सत्यमेव जयते

ELIMINATION OF LYMPHATIC FILARIASIS INDIA- 2013-14

**NATIONAL GUIDELINES
FOR
TRANSMISSION ASSESSMENT SURVEY
(FOR DISTRICT & STATE LEVEL HEALTH OFFICIALS)**

**Directorate of National Vector Borne Disease Control Programme
(Directorate G.H.S, MOH & FW, Government of India
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ELIMINATION OF LYMPHATIC FILARIASIS PROGRAMME
INDIA- 2014

NATIONAL GUIDELINES FOR TRANSMISSION ASSESSMENT SURVEY
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National Vector Borne Disease control Programme
Elimination of Lymphatic Filariasis
National guidelines on Transmission Assessment survey- 2013

PREFACE

The guidelines deal with Transmission Assessment Survey (TAS) activities under Elimination of Lymphatic Filariasis (ELF) Programme in India. As such, information about other aspects of Lymphatic Filariasis and ELF (including Life cycle of parasite, Mass Drugs Administration, Mf survey and Morbidity Management etc.) will not be available here. For such information "Guidelines on Elimination of Lymphatic Filariasis, India 2009" published by NVBDCP may be referred to.

The present guidelines give information about TAS and describe the techniques to be followed and tasks to be performed by the district VBD officer for conducting Transmission Assessment Survey (TAS). The guidelines have 15 sections dealing with different aspects of TAS. The state level health officials and other health officials, connected with ELF Programme, can also understand as to how TAS is to be done.
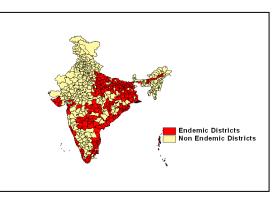
The guidelines are to be the primary training materials during training on TAS for district/State level officers. For certain clarifications also, the district VBD officers and others may use the guidelines as reference.

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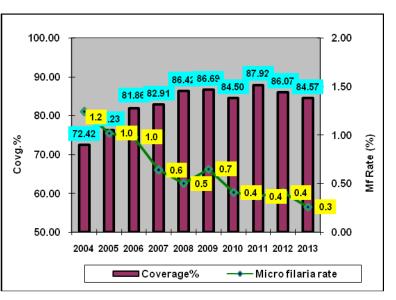National Guidelines on Transmission Assessment Survey- 2013

1: INTRODUCTION

Lymphatic Filariasis (LF) is endemic in 250 districts (now 255 due to bifurcation of districts) of 15 states and 5 UTs of India with about 650 million of at-risk population. Elimination of LF (ELF) Programme was launched in the country during 2004.The districts were selected based on historical data on endemicity or based on reports from the states. The twin strategies of ELF are (i) annual single dose Mass Drug Administration (MDA) with DEC & Albendazole tablets to all eligible at-risk population of the endemic districts and (ii) alleviation of morbidity by promoting home-based care of lymphoedema cases and up-scaling of hospital based hydrocele operation.

In India, progress of ELF programme is reflected in the increase of MDA coverage from 72% in 2004 to 88% in 2012 and reduction of overall Microfilaria (Mf) rate from 1.24% in 2004 to 0.44% in 2012 (since draft guideline is for 2013 consider providing 2013 statistics) at country level. About 200 districts have reported overall Mf rate of <1% during 2013.

The impact of the MDA programme is measured by microfilaria survey, conducted in the night every year one month prior to MDA in four sentinel (fixed) and four random (spot check) sites, in each endemic district. A minimum of 500 persons are to be screened in each site, which means at least 4000 persons should be screened in each district. The programme is also evaluated in terms of drug compliance to measure the percentage of eligible population at-risk who have consumed the drugs in low, medium

and high drug coverage areas. This evaluation is carried out independently through Medical Colleges/ Research Institutions.

The MDA was launched with the concepts that, minimum of 5-6 rounds of MDA can reduce the mf prevalence to less than 1% in the community and the reduction can be sustained thereafter to achieve interruption of transmission.
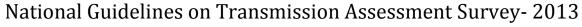
WHO guidelines 2011 stipulate that, assessment of transmission should be done after attaining the following status in an implementation unit
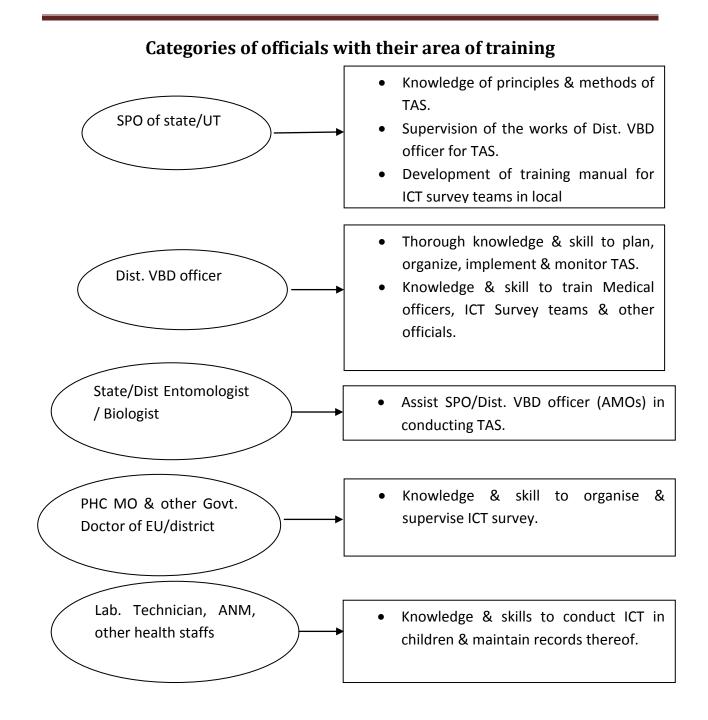
1. Minimum of five effective rounds of MDA with more than 65% coverage (Compliance) against total population living at-risk of LF.
2. Microfilaria rate of less than 1% in each of the sentinel and random site in the last round of mf survey.

The national guidelines also stipulate that, the above status is a pre requisite for TAS to be taken up in an implementation unit.

The validation of mf rate reported by implementation units (districts) is very important as this report is the basis for all further decisions. To validate the mf rate, additional Mf survey has to be conducted in 10 additional random (spot) sites (procedure for selecting random sites is explained in a separate chapter). Thereafter, if each of the 10 sites shows Mf rate of less than 1%, the district can proceed for conducting **Transmission Assessment Survey** as described in this guidelines. These guidelines are prepared based on WHO TAS guidelines which can be referred during field work by state, district and PHC level officers. While, the grass root level workers can also be trained with the help of these guidelines. The illustration below indicates about different categories of human resource and areas of training.

Categories of officials with their area of training

SPO of state/UT	• Knowledge of principles & methods of TAS. • Supervision of the works of Dist. VBD officer for TAS. • Development of training manual for ICT survey teams in local
Dist. VBD officer	• Thorough knowledge & skill to plan, organize, implement & monitor TAS. • Knowledge & skill to train Medical officers, ICT Survey teams & other officials.
State/Dist Entomologist / Biologist	• Assist SPO/Dist. VBD officer (AMOs) in conducting TAS.
PHC MO & other Govt. Doctor of EU/district	• Knowledge & skill to organise & supervise ICT survey.
Lab. Technician, ANM, other health staffs	• Knowledge & skills to conduct ICT in children & maintain records thereof.

2: BASIC INFORMATION ABOUT TAS

MDA is a process to interrupt transmission of LF which should be monitored at every step. Microfilaria survey is part of MDA which measures the impact of MDA to have the first level indication of reduction in Mf prevalence in the community. Further, this parameter indicates whether to initiate the process of TAS or not. Transmission Assessment Survey is a tool designed to know whether or not transmission is interrupted by MDA and therefore this is the true evaluation of MDA. In case the transmission has been interrupted, the prevalence of circulating antegenemia among children born after initiation of MDA should be below critical threshold, so that the transmission of disease is no longer sustainable and future generation will be free from this disease.

With the concept described above, the TAS activities have been divided into Pre-TAS and TAS activities. The pre TAS activities include learning about TAS with basic information and ensuring mf prevalence to less than 1% by conducting night blood survey in 10 additional random sites. TAS activities include preparation of skilled team and testing children with ICT for presence of *W. bancrofti* and/or with Brugia Rapid Test for *B. Malayi.*
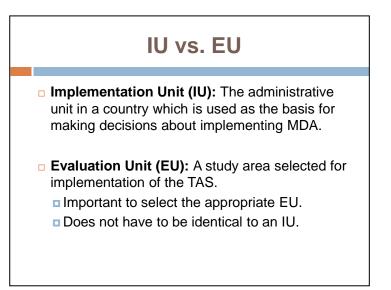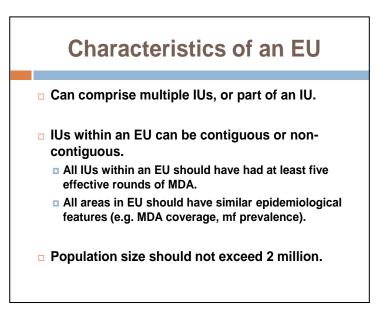
2.1 Salient Features

- TAS should be done minimum six months after the last MDA.
- MDA programme in India is district-based and such districts having population selected for MDA are called "Implementation Units" (IUs).
- Geographical unit, where TAS is implemented, is called "Evaluation Unit" (EU).
- Population of an EU should not exceed 2 million.
- For TAS, EU shall be demarked geographically; and it may or may not coincide with Implementation Unit (i.e district, where MDA was annually done).
- EU may comprise of multiple IUs if the population size of IUs is small. But in such situation, the clubbed IUs should have similar epidemiological features including overall MDA coverage and Mf rate.
- EU may be a part of an IU if population of IU is more than 2 million. i.e. an IU can be divided into 2 or more EUs if population of IU is more than 2 million.
- Before TAS, it should be ensured that all IUs have had at least five effective MDA with >65% of population coverage and each of sentinel, spot & additional spot site had achieved <1% Mf rate.
- Immuno- Chromatographic Test (ICT) will be performed in TAS.
- This is a rapid diagnostic test done by ICT card with finger tip blood in field situation.

- TAS is done by following "clusters technique with Lot Quality Assurance Sampling (LQAS)".
- Software provided by the WHO will be used to determine number of clusters, sample size, critical cut off value etc.
- The survey will be done either in schools (1st & 2nd standard students) or households (6-7 years children) of EU as per the situation as explained later in this guideline.
- It is likely that a new "Strip Test" may replace ICT in near future.

IU vs. EU

□ **Implementation Unit (IU):** The administrative unit in a country which is used as the basis for making decisions about implementing MDA.

□ **Evaluation Unit (EU):** A study area selected for implementation of the TAS.
  ▫ Important to select the appropriate EU.
  ▫ Does not have to be identical to an IU.

Characteristics of an EU

□ **Can comprise multiple IUs, or part of an IU.**

□ **IUs within an EU can be contiguous or non-contiguous.**
  ▫ **All IUs within an EU should have had at least five effective rounds of MDA.**
  ▫ **All areas in EU should have similar epidemiological features (e.g. MDA coverage, mf prevalence).**
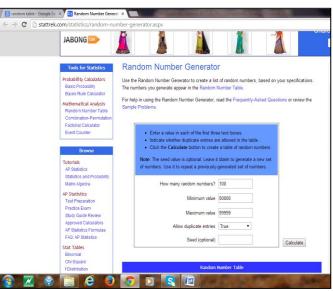
□ **Population size should not exceed 2 million.**

2.2   Pre-TAS Activities

2.2.1 Validation of Mf Prevalence

To validate the status of mf rate, additional Mf survey has to be conducted in 10 additional random (spot) sites (7 rural + 3 urban). For rural areas 'multi stage random sampling' has to be followed. List of all PHCs under MDA with serial number has to be prepared and while doing so, it should be ensured that they are numbered starting from one end of the district and contiguously covering the areas (except urban areas) to other end of the district. From such list, 7 PHCs are randomly selected by following method:

2.2.1a Selection of PHCs

- List of all PHCs (INCLUDE BLOCK PHCs) should be prepared as mentioned above.
- Open the site www.google.com
- Type 'random table' in search box & press 'Enter' or click.
- In the new page click on link entitled 'Random Number Generator'.
- In the new screen, give following inputs:

  - How many random numbers? [This will be 7. As mentioned previously out of 10 additional sites 7 will be rural sites and hence out of total PHCs, 7 PHCs have to be selected for survey as first step. Remember to **INCLUDE BLOCK PHC**s. In case number of towns are lesser than 3, number of rural sites have to be increased. i.e. if there are 2 towns 8 rural sites have to be selected and if 1 town 9 rural sites have to be selected and so on.]
  - Minimum value: (This will be 1, i.e starting serial number of PHC enlisted)
  - Maximum value: (This will be the last serial number of PHC enlisted, suppose there are 30 PHCs in district, it will be 30)
  - Allow duplicate entries: (Select 'false' here, i.e. not allowing duplication of selected number)

- Click on "Calculate".
- The randomly selected serial number of 7 PHCs will appear below the same screen.
  'Tick mark' these selected serial numbers in the list of PHC.

