.](#)

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 SENS 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 level of households.

References

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<https://www.unhcr.org/protection/health/530f12d26/global-strategy-public-health-unhcr-strategy-2014-2018-public-health-hiv.html>

UNHCR (2014) Malaria Prevention: Quick check list. Distribution of Long-lasting Insecticide Treated Nets in Refugee Situations

<https://www.unhcr.org/protection/health/53ba5cca9/malaria-prevention-quick-check-list.html>

World Health Organization on behalf of the Roll Back Malaria Partnership Secretariat (2015) Action and Investment to Defeat Malaria 2016-2030-For a Malaria-Free World

https://www.rollbackmalaria.org/files/files/aim/RBM_AIM_Report_A4_EN-Sept2015.pdf

World Health Organisation (2015) Global Technical Strategy and Targets for Malaria 2016-2030

http://www.who.int/malaria/areas/global_technical_strategy/en/

World Health Organisation (2015) Indoor residual spraying: an operational manual for indoor residual spraying (IRS) for malaria transmission control and elimination – 2nd ed.

http://apps.who.int/iris/bitstream/10665/177242/1/9789241508940_eng.pdf?ua=1&ua=1

ANNEXES



Annex 1 - SENS mosquito net coverage questionnaire 1

See SENS Pre-Module tools: [Tool 11- Full SENS questionnaire] and [Tool 12- Full SENS Questionnaire with Instructions].



QUESTIONNAIRE

The following questionnaire is to be used for paper-based surveys where manual data entry will be done. Manual calculations will also need to be done.

- The statements that appear in **grey shaded areas indicate that they are for completion after the survey by the survey team / supervisor.**
- The statements that appear in capital letter indicate that they are surveyor instructions and should not be read aloud to the respondent.

MOSQUITO NET COVERAGE: 1 questionnaire per household

(THIS QUESTIONNAIRE IS TO BE ADMINISTERED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD).

Consent: yes / no / absent

Code Section / Number	Code Zone / Number	Code Block / Number
<div style="border: 1px solid black; width: 40px; height: 15px; margin: 0 auto;"></div> SECTION	<div style="border: 1px solid black; width: 40px; height: 15px; margin: 0 auto;"></div> ZONE	<div style="border: 1px solid black; width: 40px; height: 15px; margin: 0 auto;"></div> BLOCK
Date of interview (dd/mm/yyyy)	Cluster Number (in cluster survey only)	
<div style="border: 1px solid black; width: 100px; height: 15px; margin: 0 auto;"></div> SURVDATE	<div style="border: 1px solid black; width: 40px; height: 15px; margin: 0 auto;"></div> CLUSTER	
Team Number	HH Number	
<div style="border: 1px solid black; width: 20px; height: 15px; margin: 0 auto;"></div> TEAM	<div style="border: 1px solid black; width: 40px; height: 15px; margin: 0 auto;"></div> HH	

No	QUESTION	ANSWER CODES			
SECTION TN1					
TN1	How many people live in this household and slept here last night? INSERT NUMBER. TOTHH				_ _
TN2	How many children 0-59 months live in this household and slept here last night? INSERT NUMBER. TOTCH				_ _
TN3	How many pregnant women live in this household and slept here last night? INSERT NUMBER. TOTPW				_ _
TN4	Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past 6/12 months? (IF APPLICABLE) HHIRS	Yes.....1 No.....2 Don't know.....8			_
TN5	Do you have mosquito bed nets in this household that can be used while sleeping? MOSNETS	Yes.....1 No.....2 Don't know.....8			_ IF ANSWER IS 2 OR 8 STOP NOW
TN6	How many of these mosquito bed nets that can be used while sleeping does your household have? INSERT NUMBER. NUMNETS	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
TN7	ASK RESPONDENT TO SHOW YOU THE NET(S) IN THE HOUSEHOLD. IF NETS ARE NOT OBSERVED → CORRECT TN6 ANSWER	NET # _	NET # _	NET # _	NET # _

