UNHCR

STANDARDISED EXPANDED

NUTRITION SURVEY (SENS) GUIDELINES

FOR REFUGEE POPULATIONS



MODULE **6**:

**MOSQUITO NET COVERAGE**

**A PRACTICAL STEP-BY-STEP GUIDE**

**VERSION 3 (2018)**

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 measures3 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](https://endmalaria.org/sites/default/files/RBM-Strategic-Plan-digital-JW-220218.pdf)
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,] 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.

1. 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** | **Was consent given for conducting the interview?** | Ensure that you have introduced the team and informed them about the interview.  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 not be replaced with another household.  Refer to SENS pre-module tool: [**Tool 8-** Data collection control sheet] for a model tool to help track the absent households.  If answer is “2” (No) or “3” (Absent), stop here for the mosquito net coverage questionnaire. |
|  |  | 1= Yes |
|  |  | 2= No |
|  |  | 3= Absent |
| **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** | **Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past 6/12 months?** | 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.  Explain that this is not the can of insecticide that can be sprayed in the house. |
|  |  | 1= Yes  2= No  3= Don’t know |  |
|  |  | (IF APPLICABLE) |  |
| **TN7** | **MOS- NETS** | **Do you have mosquito bed nets in this household that can be used while sleeping?** | 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. This includes mosquito nets that are being saved or stored, including those currently in their packaging.  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.  If answer is “2” (no) or “8” (don’t know), stop here for the mosquito net coverage questionnaire. |
|  |  | 1=Yes |
|  |  | 2=No |
|  |  | 8=Don’t know |
| **TN8** | **NUM- NETS** | **How many of these mosquito bed nets that can be used while sleeping does your household have?** | Record reported number. Probe any nets currently not in use that are being saved or stored (still in their package).  This is the number of mosquito nets (of all type), as reported by the respondent. This number will be confirmed by observations. |
|  |  | **Lower limit=1 Upper limit=10** |  |

**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= YORKOOL  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** | These variables (TN18-TN23) are the mosquito net summary given automatically in MDC survey for use during data analysis.  In paper-based surveys, refer to **Annex 1** for further guidance on how to calculate these variables. |
| **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 |  | *[only include household with data; exclude absent household and refusals]* |  |

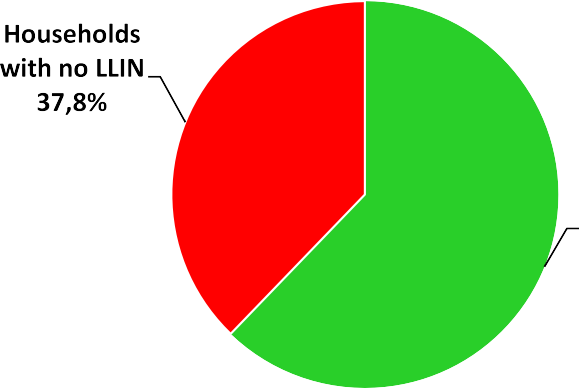


**TABLE 6** LIST OF MOSQUITO NET BRAND NAME OBSERVED DURING ASSESSMENT

|  |  |
| --- | --- |
|  | **Brand name** |
| **LLIN mosquito net brands observed during the survey** | * *[insert brandname]* * *[insert brandname]* * *[insert brandname]*   - *…* |
| **Non-LLIN mosquito net brands observed during the survey** | * *[insert brandname]* * *[insert brandname]* * *[insert brandname]*   - *…* |

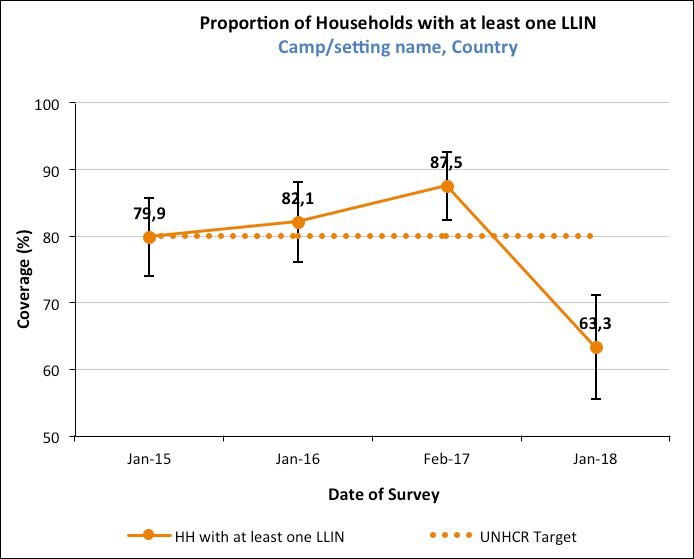
**TABLE 7** HOUSEHOLD MOSQUITO NET OWNERSHIP