2.2.1b Selection of Sub Centres

- PHC wise list of sub centre (individually for each PHC) has to be prepared starting from sl. no. 1 to last sub centre.
- Type 'random table' in search box & press 'Enter' or click.
- In the new page click on link entitled 'Random Number Generator'.
- In the new screen, give following inputs:
  - ➤ How many random numbers? [This will be 1, as only one sub centre has to be selected randomly from the total number of sub centres existing in each of the selected PHCs.
  - ➤ Minimum value: (This will be 1, i.e starting serial number of sub centre enlisted)
  - ➤ Maximum value: (This will be the last serial number of sub centre enlisted, suppose there are 8 sub centres in one PHC, it will be 8)
  - ➤ Allow duplicate entries: (Select 'false' here, i.e. not allowing duplication of selected number)
- Click on "Calculate".
- The randomly selected serial number of one subcentre will appear below the same screen.
- 'Tick mark' these selected serial number in the list of sub centre.
- Repeat the process for each of the other selected PHCs.

2.2.1c Selection of Village

- Arrange all villages in each of the sub-centre in a serial order and give serial number starting from 1.
- Type 'random table' in search box & press 'Enter' or click.
- In the new page click on link entitled 'Random Number Generator'.
- In the new screen, give following inputs:

- How many random numbers? [This will be 1, as only 1 village has to be randomly selected from the total listed villages in the selected sub centre].
- Minimum value: (This will be 1, i.e starting serial number of villages enlisted)
- Maximum value: (This will be the last serial number of villages enlisted, suppose there are 7 villages in the selected sub centre, it will be 7)
- Allow duplicate entries: (Select 'false' here, i.e. not allowing duplication of selected number)
  - Click on "Calculate".
  - The randomly selected serial number of village will appear below the same screen.
  - 'Tick mark' these selected serial numbers in the list of village.
  - Repeat the process for each of the other selected sub centre.

With the above mentioned methodology, in each such selected PHC, list of sub-centres as stated above is to be made and 1 sub-centre is randomly selected. Finally, list of villages under selected sub-centre is made and one village is randomly selected. This way 7 villages are randomly selected for Mf survey. If any of the selected villages cannot yield 500 blood slides, the nearest village(s) or hamlet (s) should be included to complete collection of 500 blood slides.

2.2.1d Selection of Town

For urban areas, 3 towns are to be selected out of all towns in the district. Repeat the same procedure to select town as used for selecting PHC. In case of only one town, process directly for selection of ward.

2.2.1e Selection of Ward

All municipal wards of the town(s) selected above are listed and 3 wards (one ward in each town) are randomly selected in a similar manner as explained above for selection of sub-centre/village. If a selected ward cannot yield 500 blood slides, the adjacent ward (in any direction) is included for completing collection of 500 slides.

This way, total 10 sites are selected and a total of 5000 slides will be collected during night (8.30 PM to 12.00 midnight) from these spot sites to look for Mf prevalence in each site separately.

Quality control in terms of time of survey and method of making blood slides, as well as, cross-checking is very crucial. While the former can be ensured by proper on-spot monitoring and supervision, the latter is to be done in Senior Regional Director's office or State laboratory. All positives blood slides and 5% of negative blood slides are to be cross-checked. Those LTs at State HQ/ ROHFWs (GoI) needing reorientation, must be trained under intimation to Directorate of NVBDCP. NCDC and Directorate of NVBDCP will arrange for their reorientation.

2.3 Diagnostic Tools

Examining a stained blood slide for microfilaria can reveal whether a person has microfilaraemia in the peripheral blood. In areas with nocturnally periodic LF, blood must be taken in the middle of the night.

The rapid ICT antigen detection test is available only for *W. bancrofti.* It detects the presence of adult worm antigen circulating in the blood, and samples can be taken at any time. People who are treated with anti-filarial medicines retain antigen in the blood for several months or years although the adult worms and microfilariae die and disintegrate. Detection of antigen may therefore still be positive despite a significant reduction in microfilaraemia levels.

The Brugia Rapid™ test detects antibodies to *Brugia malayi* and *B. timori*. Infected people have elevated levels of antibodies, but the results of antibody testing do not distinguish between current and past infection. However, detection in children demonstrates recent infection.

In areas where *W. bancrofti* is endemic, ICT tests should be performed in selected children to detect antigenaemia. ICTs require no laboratory equipment and can be processed quickly. A positive result indicates the presence of adult worms and therefore is a measure of the potential for ongoing transmission. ICTs are simple to use, but training is required to ensure that cards are

Diagnostic Tools for LF

Target Detected	Field Assay	Confirmatory Assay (Laboratory based)
Microfilariae	•Blood film	•PCR
Filarial Antigen	•ICT	•Og4C3 ELISA
Antifilarial Antibody	•Brugia Rapid™	•Bm14 ELISA

not misread, which most often leads to false-positive results, and that different readers agree on the results.

In areas where Brugia sp. is endemic, the Brugia Rapid™ test should be administered to all selected individuals to detect antibody.

In areas endemic for both *W. bancrofti* and *Brugia sp.*, both diagnostic tools should be used. Positive results from ICT and Brugia Rapid™ testing should be evaluated separately against the critical cut-off thresholds.

3: CONSTITUTION OF EVALUATION UNITS (EUs)

Number of EUs to be constituted in an implementation unit depends on the population of that IU. Following norms have to be considered for constitution of EUs.

1. Districts with population up to 20 lakh (2 million) should be considered as single EU. Operational and administrative feasibility, in such situation, will over ride the problems of clubbing with other district.
2. Districts with population from >20 lakh up to 40 lakh should be divided into two EUs.
3. Districts with population from >40 lakh up to 60 lakh should be divided into three EUs & so on.

Sl. No.	Population of IUs	Number of EUs to be constituted
1	Up to 20 lakhs	1
2	20-40 lakhs	2
3	40-60 lakhs	3
4	60-80 lakhs	4

4. Clubbing of districts should be avoided. If there is a need for clubbing then geographical proximity should also be maintained as far as possible though it is not mandatory.
5. Each endemic state/UT should suitably re-organise eligible IUs into EUs and its geographical boundary should be defined and notified. Each EU should be given an identification name or number (preceding with IU's name).
6. If TAS fails in any EU (with more than one IUs), then MDA is to be repeated in those EUs.

Combining IUs

IU	Total population	Baseline Mf prevalence (%)	MDA Coverage (%)					Sentinel Site Mf prevalence (%) (post 5th MDA)	Spot Check Site Mf prevalence (%)
			#1	#2	#3	#4	#5		
1	32,983	2.1	81	69	79	76	76	0	0
2	101,438	3.4	78	67	77	72	76	0.3	0.1
3	52,138	2.9	75	70	72	76	68	0.1	0.1

Endemic IU
MDA

Combining IUs - Considerations

□ Combining IUs into a single EU may reduce overall survey costs but may carry some risks.
  □ If the critical threshold is exceeded, all IUs that comprise the EU will have to continue MDA.
  □ The EU may pass the TAS even though prevalence of infection in one or more IUs is above the threshold, potentially allowing transmission to recrudesce.

Dividing IUs

Total population	Baseline Mf prevalence (%)	MDA Coverage (%)					Sentinel Site Mf prevalence (%) (post 5th MDA)	Spot Check Site Mf prevalence (%)
		#1	#2	#3	#4	#5		
2,647,953	2.8	79	66	71	74	72	0.2	0.3

Endemic IU
MDA

Sub-district	Total Population	Baseline Mf prevalence (%)
1	798,234	1.8
2	989,436	5.4
3	860,283	1.2

Geographic Area of an EU

□ Although there is no upper limit to the geographic area of an EU, consideration should be taken when combining IUs. It is likely that the probability of missing foci of infection increases as the geographic area of the EU increases.

4: DECISION FOR SCHOOL OR HOUSEHOLD SURVEY

To assess the impact of MDA children aged 6–7 years should be surveyed because they should have been protected from LF infection if the MDAs have been successful in interrupting the transmission. Antigenaemia in young children is a marker for relatively recent events of transmission, while antigenaemia in older children or adults may be related to infections that occurred before MDA.

There are two approaches for ICT survey. One is "school-based survey", where first and second standard primary-school children can be used to approximate the study population, realizing that there may be a few children outside of these ages.

The second approach is community-based household survey of 6-7 year old children. It must be noted that, in this approach of survey focus should be given for selecting children of 6–7 year old in the selected households. Where there has been no evidence of filarial transmission for many years, the school level of children among whom filarial antigenaemia is measured can be matched with the epidemiological profile of exposure to filarial infection in the IU and a wider age range could be considered.

4.1 Survey Planning

Selection of mode of survey is population dependant. If more than or equal to 75% of the total 6-7 year old children in an IU are found to be enrolled in schools, then school based ICT survey can be adopted and if the said proportion is less than 75% community based house hold survey has to be taken up. Population therefore plays a very significant role and hence calculations should be made very cautiously. Census data of 2011 should be considered as base for all calculations required in planning this survey.

Census Data

Total number of 6-7 years children is to be estimated from census (2011) data for a given EU (district). This figure is ≈ 40 per cent of 5-9 years population with addition of annual growth following last census year (2011). The following table describes the calculation

The formula used to estimate population of EU in TAS year, i.e. $P_t = P_0 + [(P_0 \times r \times y) / 100]$ Where:
P_t = Estimated population of EU during TAS year.
P_0 = Population of 2011 census.
r = Annual growth rate in %.
y = Numerical difference between TAS year and 2011 (last census year).
Clarification: 'y' for the year 2014 is 3 (2014-2011), for 2015 it is 4, for 2016 it is 5 and so on.
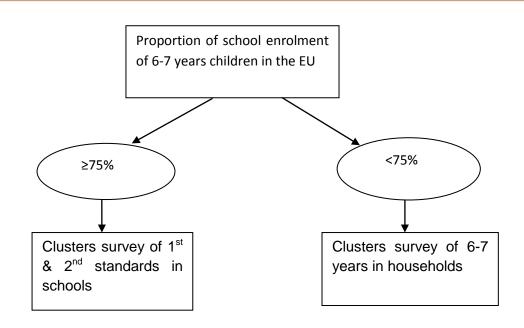
Sl. No.	LF endemic district	Total population at risk	Annual growth rate (2001-2011) in %	Population in 2013 = (3) + [(3) x {(4) x 2**}] / 100	Total 5-9 years children {In India ≈ 10.0% of (5)}	Total 6-7 years children in EU = 40% of (6)	75% of (7)
1	2	3	4	5	6	7	8
1	District	8490472	1.1	8677262	867726	347090	260318

Note: Each state/UT should use district census data (2011) to make estimation for the EU (district) where TAS is to be done.

Using the district census data (2011) for proportion of 5-9 years children, the total number of children of this age group in EU can be estimated. Forty per cent of this figure will give estimated population of 6-7 years in EU. Say this is '*a*'

Compare Data from education department & field visit:

- Total number of 1st & 2nd standard students enrolled in primary schools during the year & time of TAS is to be obtained. Say this is '*b*'.

➤ Proportion of 6-7 years children enrolled in 1st and 2nd standards in schools = [(*b/a*) x 100]. Say this is '*c*'.