TN8	OBSERVE NET AND RECORD THE BRANDNAME OF NET ON THE TAG. IF NO TAG EXISTS OR IS UNREADABLE RECORD 'DK' FOR DON'T KNOW.				
TN9	<p>For surveyor/supervisor only (not to be done during interview):</p> <p>WHAT TYPE OF NET IS THIS? BASED ON THE TAG INDICATE IF THIS IS A LLIN OR OTHER TYPE OF NET OR DK.</p>	<p>1=LLIN 2=Other/DK</p> <p><input type="checkbox"/></p> <p>LNTYPE1</p>	<p>1=LLIN 2=Other/DK</p> <p><input type="checkbox"/></p> <p>LNTYPE2</p>	<p>1=LLIN 2=Other/DK</p> <p><input type="checkbox"/></p> <p>LNTYPE3</p>	<p>1=LLIN 2=Other/DK</p> <p><input type="checkbox"/></p> <p>LNTYPE4</p>
TN10	<p>For surveyor/supervisor only (not to be done during interview):</p> <p>RECORD THE TOTAL NUMBER OF LLINs IN HOUSEHOLD BY COUNTING THE NUMBER OF '1' IN TN9.</p> <p>TOTLN</p>				<p><input type="checkbox"/></p> <p>LLINs</p>

SECTION TN2											
Line no	Household members	Sex	Age	Pregnancy status			Slept under bed 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)			Did (NAME) sleep under a net last night?		ASK THE RESPONDENT TO PHYSICALLY IDENTIFY WHICH OF THE OBSERVED NETS THEY SLEPT UNDER. WRITE THE NUMBER CORRESPONDING TO THE NET THEY USED.	For surveyor/supervisor only: BASED ON THE OBSERVED NET BRANDNAME RECORDED (TN8), INDICATE IF IT IS AN LLIN OR OTHER / DON'T KNOW (DK)	
				Yes	No/DK	N/A	Yes	No/DK		LLIN	OTHER/DK
01		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
02		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
03		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
04		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
05		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
06		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
07		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
08		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
09		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
10		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
11		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
12		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
13		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
14		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2
15		m f	<5 ≥5	1	0	99	1	0	<input type="checkbox"/>	1	2

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

QUESTIONNAIRE OVERVIEW AND RATIONALE FOR QUESTIONS

TABLE 14 EXPLANATION OF QUESTIONS ON IRS AND MOSQUITO NETS (SECTION TN1)

Question number	Variable name	Question	Special instructions
TN4	HHIRS	Did you have your house sprayed with insecticide in an indoor residual spraying campaign in the past 6 months? (IF APPLICABLE) 1= Yes 2= No 8= Don't know	This question refers to the past 6 months or to the past 12 months. Adapt the frequency of the spraying cycle to the survey setting. If no IRS campaign was done in the last 6 months/12 months, exclude this question. Be sure to explain that this is NOT the can of insecticide that can be sprayed in the house.
TN5	MOSNETS	Do you have mosquito bed nets in this household that can be used while sleeping? 1= Yes 2= No (STOP NOW) 8= Don't know (STOP NOW)	If there is a local term for mosquito net, please use this to describe. 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.
TN6	NUMNETS	How many of these mosquito nets that can be used while sleeping does your household have? Number of nets all type.	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).

Question number	Variable name	Question	Special instructions
TN7	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>
TN8	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 BRAND NAME 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 https://www.who.int/pq-vector-control/prequalified-lists/en/ⁱⁱ</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 Annex 3.</p>
TN9	<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 there is no tag or if the tag is unreadable, register '2' (Other/Don't know).</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>
TN10	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>

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

TABLE 15 EXPLANATION OF QUESTIONS ON HOUSEHOLD LISTING AND MOSQUITO NET USE
(SECTION TN2)

Column number	Variable name	Question	Special instructions
COL 1	Not entered in the database	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.	All names will be kept confidential. Recording of the names will help with probing in further questions regarding mosquito net use.
COL 2	Not entered in the database	Sex (Male or Female)? m = Male f = Female	Select the number corresponding to the sex.
COL 3	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.
COL 4	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.
COL 5	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.
COL 6	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.
COL 7	Not entered in the database	BASED ON THE OBSERVED NET BRANDNAME RECORDED (TN8 / TN9) INDICATE IF IT IS AN LLIN OR OTHER / DK (DON'T KNOW) 1 = LLIN 2 = Other/DK	Information on the brand name is recorded in TN8 / TN9. 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.

TABLE 16 EXPLANATION OF SUMMARY TABLE OF MOSQUITO NET OWNERSHIP AND UTILISATION

Question number	Variable name	Information	Special instructions
TN1 (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.
TN2 (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.
TN3 (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.
TN11 (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).
TN12 (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).
TN13 (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).
TN14 (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).
TN15 (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).
TN16 (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).