|  |  |  |
| --- | --- | --- |
|  | **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)*



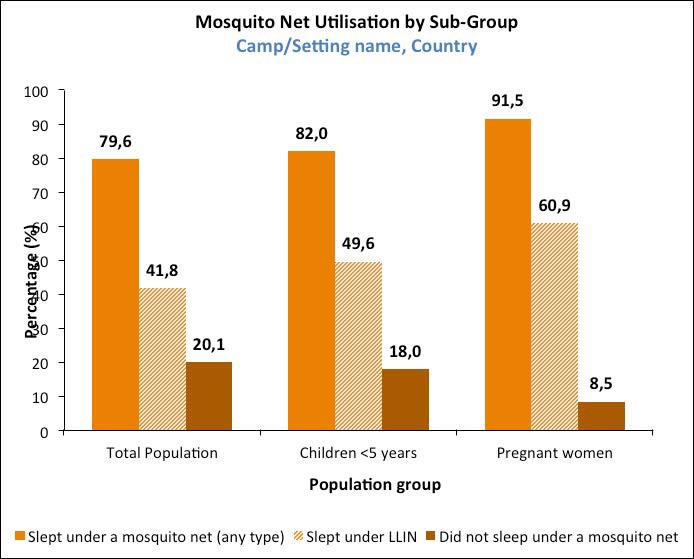
**TABLE 8** NUMBER OF NETS

|  |  |
| --- | --- |
| **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** |
| **TN6. Did you have your house sprayed with insecticide in an indoor residual**  **spraying campaign in**  **the past 6 months?** | Proportion of households covered by IRS in last 6 months  (HHIRS) | Numerator: Total number of households covered by IRS in last 6 months  Divided by  Denominator: Total number of households surveyed |
| 1= Yes  2= No  8= Don’t know |  | No recoding needed. Run the ‘Frequencies’/‘Complex Sample Frequencies’ command on the variable termed HHIRS to fill out **Table 10**. |
| (IF APPLICABLE) |  | Exclude from analysis households with answers 8 (Don’t know). The frequency of answer 1 (‘Yes’) is reported. |
| **TN7. Do you have mosquito bed nets in this household that can be used while sleeping?** | Proportion of households owning at least one mosquito net of any type | Numerator: Total number of households owning at least one mosquito net of any type  Divided by  Denominator: Total number of households surveyed |
| 1= Yes  2= No  8= Don’t know | (MOSNETS) | No recoding needed. Run the ‘Frequencies’/‘Complex Sample Frequencies’ command on the variable termed MOSNETS to fill out **Table 7.**  Exclude from analysis households with answers 8 (Don’t know). The |
|  |  | frequency of answer 1 (‘Yes’) is reported. |
| **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?** | Proportion of households owning at least one LLIN  (TOTLN) | Numerator: Total number of households owning at least one LLIN Divided by  Denominator: Total number of households surveyed  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.   1. LN [answer ≥ 1] 2. No LN [anything else: answer 0 or answer missing] |
| Number of LLINs is derived |  | 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. |

**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 | Numerator: Total number of LLINs observed during survey (TOTLN) Divided by  Denominator: Total number of households surveyed (HH)  Run the ‘Means’ command on the variable termed TOTLN to fill out  **Table 8.** The ‘Mean’ value given is reported. |
| 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)  Divided by  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 **Table 8.** 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)  Divided by  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 **Table 9** 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)  Divided by  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 **Table 9.** The ‘Total’ value given for each variable is used in a hand calculation (numerator / denominator). |
| 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 | Numerator: Total number of 0-59 months who slept under a net of any type (TOTCHNT)  Divided by  Denominator: Total number of 0-59 months in the surveyed households (TOTCH)  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). |

|  |  |  |
| --- | --- | --- |
| **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)  Divided by  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)  Divided by  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)  Divided by  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.