➤ If the value of '*c*' ≥ 75% of '*a*', Cluster Survey of 1st & 2nd standard students in primary schools is to be done. Otherwise household based cluster survey of 6-7 years children in the community is to be done.

Proportion of school enrolment of 6-7 years children in the EU

≥75%

<75%

Clusters survey of 1st & 2nd standards in schools

Clusters survey of 6-7 years in households

Example: Say the 2011 census population of a district (IU) is 1856219, annual growth rate is 1.56%, proportion of 5-9 years children is 9.2% and total primary school enrolment in 1st and 2nd standard is 53916 (in 2014). To find out how many EU the IU will make and if 'school survey' or 'household survey' has to be done for TAS during 2014, the calculation is given below:

1. Population of district during 2011 = 1856219
2. Population during 2014 = [1856219 + (1856219 x 1.56 x 3) / 100] = 1943090
3. Since the estimated district population during 2014 is <2 million, only one EU will be constituted for TAS.
4. Total number of 5-9 years = 9.2% of 1943090 = 178764 (**Pl. make sure whether to use this percentage or not, as some states may not have this figure. On safer side we can consider this as 10% as depicted in the above table**)
5. Total number of 6-7 years = 40% of 5-9 years, i.e. 40% of 178764 = 71506
6. Proportion of total 6-7 years enrolled in schools = [(53916 / 71506) x 100] = 75.4%
7. Since the proportion of school enrolment is ≥75%, school survey will be conducted for TAS.

A template is given at <u>Table-1</u> below. Available information of the EU is to be entered in the template to justify TAS and type of ICT survey. Filled-in <u>Table-1</u> & filled-in <u>Table-4</u> (given further below) with all enclosures are to be sent to NVBDCP, Delhi, as a first step, for examination of all information at National level before according permission for conducting TAS.

Table-1

5: TEMPLATE FOR ENTERING DATA ON PRE-TAS ACTIVITIES OF EU

Name of the state/UT	Identification name or number of EU	Estimated population of EU during TAS year	Estimated total number 6-7 years old children in EU	Total number of 1st & 2nd standard enrolment in primary schools in EU.	Proportion of primary school enrolment in 6-7 years old children in EU	Mention about school or household based survey

Map of Evaluation Unit and calculation sheet of estimated population & number of 6-7 years children during the TAS year in EU are attached with the template.				Indicator /Year#	20…	20…	20…	20…	20…	20…	20…	20…	20…
Year of initiation of MDA in IU(s).	Number of total rounds of MDA done in IU(s).	Date of last MDA in IU(s)	Proposed date of TAS in the EU.	MDA coverage									
				BSE									
				Mf +ves									
Individual site-wise results of last Mf survey before TAS				Mf rate%									

Indicators	R1	R2	R3	R4	S1	S2	S3	S4	AR1	AR2	AR3	AR4	AR5	AR6	AR7	AR8	AR9	AR10
BSE																		
No. Mf +ve																		
Mf rate %																		

- When an IU (District) is divided into >1 EUs, the shaded cells pertain to data of IU. But if >1 IUs are clubbed into one EU, data of each IU are to be given.
- # Information of last 8-9 years should be provided. If in any year MDA or Mf survey was not done the same should be mentioned in the cell
- BSE = Number of blood Slides examined; R = Random (spot) site; S = Sentinel site; AR = Additional random (spot) site.
- Number of Additional Random site may be >10 if more than one districts are clubbed.

6: SCHOOL SURVEY METHODOLOGY

Once the mode of survey is finalized further activities have to be taken up accordingly. If an EU qualifies to take up school based survey following activities have to be followed:

1. The matter of TAS is to be taken up with Administrator(s) of the EU with request to direct Education/School authorities of EU to extend all possible help.
2. All schools running 1st and 2nd standard classes in the EU are to be enlisted with serial number from the record of education department. Such schools should include all types, i.e., government, private, charitable, NGO run, religious schools etc.
3. The data related to number of such schools and number of 1st & 2nd standard students collected from Education department is often found to be on lower side. This may give incorrect picture. Therefore data from Education department can be taken as base and supplemented by field visit for collecting the actual data.
4. Enlistment of schools with continuous serial number should start from one side of the EU and proceed with geographical continuity to opposite end covering all the urban and rural areas.
5. In each of enlisted school, number of students enrolled in 1st and 2nd standard during the year of TAS, is to be recorded in **Table-2** given below from the office records and updating by field visits. **Sub-centre ANM & Health staffs should be used for such field visits**.

Table-2

FORMAT FOR ENLISTING PRIMARY SCHOOLS & ROLL STRENGTH

Sl. No.	Name of school with complete address	Total no. of students in 1st standard	Total no. of student in 2nd standard	Total of 1st & 2nd standard
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
N				
Total number of students				

6. Though the children of 6-7 years have to be subjected to ICT survey, age of students enrolled in 1st and 2nd standard is not of any consideration in 'school based TAS'.

7. In order to estimate the absentee rate 30 schools have to be randomly selected from the list of primary schools in **Table-2** as steps given Below:

6.1 Steps for Random Selection of Thirty Enlisted Schools

- Open the site www.google.com
- Type 'random table' in search box & press 'Enter' or click.
- In the new page click on link entitled 'Random Number Generator'.
- In the new screen give following inputs in:
  - How many random numbers? (This will be 30, as 30 schools need to be randomly selected from the list of primary schools).
  - Minimum value: (This will be 1, i.e starting serial number of the schools enlisted)
  - Maximum value: (This will be the last serial number of the schools enlisted)
  - Allow duplicate entries: (Select 'false' here, i.e. not allowing duplication of selected number)

- Click on "Calculate".
- The randomly selected serial number of 30 schools will appear below the same screen.
- 'Tick mark' these selected serial numbers in the list of the primary schools prepared (**Table-2**).

8. Average daily 'absentee rate' should be estimated for the month of TAS but of **last year** for these 30 selected schools. For instance, the TAS is scheduled in the month of August 2013, the absentee rate should be calculated for August 2012. Example of one school is given below:

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FORMAT FOR ESTIMATING AVERAGE DAILY ABSENTEE RATE
(A hypothetical example of one month is given below)

Name / Number of the EU:

Name of the primary school: Date:

Complete address:

Total enrolled 1st standard student: 87 (say)

Total enrolled 2nd standard student: 75 (say)

School days	No. absent in 1st standard	% of daily absent in 1st standard	No. absent in 2nd standard	% of daily absent in 2nd standard
01.02.2013	07		10	
04.02.2013	09		09	
05.02.2013	09		08	
06.02.2013	11		11	
07.02.2013	08		09	
08.02.2013	06		05	
11.02.2013	12		12	
12.02.2013	10		10	
13.02.2013	05		07	
14.02.2013	08		11	
18.02.2013	09	(8.74/87) x 100 = 10.04 ≈ 10	15	(11.74/75) x 100 = 15.65 ≈ 16
19.02.2013	12		05	
20.02.2013	06		09	
21.02.2013	10		08	
22.02.2013	08		10	
25.02.2013	11		11	
26.02.2013	10		06	
27.02.2013	07		15	
28.02.2013	08		07	
Total absentees	166		223	
Total days	19		19	
Average/day	166/19 = 8.74		223/19 = 11.74	

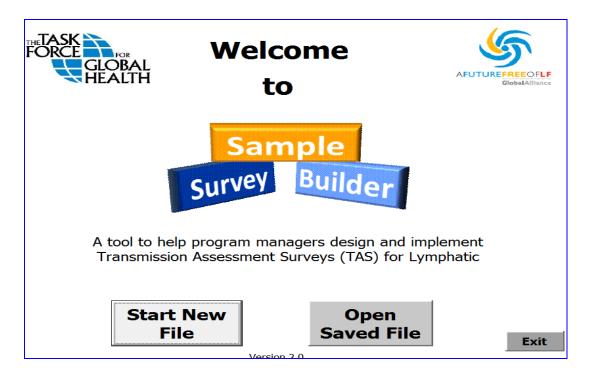Average daily absentee rate of the school = [(10 + 16)/2] = 13 %

In this way absentee rate should be calculated for all the 30 schools and average of these 30 schools should be estimated and considered as absentee rate for later use in the SSB software.

NOTE: THE WHO SOFTWARE (SSB) WORKS FOR AVERAGE ABSENTEE RATE (NON-RESPONSE RATE) OF 10-15%

7: USE OF SOFTWARE

Survey Sample Builder, a software for determining sample size, number of clusters, sampling fraction, sampling interval, critical cut off value etc., have to be used by district level officers in each EU. Detailed operating steps have been given below. Participants should follow and practice the steps during the training session. All outputs should be saved as a file.

1. Connect on Internet and open Google
2. Open site: http://www.ntdsupport.org/resources.
3. The new screen heading will show: NEGLECTED TROPICAL DISEASES SUPPORT CENTRE.
4. Scroll down to link: Transmission Assessment Survey Sample Builder and 'click'.
5. On the right hand side of the new page 'Downloads' icon will appear.
6. Below the icon 'click' on the first link 'SurveySampleBuilder2.1.xls' to download and then open the file.
7. "Survey Sample Builder" works on PCs and not Macs.
8. New screen will show two big boxes one upon other.
9. Heading of upper box is "Core Survey in 6-7 year-olds.
10. Heading of lower box is "Survey Design Recommendations".

11. Go to Security Warning "Option" in tool bar and click.
12. In next screen select "enable this content" and click "OK".
13. A new box will pop up with "Welcome To Survey Sample Builder".
14. Give single click on small box "Start New File" in the left bottom side of the screen.
15. A new box will pop up.
16. Enter "State/Country name" and "EU name".
17. Select "Anopheles or Culex" in right upper box.
18. Select in right lower box "School Survey" or "Household Survey" as the case may be (i.e., if the school enrolment of 6-7 year children in EU is ≥ 75% or < 75%). Click "Next".

Next boxes/pages in computer screen will be different for "School Survey" and "Household Survey". The required data have to be entered in the respective places as asked.

7.1 Further Steps for "School Survey"

- Select "School Survey" and click "Next"
- Enter total number of 1st & 2nd standard students enrolled in all primary schools of EU.
- Enter total number of primary schools in EU.
- Enter calculated expected % of absentee (or enter 10-15% if not calculated).
- Select "Yes" for "Cluster Survey".
- Click on "Finish and return to work book".
- Click on "Go To Survey Design" in new box.
- The new page will show two tables:
  - ➢ Upper table will show demographic data of EU
  - ➢ Lower table will show:
    - o Sample size (to be tasted with ICT)
    - o Number of clusters (number of schools to be covered)
    - o Critical cut off (No. of ICT +ves allowed)
- Below the lower table of this screen, there are two rectangular boxes.
- Click on the left box "1 Select schools to sample".
- A new screen will come.
- Click on "Randomize" in right upper part of the screen.
- A pop up will ask "How many extra schools would you like to select". Number 5 is already there and if it is desired to increase the number of schools then

insert a new number and click "OK". (If the absentee rate is more it may be considered for increasing the number of additional schools.)

- Screen below will give serial number of randomly selected schools with additional schools where survey has to be taken up.
- Take a print out of the page. All the selected schools and their serial numbers are to be highlighted in **Table-2**. Separate colour should be used for 'additional schools' selected.
- Click "Return to previous page" box in upper right hand side of this page.
- Click the rectangular box "2. Generate List A & B" in the lower right hand side of the page.
- Two lists with number (List A & List B) will appear below the box where last click was given. If the sampling fraction says "Test all children in target grade(s)" then no need to generate List A and B.
- These two lists contain the randomly selected serial number of the students for testing with ICT.
- Take a print out.
- Use the list A or B as random table. While performing ICT, tokens may be issued to the students and only those students having tokens bearing the serial number present in the list have to be subjected to ICT.

The sequence of procedure is shown on subsequent pages.

Once the schools are selected, the heads of the selected schools should be contacted to obtain permission from schools. Parents may also be informed accordingly. The information should include date of the survey.