Annex 2 - SENS mosquito net coverage questionnaire 2

See SENS Pre-Module tools: [Tool 11- Full SENS questionnaire] and [Tool 12- Full SENS Questionnaire with Instructions].



The following questionnaire is to be used when implementing a survey using MDC methods.

No	QUESTION	ANSWER CODES	
SECTION TN1: Details on the Household			
Note	THESE QUESTIONS NEED TO BE ASKED TO THE HEAD OF THE HOUSEHOLD OR, IF THEY ARE ABSENT, ANOTHER ADULT MEMBER OF THE HOUSEHOLD.		
TN1	Was consent given for conducting the interview? ENSURE THAT YOU HAVE INTRODUCED THE TEAM AND INFORMED THEM ABOUT THE INTERVIEW. TNCONST	Yes1 No 2 Absent..... 3	<input type="checkbox"/> IF ANSWER IS 2 or 3 STOP HERE
TN2	What is the total number of household members? RECORD NUMBER. TNHHSIZE		<input type="text"/>
TN3	How many people live in this household and slept here last night? RECORD NUMBER. TOTHH		<input type="text"/>
TN4	How many children 0-59 months live in this household and slept here last night? RECORD NUMBER OR TYPE 0 IF THERE AREN'T ANY CHILDREN BELOW 5 YEARS. TOTCH		<input type="text"/>
TN5	How many pregnant women live in this household and slept here last night? RECORD NUMBER OR TYPE 0 IF THERE AREN'T ANY PREGNANT WOMEN. TOTPW		<input type="text"/>

<p>TN6</p>	<p>Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past 6/12 months? (IF APPLICABLE)</p> <p>EXPLAIN THAT THIS IS NOT THE CAN OF INSECTICIDE THAT CAN BE SPRAYED IN THE HOUSE.</p> <p>HHIRS</p>	<p>Yes1 No 2 Don't know 8</p>	<p style="text-align: right;"> _ </p>
<p>TN7</p>	<p>Do you have mosquito bed nets in this household that can be used while sleeping?</p> <p>MOSNETS</p>	<p>Yes1 No 2 Don't know 8</p>	<p style="text-align: right;"> _ </p> <p>IF ANSWER IS 2 OR 8 STOP NOW</p>
<p>TN8</p>	<p>How many of these mosquito bed nets that can be used while sleeping does your household have?</p> <p>PROBE FOR ANY NETS CURRENTLY NOT IN USE THAT ARE BEING SAVED OR STORED (STILL IN THEIR PACKAGE). RECORD REPORTED NUMBER.</p> <p>Lower limit=1 Upper limit=10</p> <p>NUMNETS</p>		<p style="text-align: right;"> _ Nets</p>

SECTION TN2: Observation of Bed Nets
 THIS SECTION IS TO BE COMPLETED FOR ALL BED NETS USED FOR SLEEPING REPORTED BY THE RESPONDENT.

Note THESE QUESTIONS ARE ASKED FOR EACH BED NET USED FOR SLEEPING REPORTED BY THE RESPONDENT.

<p>TN9</p>	<p>Can the bed net be observed?</p> <p>ASK RESPONDENT TO SHOW YOU THE NET IN THE HOUSEHOLD.</p> <p>NETSOBS</p>	<p>Yes1 No 2</p>	<p style="text-align: right;"> _ </p> <p>IF ANSWER IS 2 SKIP TO TN12</p>
<p>TN10</p>	<p>What is the brand of the net observed?</p> <p>LOOK AT THE TAG ON THE NET. IF THERE IS NONE OR IS UNREADABLE, SELECT 'UNIDENTIFIABLE'/'DON'T KNOW.</p> <p>NETBRAND</p>	<p>DAWAPLUS 01 DURANET 02 INTERCEPTOR..... 03 LIFENET 04 MAGNET 05 MIRANET 06 OLYSET 07 PANDANET 08 PERMANET 09 ROYALSENTRY 10 SAFENET 11 VEERALIN 12 YALE 13 YORKCOOL 14 Insecticide treated net (ITN) NAME #1 15 ITN NAME #2 16 ITN NAME #3 17 Other (please specify) 96 Unidentifiable/Don't know 98</p>	<p style="text-align: right;"> _ _ </p> <p>IF ANSWER IS 96 GO TO TN11</p>