1. [Pryce J, Richardson M, Lengeler C. Insecticide-treated nets for preventing malaria. Cochrane Database of Systematic Reviews2018, Issue 11. Art.No.: CD000363.DOI: 10.1002/14651858.CD000363.pub3.](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD000363.pub3/epdf/standard)

## 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 net.
* 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

UNHCR (2014) Global Strategy for Public Health Public Health 2014-2018

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

MODULE 6: MOSQUITO NET COVERAGE

31



**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** |
| | | | |  **SECTION** | | | | |  **ZONE** | | | | |  **BLOCK** |
| **Date of interview (dd/mm/yyyy)** | **Cluster Number (*in cluster survey only*)** | |
| | | |/| | |/| | || | |  **SURVDATE** | | | |  **CLUSTER** | |
| **Team Numbe**r | **HH Number** | |
| | |  **TEAM** | | | | |  **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 | | Yes.................................................................................1 | |  |
| with insecticide in an indoor | | No.................................................................................2 | | | | |
|  |
|  | residual spray campaign in the | | Don’t know..................................................................8 | |  |
|  | past 6/12 months? | |  | |  |
|  | (IF APPLICABLE) | |  | |  |
|  | **HHIRS** | |  | |  |
| **TN5** | Do you have mosquito bed nets in this household that can be used while sleeping? | | Yes.................................................................................1  No.................................................................................2  Don’t know..................................................................8 | | | |  **IF ANSWER IS 2 OR 8 STOP NOW** |
|  | **MOSNETS** | |  | |  |
| **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 | Don’t know..................................................................8 | NET #| | | NET #| | | NET #| | |
|  | THE NET(S) IN THE | #| | |  |  |  |
|  | HOUSEHOLD. IF |  |  |  |  |
|  | NETS ARE NOT |  |  |  |  |
|  | OBSERVED  |  |  |  |  |
|  | CORRECT TN6 |  |  |  |  |
|  | ANSWER |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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** | **For surveyor/ supervisor only (not to be done during interview)**:  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  | |  **LNTYPE1** | 1=LLIN  2=Other/DK  | |  **LNTYPE2** | 1=LLIN  2=Other/DK  | |  **LNTYPE3** | 1=LLIN  2=Other/DK  | |  **LNTYPE4** |
| **TN10** | **For surveyor/supervisor only (not to be done during interview)**:  RECORD THE TOTAL NUMBER OF LLINs IN HOUSEHOLD BY COUNTING THE NUMBER OF ‘1’ IN TN9.  **TOTLN** | |  | | | | LLINs |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 RE- SPONDENT TO PHYSICAL- LY IDENTIFY WHICH OF THE OB- SERVED NETS THEY SLEPT UNDER.  WRITE THE NUMBER COR- RESPONDING 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 | | | | 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** | |
| **Slept un- der a net of any type** | Count the num- ber of ‘1’ in COL5 | **TN11**  | | |  **TOTSLPNT** | For children < 5 (COL3 is ‘<5’),  count the num- ber 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 num- ber of ‘1’ in COL7 | **TN12**  | | |  **TOTSLPLN** | For children <5  (COL3 is ‘<5’),  count the num- ber 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 | Nets must be observed. Ask the respondent to show you each of the nets that can be used while sleeping.  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.  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. |
| **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. | **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.**  Brand name | The Brand names of WHOPES approved LLINs can be found at <https://www.who.int/pq-vector-control/> [prequalified-lists/en/](https://www.who.int/pq-vector-control/prequalified-lists/en/)ii  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. |
|  |  |  | Guidelines for reading tags can be found in  **Annex 3**. |
| **TN9** | LNTYPE1 LNTYPE2 LNTYPE3 LNTYPE4  etc. if more than 4 nets.  This does not necessarily need to be entered in the database and is optional. | **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.**  1= LLIN  2= Other/DK (don’t know) | 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).  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. |
| **TN10** | TOTLN | RECORD THE TOTAL NUMBER OF LLINs IN HOUSEHOLD BY COUNTING THE NUMBER OF ‘1’ IN TN9.  Number of LLINs | Based on the observed nets add up the total number of nets that are classified as LLINs.  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. |