In case sampling fraction is observed in SSB output, and the team experiences more absenteeism on day of survey, the team has to follow the fraction for selecting and screening the students and in case, the required sample is not met repeat the exercise from left out children till the target is reached. Even if the target is not met, then additional schools, selected by the software, are to be surveyed to complete the required sample size.

In case SSB output reveals as "Test all children", but survey in selected schools cannot yield the required sample size of students for TAS, then additional schools, selected by the soft ware, are to be surveyed to complete the required sample size.

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Survey Sample Builder (SSB)

Country: Example
Name of EU: Example
Primary Vector: Anopheles or Culex

Back to "Start Here"

Demographic data on EU (provided by user)

Population of students in target grade(s):[1]	24,518
Total number of schools:	487
Avg. number of students in target grade(s) per school:	50

Note, if any of the above information is incorrect, click on the 'Back to "Start Here"' button and then click 'edit EU information'

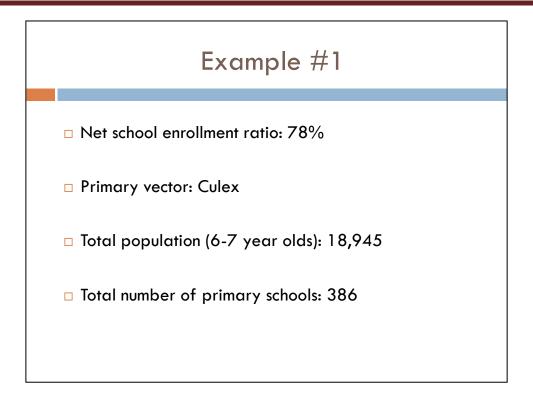**Cluster Survey of School Entrants**
Survey Sampling Methodology (calculated by program)

Sample Size for Cluster Design	1,556
Number of Clusters[1]	37
Sampling Fraction (of children within the schools)[1]	Test all children in the target grade(s)
Sampling Interval (of children within the schools)[1]	N/A
Critical Cut-off (maximum # positive ICT/Brugia Rapid results allowable for country to "Pass")	18

[1] Based on a 15% absentee rate

1. Select schools to sample   2. Generate Lists A & B

Survey sampling methodology based on data entered into program

Survey Sample Builder (SSB)

Directions: Obtain a comprehensive list of all the primary sampling units (i.e. Schools or EAs) in the EU and number them, preferably in order of geographic proximity. Once all sampling units have been assigned a number, double check that the values listed below are correct and click the "Randomize" button.   When you are finished you can click "Return to Previous Page" to go back.

Total number of EAs:	487
No. of EAs (clusters) to be sampled:	37

Randomize

Return to Previous Page

The following schools/EAs have been selected for your study

10
23
36
49
62
76
89
102
...

A list of random numbers can be generated to facilitate the selection of clusters to be included

Randomized Site Selection

□ A numbered list of ALL primary schools (for school surveys) or EAs (for community surveys) in the EU should be prepared in advance of the TAS.

□ To achieve a better geographic distribution of the EU, the school or EA list should be numbered by geographical proximity as opposed to alphabetical order

□ Selecting 5-10 additional clusters is recommended as a contingency plan if the sample size falls considerably short of the target after all of the clusters have been surveyed.

　　□ Additional clusters should be selected from a list of all remaining clusters excluding clusters that have already been chosen. The same random selection process used for the original clusters should be implemented.

　　□ SSB allows for the selection of additional clusters

Randomized Child/Household Selection

□ Survey Sample Builder (SSB) will calculate a sampling fraction, which is the proportion of children to be surveyed per school (for school surveys) or households to be surveyed per EA (for community surveys).

□ SSB will also calculate a random starting number and the sampling interval (inverse of the sampling fraction) in order to generate two numbered lists (Lists A and B) to guide the actual selection of schoolchildren or households.

□ Sampling intervals are also listed in Tables A.5.1 and A.5.2 [TAS Guidelines pp. 73-74] (http://whqlibdoc.who.int/publications/2011/9789241501484_eng.pdf)

Example #1

- Net school enrollment ratio: 78%

- Primary vector: Culex

- Total population (6-7 year olds): 18,945

- Total number of primary schools: 386

Example #1 – Survey Design

Country: Example #1
Name of EU: Example #1
Primary Vector: Anopheles or Culex

Back to "Start Here"

Demographic data on EU (provided by user)

Population of students in target grade(s):	18,945
Total number of schools:	386
Avg. number of students in target grade(s) per school:	49

Note, if any of the above information is incorrect, click on the 'Back to "Start Here"' button and then click 'edit EU information'

Cluster Survey of School Entrants
Survey Sampling Methodology (calculated by program)

Sample Size for Cluster Design	1,552
Number of Clusters[1]	38
Sampling Fraction (of children within the schools)[1]	Test all children in the target grade(s)
Sampling Interval (of children within the schools)[1]	N/A
Critical Cut-off (maximum # positive ICT/Brugia Rapid results allowable for country to "Pass")	18

[1]Based on a 15% absentee rate

Example #1 – Randomized Cluster Selection

Directions: Obtain a comprehensive list of all the primary sampling units (i.e. Schools or EAs) in the EU and number them, preferably in order of geographic proximity. Once all sampling units have been assigned a number, double check that the values listed below are correct and click the "Randomize" button.   When you are finished you can click "Return to Previous Page" to go back.

Total number of EAs: 386
No. of EAs (clusters) to be sampled: 38

Randomize

Return to Previous Page

The following schools/EAs have been selected for your study:

8
18
29
39
49
59
69
79
90
100
110
...

Example #1 – School Selection

The following schools/EAs have been selected for your study:

8
18
29
39
49
59
69
79
90
100
110
...

School Name
1 Woodridge Elemtary
2 Lakeside Elementary
3 Shadow Rock Elementary
4 Austin Elementary
5 Idlewood Elemtary
6 Henderson Mill Elemtary
7 Stone Mill Elementary
8 Rockland Elementary
9 Sage Elementary
10 Oak Grove Elementary
11 Brockett Elementary
12 Princeton Elementary
13 Chestnut Elementary
14 Rockbridge Elementary
15 Dresden Elementary
16 Midvale Elementary
17 Columbia Elementary
18 Pine Ridge Elementary
19 Flatrock Elementary
20 Snapfinger Elementary
...

Example #2

- □ Net school enrollment ratio: 68%

- □ Primary vector: Anopheles

- □ Total population (6-7 year olds): 23,128

- □ Total number of EAs: 284

Example #2 – Survey Design

Country:	Example #2
Name of EU:	Example #2
Primary Vector:	Anopheles or Culex

Back to "Start Here"

Demographic data on EU (provided by user)

Population of students in target grade(s):	23,128
Total number of schools:	284
Avg. number of students in target grade(s) per school:	81

Note, if any of the above information is incorrect, click on the 'Back to "Start Here"' button and then click 'edit EU information'

Cluster Survey of School Entrants
Survey Sampling Methodology (calculated by program)

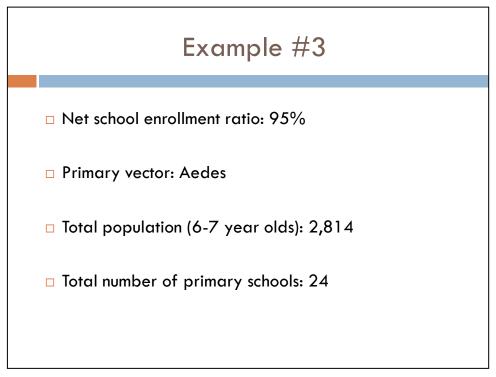|	
Sample Size for Cluster Design	1,552
Number of Clusters[1]	30
Sampling Fraction (of children within the schools)[1]	0.75
Sampling Interval (of children within the schools)[1]	1.34
Critical Cut-off (maximum # positive ICT/Brugia Rapid results allowable for country to "Pass")	18

[1]Based on a 15% absentee rate

Example #2 – List A and List B

Lists corresponding to the children selected for sampling out of all students in target grade(s), per school

The random number used to generate these lists is: 0.775367533

List A

List B

List A	List B
1	1
3	2
4	4
5	5
7	6
8	8
9	9
11	10
12	12
13	13
15	14
16	16
…	…

1 2 3 4 5 6

12 11 10 9 8 7

Example #3

□ Net school enrollment ratio: 95%

□ Primary vector: Aedes

□ Total population (6-7 year olds): 2,814

□ Total number of primary schools: 24

Example #3 – Survey Design

Country: Example #3
Name of EU: Example #3
Primary Vector: Aedes

Back to "Start Here"

Demographic data on EU (provided by user)

Population of students in target grade(s):	2,814
Total number of schools:	24
Avg. number of students in target grade(s) per school:	117

Note, if any of the above information is incorrect, click on the 'Back to "Start Here"' button and then click 'edit EU information'

Cluster Survey of School Entrants
Survey Sampling Methodology (calculated by program)

Sample Size for Cluster Design	1,758
Number of Clusters[1]	24
Sampling Fraction (of children within the schools)[1]	0.59
Sampling Interval (of children within the schools)[1]	1.70
Critical Cut-off (maximum # positive ICT/Brugia Rapid results allowable for country to "Pass")	11

Will visit every school in the EU

[1]Based on a 15% absentee rate

TAS Protocol

□ Define EU
□ Identify sampling strategy
□ Determine sample size
□ Prepare lists
    ▫ Schools (school based survey)
    ▫ Enumeration areas (community based survey)
□ Test selected children
    ▫ ICT (areas endemic for *W. bancrofti*)
    ▫ Brugia Rapid™ (areas endemic for *Brugia* spp.)
□ Interpret results based on critical cut-off

Exercise

☐ Using population data from the EU(s) defined in Module 3:

▫ Use Survey Sample Builder to define:
- The appropriate survey design
- The sample size needed
- The number of clusters for the survey
- The sampling fraction
- The sampling interval

▫ Use Survey Sample Builder to:
- Select clusters to include (if necessary)
- Generate Lists A and B (if necessary)

8: HOUSEHOLD SURVEY METHODOLOGY

As mentioned earlier if the proportion of the 6-7 years old children enrolled in schools is less than 75% community based house hols survey has to be taken up in the EU. Following points have to be noted down while preparing the plan for house hold survey.

1. 6-7 years children mean children of 6+ to 7+ years i.e. from 6th birthday to one day before 8th birthday. In house hold survey age of the children should be verified and only 6-7 year old children have to be screened.
2. The EU needs to be divided into Evaluation Areas (EA) or clusters.
3. For practical purpose, group of three contiguous sub-centres in rural areas can serve as EAs. But for an EU, the number of sub-centres in each EA has to be uniform as far as possible. For urban areas, group of three contiguous municipal wards can be an EA.
4. The total number of EAs thus made should be at least 100 or more so that required number of EAs (clusters) can be randomly selected and provision of selecting additional EAs remains there. Otherwise, number of sub-centres (or wards) per EA is to be reduced. Population of EA may be approximately from 10,000 to 20,000.
5. Population of EU during the year of TAS is to be estimated by using last census data and growth rate as discussed earlier
6. List with serial of all EAs (including groups of sub-centres in rural areas and groups of urban wards of towns) is to be made with identification number (sample format given in **Table-3)** starting from one side of the EU and proceeding contiguously to other side covering all urban and rural EAs.

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Table-3

SAMPLE FORMAT FOR ENLISTING EVALUATION AREAS

SI No.	Name of PHC/town	Name of group of HSCs (rural) or group of ward Nos. (urban)	Name of villages (under group of HSCs) or ward Nos. (in urban)	Identification No. of EA
1				1
				2
				3
				4
2				5
				6
				7
				8
3				9
				10
				11
				12
				13
4				14
				15
				16
				17
				18
				19
5				20
				21
				22
				23
6				24
				25
				26
				27
				28
N				29
				30
				31
				32

8.1 Use of "Survey Sample Builder".

Further steps (after point no. 16 of '**use of soft ware**') for "Household Survey":

1. Select "Household survey" and click "Next".
2. In next pop up following inputs are to be given:
   - ➢ Total 6-7 year children in EU.
   - ➢ Total number of EA enlisted.
   - ➢ Expected non-response (it is taken as 15-20%).
   - ➢ Select "Yes" for "Cluster Survey".
3. Click "Finish and return to work book".
4. Click "Go to survey design" in new box.
5. Rest steps are same as 'school survey'.
6. In place of list of selected schools, this will give list of selected EAs.
7. List A or List B will give the serial number of selected children in EAs.
8. By flipping a coin, select one list out of the two.
9. Use the selected list (A or B) as random table and follow the children numbers and perform ICT.
10. The number of selected EAs will always be ≥ 30. If the average number of 6-7 years children per EA is less, the number of selected EAs will be > 30. In such situation all 6-7 years children of selected EAs will need to be tested.