TN11	If other, please specify the brand name of net BRANDOTH	<input type="text"/>	
	TOTLN		<input type="text"/>
SECTION TN3: Survey of household members THIS SECTION IS TO BE COMPLETED FOR EACH HH MEMBER WHO LIVES HERE AND SLEPT HERE LAST NIGHT.			
Note	THESE QUESTIONS NEED TO BE COMPLETED FOR EACH HH MEMBER WHO LIVES IN THE HOUSEHOLD AND SLEPT HERE LAST NIGHT.		
TN12	ID of household member HHMID		<input type="text"/>
TN13	What is the sex of the household member? HHMSEX	Malem Femalef	<input type="text"/>
TN14	How old is the household member? HHMAGE	<5 years1 ≥5 years2	<input type="text"/>
TN15	Is the household member currently pregnant? HHMPREG	Yes1 No2 Don't know8	<input type="text"/>
TN16	Did the household member sleep under a net last night? SLPNET	Yes1 No2 Don't know8	<input type="text"/>
TN17	Select the brand of the net under which the household member slept ASK THE RESPONDENT TO PHYSICALLY IDENTIFY WHICH OF THE OBSERVED NETS S/HE SLEPT UNDER. SLPBRAND	RESPONSES FROM TN10 SHOWN HERE. EXAMPLE: NETBRAND1-PERMANET NETBRAND2-PERMANET NETBRAND3-Unidentifiable/Don't know NETBRAND4- OLYSET	<input type="text"/>
Note	Error messages		
	The total number of children in the household declared at the beginning of the form (TN4) does not match the number of children you have entered in the group (TN14). Please review to ensure they match.		
	The total number of pregnant woman in the household you declared at the beginning of the form (TN5) does not match the number of pregnant woman you have entered (TN15). Please review to ensure they match.		
	Interviewer: I confirm that questionnaire is complete: yes/no		
	Supervisor: I confirm that questionnaire is complete.: yes/no MESSAGE TO INTERVIEWER: DO NOT ANSWER THIS QUESTION.		

Annex 3 - 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 <https://www.who.int/pq-vector-control/prequalified-lists/en/>.

This version of the guide shows the tags of mosquito nets WHOPES approved as of April 2016. The survey manager 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 e.g. OLYSET.
- If you cannot read the tag, please select “Unidentifiable / Don’t know”.
- If there is no tag, please write “Unidentifiable / Don’t know”.
- If the brand name of the net does not appear on the questionnaire, record the brand name in the ‘other (please specify)’ answer option and inform your **supervisor / survey manager** 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 17 EXAMPLES OF THE TAGS, BRAND NAMES AND MANUFACTURERS

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

Annex 4 - Training ideas

MATERIALS REQUIRED

- Example mosquito nets.
- 10 copies of the questionnaire per surveyor (please note that even in MDC surveys, it is recommended to print paper copies of the questionnaire to be used during training).
- 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: Reading the mosquito net tags

- 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.
- Ask each surveyor the brand name of each of the examples of mosquito nets that you have until you are confident that the surveyor can easily identify nets from the tags.

ROLE PLAYING

Role Play 1

- Divide the participants into their interview teams.
- The survey manager will set up a simulation household with mosquito nets.
- The survey manager takes the role of the respondent and asks each interview team to practice delivering the mosquito net coverage questionnaire and recording their answers.
- The survey manager 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 survey manager 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 survey manager 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).
- Field practice will assist the survey manager 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 survey manager 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 18 TRAINING TEST

Mosquito net Coverage Module	
PRACTICE	
1.	What two characteristics make someone “not applicable” to be pregnant? Answer: Under the age of 15 years and above 49 years and Male.
2.	What do you do if a respondent will not allow you into their house to see their mosquito nets? Answer: Ask the respondent to bring the nets outside for you to look at.
3.	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? 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.	What do you do if you find mosquito nets in the household that are still in their packaging? 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 TN6-TN9).
5.	How do you identify a mosquito net brand? Answer: Find the manufacturers tag on the mosquito net and record the brand name.
6.	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 Answer: No, because they cannot be used for sleeping under.
7.	Are households that do not have any mosquito nets included in this survey? Yes or No Answer: Yes
8.	What do you do if there is a mosquito net with no tag? Answer: Select that the mosquito net was unidentifiable.

Annex 5 - Epi info Analysis

Below are the standard Epi Info codes to use for analysis.