ii World Health Organization Pesticide Evaluation Scheme (WHOPES) [http://www](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.  **TNCONS**T | Yes.............................................................................1  No..............................................................................2  Absent........................................................................3 | | | **IF ANSWER IS 2 or 3 STOP HERE** | |
| **TN2** | What is the total number of household members?  RECORD NUMBER.  **TNHHSIZE** |  | | | | | |
| **TN3** | How many people live in this household and slept here last night?  RECORD NUMBER  **TOTHH** |  | | | | | |
| **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** |  | | | | | |
| **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** |  | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **TN6** | Did you have your house sprayed with insecticide in an indoor residual spray campaign in the past 6/12 months? (IF APPLICABLE)  EXPLAIN THAT THIS IS NOT THE CAN OF INSECTICIDE THAT CAN BE SPRAYED IN THE HOUSE.  **HHIRS** | Yes.............................................................................1  No..............................................................................2  Don’t know................................................................8 | | | |
| **TN7** | 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** |
| **TN8** | How many of these mosquito bed nets that can be used while sleeping does your household have?  PROBE FOR ANY NETS CURRENTLY NOT IN USE THAT ARE BEING SAVED OR STORED (STILL IN THEIR PACKAGE). RECORD REPORTED NUMBER.  **Lower limit=1 Upper limit=10**  **NUMNETS** |  | | |Nets |
| **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. | | |
| **TN9** | Can the bed net be observed?  ASK RESPONDENT TO SHOW YOU THE NET IN THE HOUSEHOLD.  **NETSOB**S | Yes.............................................................................1  No..............................................................................2 | | |  **IF ANSWER IS 2 SKIP TO TN12** |
| **TN10** | What is the brand of the net observed?  LOOK AT THE TAG ON THE NET. IF THERE IS NONE OR IS UNREADABLE, SELECT  ‘UNIDENTIFIABLE’/’DON’T KNOW.  **NETBRAND** | 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  YORKOOL..................................................................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 | | | |  **IF ANSWER IS 96**  **GO TO TN11** |

|  |  |  |  |
| --- | --- | --- | --- |
| **TN11** | If other, please specify the brand name of net  **BRANDOTH** | | | | |
|  | **TOTLN** |  | | | | |
| **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** |  | | | |
| **TN13** | What is the sex of the household member?  **HHMSEX** | Male........................................................................m  Female......................................................................f | | | |
| **TN14** | How old is the household member?  **HHMAGE** | <5 years.......................................................................1  ≥5 years.....................................................................2 | | | |
| **TN15** | Is the household member currently pregnant?  **HHMPREG** | Yes..........................................................................1  No..........................................................................2  Don’t know............................................................8 | | | |
| **TN16** | Did the household member sleep under a net last night?  **SLPNET** | Yes..........................................................................1  No..........................................................................2  Don’t know............................................................8 | | | |
| **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 | | | | |
| **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 | Mode |
| 0,0000 | 1,0000 | 1,0000 1,0000 | 4,0000 | 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 |
| 291,0000 | 1560,0000 | 5,3608 | | 7,6866 | | 2,7725 |
| Minimum | 25% | Median | 75% | | Maximum | Mode |
| 1,0000 | 3,0000 | 5,0000 | 7,0000 | | 13,0000 | 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 | Mode |
| 0,0000 | 1,0000 | 1,0000 | 1,0000 | | 4,0000 | 1,0000 |

#### Hand calculation:

Total number of people in surveyed households / Total number of LLIN found in all surveyed households=1560 / 219 = ~

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 | Mode |
| 1,0000 | 3,0000 | 5,0000 | 7,0000 | | 13,0000 | 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 | Mode |
| 0,0000 | 2,0000 | 3,0000 | 4,0000 | | 12,0000 | 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 x 100= ~

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).

MODULE 6: MOSQUITO NET COVERAGE

III





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

IV



UNHCR

STANDARDISED EXPANDED

NUTRITION SURVEY (SENS) GUIDELINES FOR REFUGEE POPULATIONS

MODULE **6**:

**MOSQUITO NET COVERAGE**