The software will give serial number of EAs selected for the survey along with additional number of EAs, number of children to be screened and the critical cut off number of ICT positives. By flipping a coin, list A or B (indicating serial number of children to be tested in each EA) is to be finalised.

- The selected EAs (clusters) are to be high-lighted in the list prepared earlier including additional EAs selected. **(Table-3)**
- Community leaders of selected EAs are to be informed about the survey, its date and their help for participation of 6-7 years children is to be solicited.
- Survey of selected EA is to be started from its any village in rural area (or any selected ward in urban area) and complete the survey of the EA to examine 6-7 years as per their selected random number until the required number of children of 6-7 years for each EA (cluster) is tested. Detailed procedure is given latter in the guidelines.
- If the ICT survey in selected EAs cannot yield the required sample size of children for ICT, then additional EAs as selected by the software earlier are to be surveyed to complete the required sample size.

> Contents of demographic profile and sample data etc. obtained by using WHO software should be recorded in <u>Table-4</u> as shown below for school or household survey:

<div align="right">

<u>Table-4</u>

</div>

<u>DEMOGRAPHIC, SAMPLE DATA & POPULATION</u>

(Enter data either in "A" or "B" below as per the situation)

Name of state/UT: Name/Identification No. of EU:

A. For School Survey:
1. Total number of students enrolled in 1st & 2nd standard in EU:
2. Total number of primary schools in EU:
3. Average number of 1st & 2nd standard students per school:
4. Estimated 'absentee rate' (calculation sheet to be enclosed):
5. Sample size for cluster design:
6. Number of clusters:
7. Sampling fraction:
8. Sampling interval:
9. Critical cut off:
10. List of selected schools is to be attached:
11. A scaled map with the clear cut boundary of the Evaluation Unit indicating its name or identification number, block & town-wise current estimated population (as per 2011 census) should also be enclosed

B. For household survey:
1. Estimated population of 6-7 years during the year of TAS in EU:
2. Total number of EA in EU:
3. Average population of 6-7 years per EA:
4. Accepted 'absentee rate' (a figure between 10-15%, as per judgement, to be indicated):
5. Sample size for cluster design:
6. Number of clusters:
7. Sampling fraction:
8. Sampling interval:
9. Critical cut off:
10. List of selected EAs is to be attached:
11. A scaled map with the clear cut boundary of the Evaluation Unit indicating its name or identification number, block & town-wise current estimated population (as per 2011 census) should also be enclosed.

9: CONSTITUTION OF SURVEY TEAMS

For TAS with ICT a number of Survey Teams need to be constituted. Each survey team should consist of minimum **three members** (preferably one each of Laboratory Technician, Health Worker & ANM/Nurse). There will be one additional member as Supervisor (explained later) for each team. The task distribution of team members will be as follows:

- One for managing supplies.
- One for performing test including making all entries on ICT cards.
- One for format filling, ICT test time tracking, result reading and recording the result.

At least two teachers from each selected school should be co-opted as members for survey teams of 'school survey'. Their names should be enlisted after consultation with the respective school authority. Such teacher members of the survey teams will help in comforting the students and crowd management. Involvement of teachers will reflect sharing of ownership of TAS with the schools and help in getting active support from the schools.

The **Medical Officer** from PHC/District should invariably be with each team for overall management.

In case of household survey, Anganwari workers/ASHA/opinion leaders/social workers should be co-opted members.

> *Officer in-charge of each EU should constitute appropriate number of teams, depending on the school-based or household-based survey and complete the same within reasonable period (not more than one month). An additional reserve of 10% should be kept. The list of such teams constituted should be notified well in advance. In case of need, staffs may be inducted in survey teams from adjacent districts*

10: TRAINING OF SURVEY TEAMS

The training of survey team members is very crucial. It should be imparted at district level in workshop approach (i.e. learning by doing). Hands-on training of each member for conducting ICT and making entries in record register/format is a must. Not more than 20 participants should be trained in a batch. Photograph and video of such survey done elsewhere in India may be used to explain the different steps in a better way.

Each team member should be clear about his/her specific role in the survey team as indicated below:

10.1 In case of School Survey:

- Selected schools are to be visited one week prior to the date of actual survey and parents' consent may be obtained,
- On the day of survey, 1st & 2nd standard students (boys & girls) should be made to stand in a line one class after another,
- Token number is to be issued bearing the number 1, 2, 3 & so on from one side of the line to cover all students,
- List of selected serial

Token distribution in students

Segregated selected students

number of students is to be consulted,

- The selected students should be segregate & asked to keep their token number in hand,

- The non-selected students should be dispersed after taking back the token number,

- The selected students should be tested one by one after verifying the token number,

- The test result should be read and entries recorded as per **Table-5**.

- If the SSB output is "test all children" then all the students in each school have to be screened.

Finger prick being

Adding blood from capillary tube to ICT card

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Table-5

PROFORMA FOR SCHOOL SURVEY

Name / number of EU: Date of survey:

Name of the school: Sl. No. of school:

Type of school (Govt. / private / charitable / NGO run / religious / other):

Sl. No.	ID/Token number	Name of student	Age (yrs)	sex	ICT +ve /-ve/Invalid
Total ICT positive students					

- *Survey should end when ICT is done on required number of students. In-charge of EU should be in constant contact with survey teams over mobile phone.*
- *Each invalid result entry should be treated as "dies non" & struck off from the proforma for school survey. One additional student to be tested from same school or reserve school following random number list.*
- *Each 'positive' result entry should be circled with red ink.*

10.2   In case of Household Survey

10.2.1 For rural EA

- Prior intimation to be given to village leader & ASHA about TAS & date.
- Village of selected EA to be visited on the prefixed date for ICT.
- All 6-7 years children are to be brought in a central place of the village or school/Anganwari.
- Ensure through leaders & ASHA that no children of the age group is left out.
- All school going children of 1st & 2nd standard are to be included in the group.
- For the children not attending school, cross-verification of age (6-7 years) may be made from parents/leaders/ASHA or by observation.
- All such children are to put in a line mixing boys and girls at random.
- Issue token number bearing the number 1, 2, 3 & so on from one side of the line to cover all children.
- List of selected serial number of children is to be consulted.
- The selected children should be segregated & asked to keep their token number in hand.
- The non-selected children should be dispersed.
- The selected children should be tested one by one after verifying the token number.
- The test result should be read and entries record as per **Table-6**.

Table-6

PROFORMA FOR HOUSEHOLD SURVEY

Name / number of EU: Date of survey:
Name of the village/ward number: Sl. No. of EA:

Sl. No.	ID/Token number	Name of child	Age (yrs)	sex	ICT +ve /-ve/Invalid
N					
	Total ICT positive children				

- *Survey should end when ICT is done on required number of children. In-charge of EU should be in constant contact with survey teams over mobile phone.*
- *Each invalid result entry should be treated as "dies non" & struck off from the proforma for household survey. One additional child to be tested from same EA or reserve EA following random number list.*
- *Each positive result entry should be circled with red ink.*

10.2.2 For urban EA (ward of town):

- The boundary of the ward is to be confirmed.
- Prior information should be given to local Councillor & leaders about TAS & date.
- A starting point in the ward is selected as done in Immunisation Coverage evaluation.
- Households are to be visited one after another.
- List is to be consulted to know the serial number of selected children.
- The non-selected children should be skipped.
- ICT is to be conducted on selected children (after confirming age).
- The result should be read and entries recorded as per **Table-6**.

A detailed training manual for survey team members is to be developed in local language by the health authorities of endemic state/UT with prior approval of the English version from NVBDCP, Delhi.

11: SUPERVISION DURING ICT IN CHILDREN

A group of supervisors, consisting of PHC medical officers & district level health officials is to be constituted and trained along with survey teams about the actual field works including ICT. List of such supervisors should be notified. There should be one supervisor for each survey team. He should be responsible:

- To inform and brief the school/EA authorities beforehand about the date of survey and its methods.
- To make all arrangements for selection of sample students/children.
- To supervise conduction of ICTs, making entries on ICT cards, reading of results in time, making entries in record register/format.
- To sort out if any unforeseen problem (including clinical) crops up.

12: TENTATIVE BUDGET ESTIMATE

Financial supports are required for the following activities and supplies for each EU to conduct TAS. The requirements (example given below) are to be reflected properly in state/UT PIP accordingly.

1. Collection of base line data (about population of EU, schools, students, Sub-centres & urban wards, villages & population of sub-centres/urban wards etc.).
2. Training of survey teams (about 15 – 20 participants should be trained / batch).
3. Cost of ICT cards (about Rs 400 / test card) with extra 5% cards as reserve stock.
4. Gloves, lancet, spirit swab, band aid, soap and disinfectants for survey teams.
5. Cost of DEC tablets for 12 days treatment of ICT positive children.
6. Toffees and biscuits for children.
7. Registers (formats), pen, marker pen & bag etc. for survey teams.
8. Cost of survey (TA & DA to survey team members).
9. Mobility support for Supervisors & In-charge of EU.
10. Contingency = @ 5% of total cost of Sl. No 1 to 9 above.

> **All supply materials for TAS should be of adequate quantity (including 10% additional) and quality. The requirements are to be estimated with care while budgeting.**

13: FRAIMING OF ACTION PLAN

A detailed 'Action Plan' indicating all tasks to be performed with time frame etc. and survey schedule should be developed by the District VBD Officer as the first step for executing TAS. This will help in conducting the TAS properly with monitoring and supervision. An example format is placed at **Annexure-1.** The health authorities should try to foresee all operational aspects of TAS and develop the 'Action Plan' accordingly. In spite of this, some unforeseen difficulties may come up during actual conduction of TAS. The district and state health authorities should be ready to address those problems. In the case of major difficulties, Directorate of NVBDCP, Delhi may be contacted.

> *A copy of the Action Plan should be given to the Chief Medical & Health Officer of the EU (designation may vary from state to state) & State Programme Officer (SPO) so that they may supervise and monitor the progress in execution of Action Plan.*

Note: Detailed information on "Infection prevention practices and safe disposal of the bio-waste" is placed at **Annexure-2** which should be strictly followed.
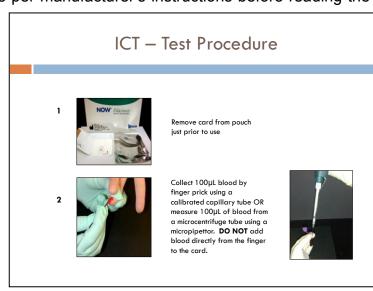
14: LOOKING AT RESULTS OF ICT

After completing ICT in all selected schools / EAs covering the required number of students / children of the EU, the total ICT positives number is to be found out. If the total number of ICT positive does not exceed the 'cut off number' determined earlier by the software, the EU will qualify for stoppage of MDA and initiate Post-MDA Surveillance. Otherwise, MDA has to be continued in IU(s) of the EU. Important information about ICT is placed below:

Immuno Chromatographic Test

ICT is an antigen-based rapid test suitable for field situation. Adequate training is required to conduct the test to reduce inter-observer variability and to reduce the misreading of test result. A few known LF +ve & -ve cases should be brought (by consulting NFCP clinic / PHC / CHC / district hospital records) during training for
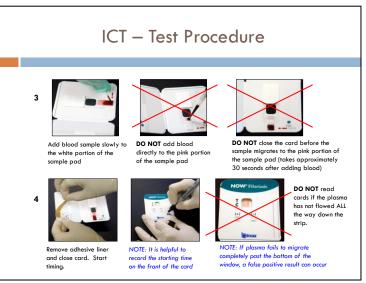
giving demonstration about positive & negative readings. Important points to be noted are:

1. Follow manufacturer's guidelines for storage and shelf life of ICT cards.
2. ICT cards have usually limited shelf life of 3 months at 30 degree C.
3. At 4 degree C, the shelf life is about 9 months.
4. Cards should not be frozen.
5. For carrying in field situation cool box is usually not required.
6. If there is probability of exposure to extreme heat for prolong period in field, cool box should be used.
7. Before starting the test, particulars of the student/child should be recorded in the register/format.
8. Technician conducting test should use gloves.
9. Write identification mark (serial number and name of student/child) on the cover of test card.
10. Each ICT card package should be opened just before performing test.
11. Cleanse the finger tip of student / child with spirit swab.
12. Make a liberal (somewhat deep) prick by using lancet on the cleansed finger tip.
13. Collect 100 micro-litre of blood in heparin coated capillary tube (supplied with ICT cards)
14. No air bubble should enter the tube. It reduces the quantity of blood required for test.
15. Add blood sample slowly to the white portion of sample pad. Touching and moving around the tip of capillary tube to pad will lead to absorption of blood.
16. See the time and close the test card.
17. Write the time on cover of the test pack.
18. Put band-aid on the finger prick site.
19. Wait for 10 minutes or as per manufacturer's instructions before reading the result.
20. Read the result in adequate light.
21. Team members, with supervisor, should reach consensus about result.
22. If there is disagreement about test result, the card should be kept separately for immediate opinion of supervisor.