Refer to the fictitious dataset available for practical purposes; Go to SENS Mosquito Net Coverage: [Tool 1-NET Data], and see the Excel database PIL_0919_NET_PILOT.



The practical Excel database PIL_0919_NET_PILOT is from a survey using *cluster sampling*.

DATA REVIEW

Ranges and codes

Run these commands (together or separately; regardless of the survey design) and make sure that the ranges and codes of the variables entered in the database match the standard questionnaire. This step can be omitted when using MDC surveys given that ranges and codes are pre-set, and that values outside of the pre-set ranges and codes cannot be entered during data collection.

FREQ TNCONST

For the below variables, only perform these checks on households having provided consent, i.e. `SELECT TNCONST=1`

MEANS TOTHH (note that the range of household size should not exceed 30 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 NET_BRAND1

FREQ NET_BRAND2

FREQ NET_BRAND3

FREQ NET_BRAND4 (note that you should add more variables if more than 4 nets were observed in some households, e.g. NET_BRAND5, NET_BRAND6, NET_BRAND7, 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

Missing data

You should check the missing data in your database and make a note on this in the final SENS report. **Refer to the Data Review section for detailed instructions to follow with missing data.**

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.

This step is important to do with MDC surveys as well as paper-based surveys.

For the below variables, only perform these checks on households having provided consent, i.e. **SELECT TNCONST=1**

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 entitled PIL_0919_NET_PILOT (cluster sampling survey) are illustrated below. Refer to the SENS Pre-Module **Annex 4** for detailed explanations on how to interpret Epi-info analysis outputs when using different survey designs.

MOSQUITO NET COVERAGE SAMPLING INFORMATION

Household data	Planned	Actual	% of target
Total households surveyed for mosquito net coverage	319	291	91.2%

Actual number of households surveyed and % of target

FREQ TNCONST

TNCONST	Frequency	Percent	Cum. Percent	
1	291	91,22%	91,22%	
2	26	8,15%	99,37%	
3	2	0,63%	100,00%	
Total	319	100,00%	100,00%	

Wilson 95% Conf Limits

1	87,61%	93,86%
2	5,62%	11,67%
3	0,17%	2,26%

MOSQUITO NET OWNERSHIP ANALYSIS

HOUSEHOLD MOSQUITO NET OWNERSHIP

	Number/total	% (95% CI)
Proportion of households owning at least one mosquito net of any type	185/291	63.6% (54.9-72.3)
Proportion of households owning at least one LLIN	165/291	56.7% (47.9-65.5)

Household ownership of net of any type

SELECT MOSNETS<>8

FREQ MOSNETS PSUVAR=CLUSTER

If you are analysing a simple random survey, the code is as follows:

FREQ MOSNETS

MOSNETS	TOTAL
1	185
Row %	100,000
Col %	63,574
SE %	4,311
LCL %	54,892
UCL %	72,256
2	106
Row %	100,000
Col %	36,426
SE %	4,311
LCL %	27,744
UCL %	45,108
TOTAL	291
Design Effect	2,33

SELECT (this will cancel the selected variable(s); only to be executed after the analysis is done and the results recorded).

Household ownership of LLIN

DEFINE HHLN

IF TOTLN>=1 THEN

 HHLN="LN"

ELSE

 HHLN="no LN"

END

IF MOSNETS=(.) THEN

 HHLN=(.)

END

SELECT TNCONST=1

FREQ HHLN PSUVAR=CLUSTER

If you are analysing a simple random survey, the code is as follows:

FREQ HHLN

HHLN	TOTAL
LN	165
Row %	100,000
Col %	56,701
SE %	4,374
LCL %	47,890
UCL %	65,512
no LN	126
Row %	100,000
Col %	43,299
SE %	4,374
LCL %	34,488
UCL %	52,110
TOTAL	291
Design Effect	2,26

SELECT (this will cancel the selected variable(s); only to be executed after the analysis is done and the results recorded).