ICT – Test Procedure

1 — Remove card from pouch just prior to use

2 — Collect 100µL blood by finger prick using a calibrated capillary tube OR measure 100µL of blood from a microcentrifuge tube using a micropipettor. DO NOT add blood directly from the finger to the card.
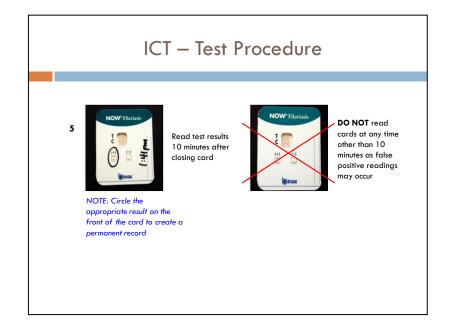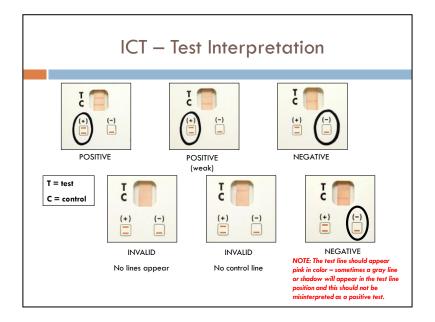
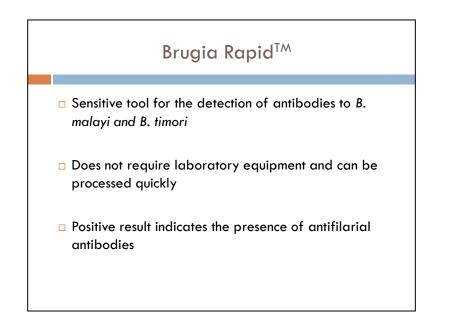There is no way of preserving the test card for a later reference.

23. If there is a single 'band or line', (i.e. single band at Control part) the test is negative.

24. If there are two 'bands or lines' (one each at control and test part), the test is positive.

25. If there is no 'band or line', or only one band appears at test part then the test is invalid and the test result is to be treated as '*dies non*' and an additional student/child should be tested to complete the sample size.
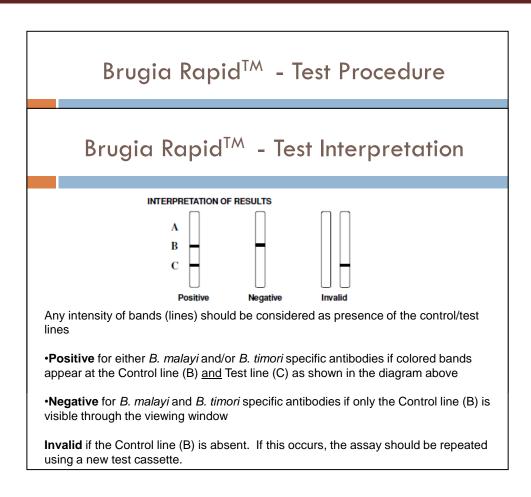

26. Record the test result in register/format where particulars of the student/child have been recorded.

27. Proceed similarly with next selected child.

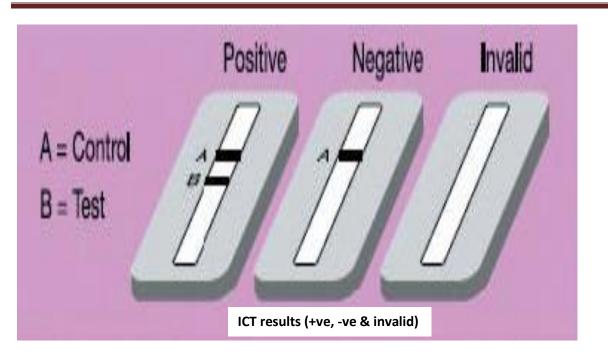28. The used spirit swab, lancet & gloves should be collected and disposed as per norms.

Brugia Rapid™

- Sensitive tool for the detection of antibodies to *B. malayi and B. timori*

- Does not require laboratory equipment and can be processed quickly

- Positive result indicates the presence of antifilarial antibodies

Brugia Rapid™ - Basic Guidelines

- The test is known to have a shelf life of 18 months when stored at ambient temperatures (20–25°C); however, for long-term storage, 4°C (refrigeration) is recommended. The tests should NOT be frozen.
- Each cassette is packed in individually sealed aluminum pouch. Open the pouch just prior to use.
- When transporting tests for use in the field, a cool box is not required, although desirable. Care should be taken not to expose the tests to extreme heat for prolonged periods of time.
- Tests must be read using adequate lighting. Faint lines can be difficult to see when lighting is not adequate. This is especially important when reading tests at night.
- The test requires 25 µl serum or plasma or 35 µl whole blood.

Brugia Rapid™ - Test Procedure

- Bring test cassette and chase buffer to room temperature (if precipitate is noted in the chase buffer, shake the bottle vigorously and allow it to warm up further)

- Open the pouch by gently tearing at the notch of the pouch

- Label the test device with the sample name

Brugia Rapid™ - Test Procedure

Brugia Rapid™ - Test Interpretation

INTERPRETATION OF RESULTS

Any intensity of bands (lines) should be considered as presence of the control/test lines

•**Positive** for either *B. malayi* and/or *B. timori* specific antibodies if colored bands appear at the Control line (B) and Test line (C) as shown in the diagram above

•**Negative** for *B. malayi* and *B. timori* specific antibodies if only the Control line (B) is visible through the viewing window

Invalid if the Control line (B) is absent. If this occurs, the assay should be repeated using a new test cassette.

ICT results (+ve, -ve & invalid)

This is Brugia Kit _To be replaced with ICT

One should be prepared for certain eventualities. Clear laid down procedure is to be followed for any untoward incident during drawing of blood. There may be a situation where an anxious or uncooperative child may have to be handled. The survey team members must tactfully handle such situation. There is a possibility of a child fainting. This happens because of hypoglycaemia or extreme anxiety or vaso-vagal syncope. Immediate remedial measures are to be taken in such situation. The child is to be kept in lying down position adequate ventilation. Water and glucose solution should be given for drink and the child is to be monitored continuously. Sometimes, significant bleeding from the finger prick may occur. In such situation pressure should be applied on the bleeding spot for some time. If in any case, the problem does not subside, the child is to be referred to hospital.

> - *Movement history of all ICT +ve students/children detected during survey should be collected and all +ves to be given DEC for 12 days as per existing norms without delay. All such relevant information should be entered in Table-7 below.*
> - *An ICT +ve will be treated as imported & excluded from survey if he/she has not stayed in EU continuously for one year & is from a known LF endemic area*

Table-7

PROFORMA FOR MOVEMENT HISTORY & DEC CONSUMPTION OF EACH ICT +VE CHILD

1. Name of the student/child:
2. Name of school & class/EA identification:
3. Address of the school/village or ward:
4. Father's name: 5. Age: 6. Sex:
7. Complete present address:

8. Complete permanent address:

9. Date of ICT performed:

10. Movement history of the child since birth (Fill-up the table below):

(Information should be collected from mother or father or any adult close relation)

Sl. No.	Name of village / town where resided	Name of district & state/UT	Age from (in years & months)	Age to (in years & months)

11. Dates of consumption of DEC tablets (2 tablets daily) in the cells below:

Note: If no movement history is found, please indicate ***"None"***

> **Brugia malayi rapid test***: All the survey steps described above are for the EUs where Wuchereria bancrofti is the causative agent. If in an EU, Brugia malayi is the causative agent, the TAS methodology will remain same. But, only a different kind of 'rapid antibody test' is to be performed in place ICT cards.*

15: REPORTING OF TAS ACTIVITIES:

> After preliminary data/information of an Evaluation Unit is collected/estimated the template given at **Table-1** and information as per **Table-4** are to be filed up accordingly and sent to NVBDCP Delhi with copy to SPO of the state/UT.

> After the completion of TAS, information/data in **Table-2 (or Table-3) and Table-5 (or Table-6)** should be sent to NVBDCP with copy to SPO of the state/UT within one week of completion of TAS.

> **Subsequent activities in the Evaluation Unit (EU) will depend on the success or failure of TAS. If TAS succeeds, the EU will enter into 'Post MDA Surveillance' phase. But if TAS fails, two annual rounds of MDA have to be done in the EU followed by repeat TAS.**

16: FINAL REPORT WRITING

After submitting the initial reports on TAS activities to NVBDCP, the In-charge of the EU should develop a detailed and formal report covering, *inter alia*, the following points:

1. Foreword (preferably by District Collector or Deputy Head of Health).
2. Acknowledgement.
3. Executive summary (one page).
4. Introduction to ELF & TAS.
5. Geographical description & map of EU, State/UT and India.
6. Demography (including population & socio-economic indicators of IU/EU).
7. Organisational structure of the health department of EU.
8. NFCP activities (if any) of the EU.
9. Year-wise performance of IU/EU after initiation of ELF Programme (Mf survey reports, MDA coverage, Morbidity Management, hydrocelectomy operations conducted, etc.).
10. Justification of TAS (**Table-1**).
11. Sample data (**Table-4**)
12. Time frame of different TAS related activities performed [first one being 'Additional Mf Survey' in 10 spot (random) sites].

13. List of survey teams (including designation of constituent members & mobile number).
14. Spot map of EU showing the location of selected schools or EAs.
15. Schedule of survey [including date, time, and place with allotted team(s) numbers].
16. Result of ICT in statement form supported by summary table also showing exclusion of imported case(s) in any.
17. Summary table of 'absentee rate' (in case of school survey).
18. Filled-in **Table-2 (or Table-3) & Table-5 (or Table-6)**.
19. Filled-in **Table-7** for movement history and confirmation of consuming 12 days treatment to all ICT +ves (if any) with DEC.
20. Photographs (10-12) with caption of different TAS related activities of EU.

This formal report should be sent to NVBDCP within one month of completion of TAS with a copy to State Programme Officer.
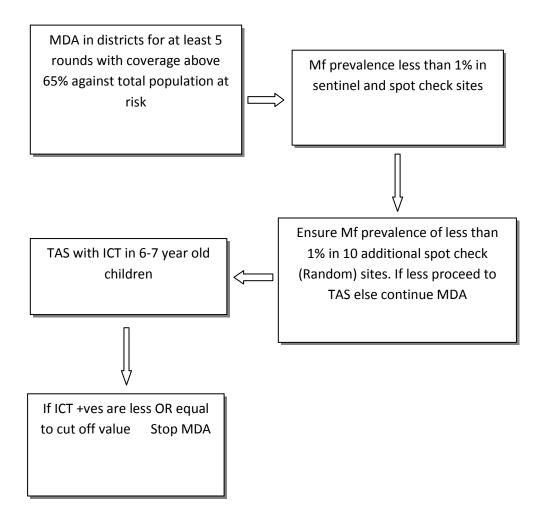
17: LF IN NON ENDEMIC AREAS

Elimination of LF relates to the whole country. Though ELF activities have been concentrated in 250 (now 255) endemic districts, search for presence of LF cases is being initiated in non-endemic districts also. The steps involved in ELF from the country are explained in the two 'Flowcharts' given below:

FLOWCHART -1 FOR ELF (NON-ENDEMIC DISTRICTS)

FLOWCHART -2 FOR ELF (ENDEMIC DISTRICTS)

```
┌─────────────────────────┐          ┌─────────────────────────┐
│  MDA in districts for    │          │  Mf prevalence less      │
│  at least 5 rounds with  │   ──▶    │  than 1% in sentinel     │
│  coverage above 65%      │          │  and spot check sites    │
│  against total           │          │                          │
│  population at risk      │          │                          │
└─────────────────────────┘          └─────────────────────────┘
                                                   │
                                                   ▼
┌─────────────────────────┐          ┌─────────────────────────┐
│  TAS with ICT in 6-7     │          │  Ensure Mf prevalence    │
│  year old children       │   ◀──    │  of less than 1% in 10   │
│                          │          │  additional spot check   │
│                          │          │  (Random) sites. If less │
│                          │          │  proceed to TAS else     │
│                          │          │  continue MDA            │
└─────────────────────────┘          └─────────────────────────┘
         │
         ▼
┌─────────────────────────┐
│  If ICT +ves are less    │
│  OR equal to cut off     │
│  value    Stop MDA       │
│                          │
└─────────────────────────┘
```

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POST MDA SURVEILLANCE

18: Post MDA Surveillance

A successful Transmission Assessment Survey (TAS) in a particular Evaluation Unit (EU) leads to the stoppage of MDA there. But this does not mean Elimination of Lymphatic Filariasis (ELF) has been achieved in the EU. Even after MDA has stopped, the LF elimination programme will continue for a further period of at least four years.

National strategy for post MDA surveillance includes activities to manage morbidity and prevent disability, ongoing surveillance and evaluation, screening of high risk population such as migrants, treatment and follow up of positive cases and vector control measures. Post-MDA activities are supposed to take place in each evaluation unit as individual units stop MDA and then at a country level, once the entire country has stopped MDA.

[Post-MDA activities will vary according to the country situation. Some countries might implement a policy of "testing and treating" for high-risk populations such as migrants. Under this policy, positive cases would be treated with a single dose of DEC and albendazole or ivermectin and albendazole. If such cases can be followed up easily, repeat testing and treatment if positive could be done. Other countries might continue with vector control measures to ensure that recrudescence will not occur.

Programmes should aim to integrate post-MDA surveillance activities with those of other NTD control programmes or integrate LF surveillance activities with population-based surveys to minimize the need for long-term resources for LF specific surveillance (*42*). This would be useful both in between the TAS (see section **8)]**

18.1 Surveillance

After the stoppage of MDA surveillance has to be implemented in two ways:
i) Periodic surveys; and (ii) ongoing surveillance activities, which are advantageous to start as soon as possible, including while MDA is ongoing.

18.1.1 Periodic surveys

Repeating a TAS is the best option for periodic surveys during post-MDA surveillance. A series of two post-MDA surveillance surveys should be conducted to evaluate whether recrudescence has occurred. Each survey should be conducted approximately 2–3 years following the previous survey and should use a similar design as the original TAS.

The timing of a repeat survey has no single best choice for all programmes. When MDA has been stopped despite concerns that transmission may not have been extinguished, a second survey conducted after 2 years is preferred to detect any early signs of recrudescence. A longer interval is more likely to identify recrudescence and might be preferred for programmes in which all indicators for success of MDA have been achieved.

When the TAS is repeated, comparing antigen-positive or antibody-positive cases to the critical cutoff is more important than comparing differences between the first and second surveys. If the post-MDA surveillance survey results are greater than the critical cut-off point, this could be a warning that transmission has resumed. It is important to consult with NVBDCP in order to decide on next steps. Depending upon the level of antigenaemia or antibody detected during these surveys, additional rounds of MDA might be required. Reassessment of the MDA stopping criteria could be repeated after one or more additional rounds of MDA.

18.1.2 Ongoing surveillance

Ongoing surveillance should be implemented to detect new foci of transmission, collect data on infection trends in the general population and confirm the interruption of transmission by capturing the data explained here after.

18.1.2.1 Entomological data collection

This is a very important post-MDA activity. It will enable the health authorities to keep a track of the vector responsible for transmission of LF infection and take appropriate steps accordingly.

For such data collection, four 'Sentinel Sites' (3 from rural & 1 from urban areas) are to be identified on the basis of past Mf survey data. Historically most high endemic localities should be selected for the purpose. These sentinel sites will remain unchanged during the period of post-MDA surveillance. Besides, four random (spot) sites (3 from rural & 1 from urban areas) should also be selected each year afresh by multi-stage random sampling method.

From each of such sentinel and random (spot) site, entomological data collection should be made from 10 catching stations spending 15 minutes in each catching station using flash light and aspirator tube in the early morning between 6 a.m. and 10 a.m. All the female *Culex quinquefasciatus* mosquitoes shall be dissected to find out the filarial infection (Filarial larvae).

A minimum of three collections at an interval of 10 days shall be carried out in each site once a year during October-November each year and four indices are to be calculated as follows:

$$\text{Ten Man-hour Vector density} = \frac{\text{No. of female \textit{C. quinquefasciatus} collected}}{\text{No. of man-hour spent for mesquite collection}} \times 10$$

$$\text{Infection rate (\%)} = \frac{\text{No. of mosquitoes +ve for any stage (l1/L2/l3 states) of the parasite}}{\text{No. of female vector mosquitoes dissected}} \times 100$$

$$\text{Infectivity rate (\%)} = \frac{\text{No. of mosquito +ve for infective larvae (L3)}}{\text{No. of female vector mosquitoes dissected}} \times 100$$

$$\text{Mean mosquito infectivity} = \frac{\text{No. of infective larvae (L3) found}}{\text{No. of infective mosquitoes}}$$

L1: Stage 1 larva or sausage stage larva
L2: State 2 larva or pre-infective stage larva
L3: Stage 3 larva or infective stage larva

Reporting format for annual entomological data:

Name of state/UT: Name/Number of EU:
Period of data collection: Date of reporting:

Sites / Indices	S-1	S-2	S-3	S-4	R-1	R-2	R-3	R-4
10 MHVD@								
Infection rate								
Infectivity rate								
Mean mosquito infectivity								

S = Sentinel site; R = Random site; @ 10 Man-hour vector density.

Signature of EU officer in-charge LF

The annual report should be directly sent to NVBDCP Delhi with copy to SPO of state/UT immediately after data collection. Completeness & timeliness of the report should be ensured.

18.1.2.2 Mf survey in 5-9 years children:

Microfilaria (Mf) survey will be done annually in 5-9 years children. This age-group based Mf survey will indicate absence, presence or recrudescence of recent LF infection. Like entomological data collection, Mf survey will be done in the same 8 selected sites during October-November each year. A minimum of 50 blood slides are to be collected from each site.

Quality assurance of Mf survey in terms of 'time of collection of blood slides' (8.30 PM to 12.00 mid-night) and 'cross-checking' of all positive slides and 5% of negative slides from each site, have to be maintained strictly. If minimum requisite numbers of slides are not available from a particular site the contiguous village/municipal ward is to be covered to collect the balance slides.

- Non-resident (living continuously for less than one year) children are to be excluded from the Mf survey.
- All Mf positive children should get 12 days standard treatment with DEC tablets.

Reporting format for annual Mf survey in 5-9 year olds.

Name of state/UT: Name/Number of EU:
Period of Mf survey: Date of reporting:

Parameter	S-1	S-2	S-3	S-4	Total sentinel	R-1	R-2	R-3	R-4	Total random	Grand total
No. BSC#											
No. Mf +ve											
Mf rate %											

BSC = Blood slides collected; S = Sentinel site; R = Random site

Signature of EU officer in-charge LF

The annual report should be directly sent to NVBDCP Delhi with copy to SPO of state/UT immediately after Mf survey is over. Completeness & timeliness of the report should be ensured.

18.1.2.3 Intensification of morbidity management:

Morbidity management is aimed at giving relief to the LF patients who have been suffering from Lymphoedema and Hydrocele. This is the ethical obligation of the ELF programme. Though in the EU, transmission of LF has been interrupted by MDA, the programme cannot keep a blind eye on those who have already developed disease manifestations.

Annual updating of line lists was done during MDA phase. In post-MDA surveillance, this is to be continued as before by ANM & Health Worker for rural and urban areas respectively during their routine field visits. Proforma given in table-10 (page 40) of National Guidelines on ELF-2009 may be used to collect data. A correct and complete line list will not only give information about the actual burden of morbidity, but also help in developing plan for executing the management activities. For alleviation of morbidity a two prong approach is to be adopted.

- Promotion of Hydrocele operation in 'Camp Approach' needs to be implemented with full earnest so that all operable hydrocele cases can be operated within a specific time frame (1-2 years).
- All lymphoedema cases should be trained by doctors at PHC, CHC and government hospitals as to how to take care of the affected body part(s). Such training should be given twice a year. Following training each patient should be given a 'morbidity management kit' containing a plastic mug, soft towel, soft soap and antifungal/antibacterial cream.

Reporting format for quarterly morbidity management activities

Name of state/UT: Name/Number of EU:
Half year ending: Year: Date of reporting:

Total number of lymphoedema cases line listed	No. given 1st training & provided with MMK#	No. given 1st + 2nd training & provided with MMK	Total number of hydrocele cases line listed	No. unfit for operation	No. operated	Balance no. to be operated

MMK = Morbidity Management Kit

Signature of EU officer in-charge LF

The report should be directly sent to NVBDCP Delhi with copy to SPO of state/UT by 15th of next month of half year ending. Completeness & timeliness of the report should be ensured.

18.1.2.4 Vector control

Anti larval measure is a part of Integrated Vector Management. During MDA phase, this aspect of vector control did not get much attention. It thus becomes imperative to institute anti larval measures in the EU under post-MDA surveillance to further reduce the chance of transmission of LF infection.

18.1.2.5 Screening of migratory population:

In some EUs, problem of population migration is common. Such migration, particularly from other LF endemic areas, can initiate a fresh spurt of transmission of LF infection in the EUs where post-MDA surveillance is going on.

The health authorities of such EUs should take-up the issue with administrative authorities. Provision for screening of migrating population should be done at the time of entry to the EUs or within one month of entry in to EU. The night blood survey of all such eligible population should be conducted and all Mf positive cases should be given standard 12 days treatment with DEC.

Reporting format for screening of migratory population

Name of state/UT: Name/Number of EU:
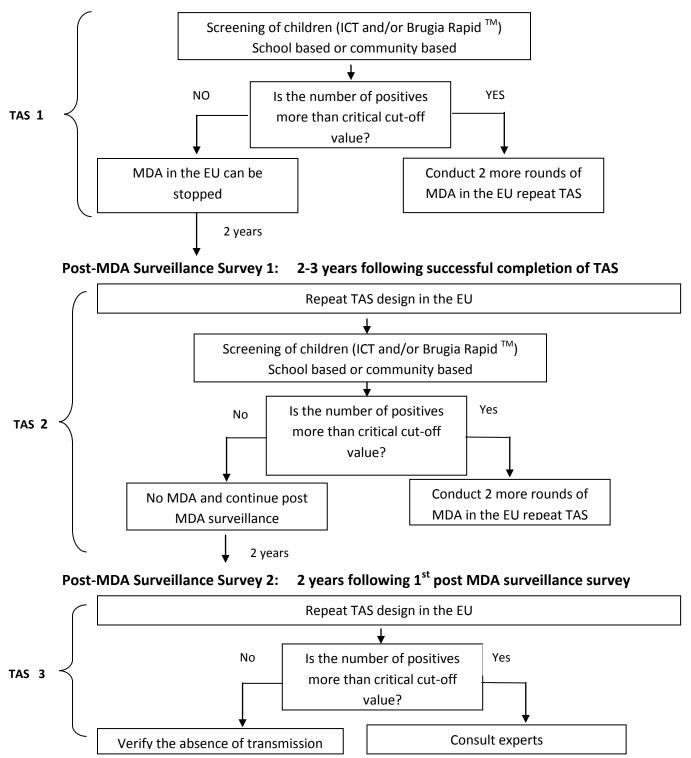Half year ending: Year: Date of reporting:

Total migratory population screened during the half year	Number Mf positives				Total Mf +ve received 12 days DEC treatment	Balance to be treated
	<5 years	5-14 years	15 & + years	Total		

Signature of EU officer in-charge LF

The half yearly report should be directly sent to NVBDCP Delhi with copy to SPO of state/UT by 15th of next month of half year ending. Completeness & timeliness of the report should be ensured.