NUMBER OF NETS ANALYSIS

NUMBER OF NETS

Average number of LLINs per household	Average number of persons per LLIN
1.2	7.1

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
185,0000	219,0000	1,1838	0,5204	0,7214
Minimum	25%	Median	75%	Maximum
0,0000	1,0000	1,0000	1,0000	4,0000
				Mode
				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
291,0000	1560,0000	5,3608	7,6866	2,7725
Minimum	25%	Median	75%	Maximum
1,0000	3,0000	5,0000	7,0000	13,0000
				Mode
				5,0000

MEANS TOTLN

Obs	Total	Mean	Variance	Std Dev
185,0000	219,0000	1,1838	0,5204	0,7214
Minimum	25%	Median	75%	Maximum
0,0000	1,0000	1,0000	1,0000	4,0000
				Mode
				1,0000

Hand calculation:

Total number of people in surveyed households / Total number of LLIN found in all surveyed households = $1560 / 219 = \sim$

7.1

MOSQUITO NET UTILISATION ANALYSIS

MOSQUITO NET UTILISATION

	Proportion of total population (all ages)		Proportion of 0-59 months		Proportion of pregnant women	
	Total Number= 1560	%	Total Number= 410	%	Total Number= 73	%
Slept under net of any type	644	41.3	219	53.4	30	41.1
Slept under LLIN	550	35.3	190	46.3	29	39.7

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
291,0000	1560,0000	5,3608	7,6866	2,7725
Minimum	25%	Median	75%	Maximum
1,0000	3,0000	5,0000	7,0000	13,0000
				Mode
				5,0000

Proportion of total population who slept under net of any type

MEANS TOTSLPNT

Obs	Total	Mean	Variance	Std Dev
185,0000	644,0000	3,4811	4,2619	2,0644
Minimum	25%	Median	75%	Maximum
0,0000	2,0000	3,0000	4,0000	12,0000
				Mode
				3,0000

Hand calculation:

Total number of people who slept under a net of any type / Total number of people in the surveyed households=644 / 1560 x 100= ~

41.3%

Proportion of total population who slept under LLIN

MEANS TOTSLPLN

Obs	Total		Mean	Variance	Std Dev
185,0000	550,0000		2,9730	4,4830	2,1173
Minimum	25%	Median	75%	Maximum	Mode
0,0000	2,0000	3,0000	4,0000	12,0000	3,0000

Hand calculation:

Total number of people who slept under a LLIN / Total number of people in the surveyed households=550 / 1560 x 100= ~ 35.3%

Total population of 0-59 months

MEANS TOTCH

Obs	Total		Mean	Variance	Std Dev
291,0000	410,0000		1,4089	1,0219	1,0109
Minimum	25%	Median	75%	Maximum	Mode
0,0000	1,0000	2,0000	2,0000	7,0000	2,0000

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

MEANS TOTCHNT

Obs	Total		Mean	Variance	Std Dev
185,0000	219,0000		1,1838	0,8030	0,8961
Minimum	25%	Median	75%	Maximum	Mode
0,0000	0,0000	1,0000	2,0000	3,0000	1,0000

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=219 / 410 x 100= ~ 53.4%

Proportion of total 0-59 months who slept under LLIN

MEANS TOTCHLN

Obs	Total		Mean	Variance	Std Dev
185,0000	190,0000		1,0270	0,8308	0,9115
Minimum	25%	Median	75%	Maximum	Mode
0,0000	0,0000	1,0000	2,0000	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=190 / 410 x 100= ~ 46.3%

Total population of pregnant women

MEANS TOTPW

Obs	Total		Mean	Variance	Std Dev
291,0000	73,0000		0,2509	0,6162	0,7850
Minimum	25%	Median	75%	Maximum	Mode
0,0000	0,0000	0,0000	0,0000	8,0000	0,0000

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

MEANS TOTPWNT

Obs	Total		Mean	Variance	Std Dev
185,0000	30,0000		0,1622	0,1366	0,3696
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=30 / 73 x 100= ~ 41.1%

Proportion of total pregnant women who slept under LLIN

MEANS TOTPWLN

Obs	Total		Mean	Variance	Std Dev
185,0000	29,0000		0,1568	0,1329	0,3646
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 = $29 / 73 \times 100 = \sim$

39.7%

INDOOR RESIDUAL SPRAYING ANALYSIS

INDOOR RESIDUAL SPRAYING HOUSEHOLD COVERAGE IN THE LAST 6 MONTHS (IF APPLICABLE)

	Number/total	% (95% CI)
Proportion of household covered by IRS in the last 6 months	260/291	89.3% (86.5-92.2)

SELECT HHIRS<>8

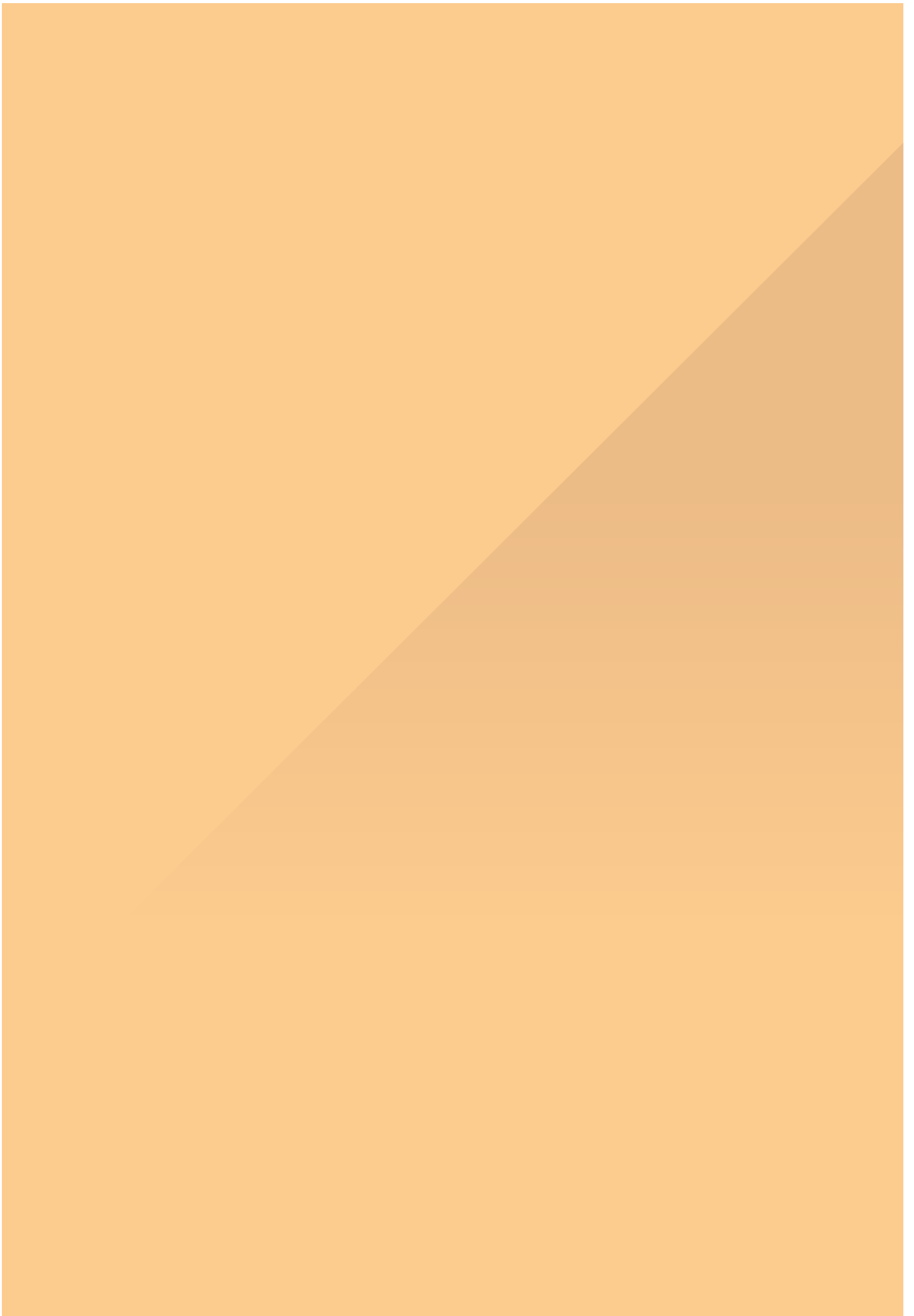
FREQ HHIRS PSUVAR=CLUSTER

If you are analysing a simple random survey, the code is as follows:

FREQ HHIRS

HHIRS	TOTAL
1	260
Row %	100,000
Col %	89,347
SE %	1,391
LCL %	86,545
UCL %	92,150
2	31
Row %	100,000
Col %	10,653
SE %	1,391
LCL %	7,850
UCL %	13,455
TOTAL	291
Design Effect	0,59

SELECT (this will cancel the selected variable(s); only to be executed after the analysis is done and the results recorded)



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FOR REFUGEE POPULATIONS

MODULE 6:
MOSQUITO NET COVERAGE