Proper annual planning of above-mentioned five activities should be made at EU level. Necessary budget requirement may be calculated and sent to SPO of the state/UT for incorporation in the PIP

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Transmission Assessment Survey

TAS 1

Screening of children (ICT and/or Brugia Rapid ™)
School based or community based

↓

Is the number of positives more than critical cut-off value?

NO

YES

MDA in the EU can be stopped

Conduct 2 more rounds of MDA in the EU repeat TAS

2 years

Post-MDA Surveillance Survey 1:   2-3 years following successful completion of TAS

TAS 2

Repeat TAS design in the EU

↓

Screening of children (ICT and/or Brugia Rapid ™)
School based or community based

↓

Is the number of positives more than critical cut-off value?

No

Yes

No MDA and continue post MDA surveillance

Conduct 2 more rounds of MDA in the EU repeat TAS

2 years

Post-MDA Surveillance Survey 2:   2 years following 1st post MDA surveillance survey

TAS 3

Repeat TAS design in the EU

↓

Is the number of positives more than critical cut-off value?

No

Yes

Verify the absence of transmission

Consult experts

19: DOSSIER

The dossier should present systematically the evidence for absence of LF transmission for the entire country. Geographically separate foci should be dealt with separately.

Terms those are used at a national level that may not be understood internationally should be defined (e.g. "imported case", "endemic district"). Spatial presentation of data is encouraged. At a minimum, maps should be included that show each IU, as well as a national-level or regional-level map indicating endemic and non-endemic areas.

The following section contains general guidance on what to include in a dossier and should be adapted to specific country circumstances based on past history and epidemiology.

Dossier contents

1. General description
The general description should focus on:

- geographical and economic features of the country, particularly as they relate to risk of LF transmission;
- the health system, emphasizing the adequacy of the health system to detect cases of infection and provide treatment;
- geographical distribution, feeding behaviour, density and competence of the vector mosquitoes;
- immigration patterns to and from LF-endemic areas (including other countries);
- occurrence of LF in neighbouring countries and the status of filariasis control or elimination efforts in those countries.

2. History of lymphatic filariasis
- A detailed description, including maps of historic foci of LF transmission, as documented by both government and research efforts. This should include a review of data on prevalence and intensity of LF infection in humans and vector mosquitoes.
- Evidence for the absence of LF transmission in areas considered to be non endemic. Information should be provided on how non-endemic areas were

defined and on surveillance in these areas to provide assurance that they remain non-endemic.

- A description of filarial disease, including geographical distribution, prevalence and treatment for its various clinical manifestations.

3. Interventions

- A detailed description of all measures to control or interrupt transmission in each focus. This description should include details of screening, testing and treatment of patients who test positive, MDA and ancillary measures, such as environmental and economic improvement, vector control and other relevant interventions, such as elimination or control activities targeting other vector-borne diseases (e.g. malaria).
- Review of case management for filarial disease.

4. Assessment of interventions

- A detailed description of surveys and studies conducted to evaluate the impact of the interventions (e.g. microfilaraemia surveys). This chapter would include data from sentinel sites and surveys for antigenaemia, as recommended by WHO, as well as other surveys or evaluations that have been conducted before the GPELF was established. It also would include any sampling undertaken as part of the decision to stop MDA or other interventions.
- Details should be provided on sampling methods and procedures that were used to assess baseline prevalence, monitor the programme and assess stopping points for MDA.
- Review of any data collected on the impact of interventions on filarial disease.

5. Surveillance

- A full review of any surveillance activities undertaken since MDA and other interventions were stopped, including TAS, other active surveillance activities, and a description of case follow-up activities completed for each positive case detected.
- Review of data collected through post-MDA surveys, such as the TAS.
- Review of the filariasis case reports through routine disease surveillance or other systems for case detection.
- Evidence that adequate sampling or surveillance was conducted in all previously endemic areas and in areas that were defined as non-endemic during initial mapping.

- Details on surveys done in cross-border areas and in immigrants from fiariasis-endemic areas (e.g. date of surveys, number of people tested, test results, follow-up of any microfilaraemia-positive cases).
- Demonstration that any positive cases detected following MDA represented isolated events not traceable to an area of active transmission. If an area of potential transmission was discovered, evidence should be presented that subsequent interventions (e.g. MDA) were successful.

6. Additional data that support the absence of LF transmission.

7. Bibliography

- Published and any available unpublished studies on LF, its geographical distribution and control, including theses and dissertations.

TENTATIVE ACTION PLAN
(March is taken as Example, it can start after 2 months of last MDA so that after 6 months TAS is done)

Sl. No.	Date	Time	Place	Persons involved	Activity	Supervisor
1	04.03.20.. to 08.03.20..	10.00 hrs to 17.00 hrs	Dist Filaria office & Dist. Collector's office	Dist. Health Chief & Dist. Filaria Officer	Obtaining Collector's letter to Dist. Education Officer and Dist. Census Officer for extending help and provide data required for the survey.	State SPO
2	11.03.20.. to 12.03.20..	10.00 hrs to 17.00 hrs	District Education & Census office	District Filaria Officer and two senior Health Inspector	Collection of baseline data about the district.	Dist. Health Chief
3	13.03.20.. to 14.03.20..	10.00 hrs to 16.00 hrs.	Block PHC area-A	Health Supervisor & Health Inspector	Enlisting all primary schools in the block with number of students enrolled in 1st & 2nd standard by field visit.	District Filaria Officer
4	15.03.20.. & 18.03.20..	10.00 hrs to 16.00 hrs	Town-X	Health Supervisor & Health Inspector	Enlisting all primary schools in the entrusted ward of the city or whole town with number of students enrolled in 1st & 2nd standard by field visit.	District Filaria Officer
5	17.03.20..	10.00 hrs. to 17.00 hrs	District Filaria office	District Filaria Officer & two senior health staff	Enlisting of primary schools with student numbers starting from one side of the EU and completing to other side. Selection of 30 schools randomly from the list.	Dist. Health Chief
6	19.03.20.. to 20.03.20..	As per timing of the schools	Selected 30 schools	15 Health staff, one for each school	Collection of absentee rate by visiting those schools. Finding out the average absentee daily rate.	District Filaria officer

7	21.03.20..	10.00 hrs to 17.00 hrs	District Filaria office	District Filaria Officer & two senior health staff	Cross-checking of school based data from Education & Census office with data generated under Sl. No. 3 & 4 and to make a final list of schools with serial number & student number.	Dist. Health Chief
8	22.03.20..	10.00 hrs to 17.00 hrs.	District Filaria office	District Filaria Officer & two senior health staff	Selection of schools, sample size, cut off point and list of selected student by using soft ware. Hard copies are to be taken for record purpose.	Dist. Health Chief

Infection prevention practices and safe disposal of the bio-waste

1. Introduction

During the process of collection of blood sample from the child and conducting the test, extreme care has to be taken to avoid exposure to infections among the health care workers and the children. It is also imperative to prevent transmission of infection from one person to another. Blood from patients/children can contain organisms that can cause different diseases like HIV/AIDS, hepatitis etc. Therefore any material which has been contaminated by blood, such as swabs, lancets, used and discarded test strips should be handled with care as per standard guidelines.

2. Procedure

- Hands should be washed thoroughly with soap and water before drawing blood.
- Sterile latex surgical gloves should be used. Gloves provide a barrier against potentially infectious microorganisms that can be found in blood, other body fluids, and waste.
- A fresh disposable sterile lancet should be always used for each test.
- The sharp tip of the lancet should never be touched before or during the process of drawing blood.
- Blood should not be touched with bare fingers at any time.
- Care should be taken to ensure that the person does not prick himself/herself accidentally with a used lancet.
- In case some amount of blood from a child comes in contact with your gloves, such soiled gloves should be disposed of and a fresh pair of gloves is to be used for the next child after through hand washing. Sufficient number of surgical latex gloves should be available.
- After the test is over, hands should be washed again thoroughly with soap and water.
- All the used materials should be disposed of in the plastic bag (blue or white translucent) and handle the waste carefully as per proper waste management principles.

3. Disposal of used lancets

It is imperative that the used lancets are properly disposed off. They should not be thrown here and there. The used lancets must be dipped in 1% Chlorine Solution for at least half an hour.

A chlorine solution can be made from liquid household bleach (sodium hypochlorite) or from chlorine compounds available in powder (calcium hypochlorite or chlorinated lime) or tablet (sodium dichloroisocyanurate) form. Because of the low cost and wide availability, chlorine solutions prepared from liquid or powdered bleach are recommended for decontamination. Liquid bleach and chlorine containing compounds are described as having a certain percentage of 'active' (or available) chlorine. It is the ''active' chlorine in these products that kills micro-organisms. The amount of 'active' chlorine is usually described as a percentage and differs from one product to another. This is important so that a chlorine solution with the appropriate percentage of 'active' chlorine can be prepared.

Using bleach solution: If sodium hypochlorite solution is used, the following formula may be used to calculate the dilution with water: % of available chlorine in the bleach solution minus 1=Parts of water required for dilution

Example: If the bleach solution has 3.5% available chlorine, then 3.5-1 i.e., 2.5 parts of water are required to be mixed with one part of bleach solution.

Using Bleaching Powder
If using bleach powder, calculate the ratio of bleach to water using the following formula:

[% chlorine desired divided by % chlorine in bleach powder] x 1,000 = Number of grams of powder for each litre of water

Example: To make 1% chlorine solution from calcium hypochlorite powder containing 35% available chlorine:

[1% divided by 35%] x 1,000 = 0.0286 x 1,000 = 28.6. Therefore, you must dissolve about 30 gms of calcium hypochlorite powder in 1 litre of water in order to get a 1% chlorine solution.

Prepare a new chlorine solution at the beginning of each day or when the solution looks like it needs to be changed, such as when the solution becomes heavily contaminated with blood or other body fluid or becomes cloudy. (Note that when bleach powder is used, the solution is likely to be cloudy at the start.)

Remember: Wear utility gloves whenever you handle chlorine, used surgical instruments, and other items for decontamination

3.1 After treatment with chlorine solution the lancets should be put into white/blue bag or puncture proof container. At the end of the day, they should be buried in a deep pit in the ground away from wells and other sources of water in an identified spot at the sub-centre/PHC.

4. Disposal of used gloves

They must be dipped in 1% Chlorine Solution for at least half an hour.

Before removing contaminated gloves, hands must be dipped in a chlorine solution to rinse the outer surfaces and to remove blood or other body fluids. The gloves must be removed carefully without touching the outer surface with bare hands or snapping the gloves, and placed in decontamination container. Separate the gloves from the instruments and other items to avoid tearing and puncturing them during decontamination. They must be soaked in a 0.5% chlorine solution for 10 minutes before clearing. They must be rinsed or cleaned immediately. These gloves have to be shredded, cut or mutilated. This ensures that they are not recycled/reused. For instance, the fingers of the gloves should be cut.

5. Additional precautions

Health care workers who are involved in collection of blood sample and conducting the tests should take all possible care to avoid accidental skin pricks by lancets. Just in case an injury occurs immediate attention is to be paid and proper procedure is to be followed for Post Exposure Care and Post Exposure Prophylaxis as prescribed under National AIDS Control Programme.

Immediately the wound should be washed along with surrounding skin with water and soap, and rinsed. Not to be scrubbed. Antiseptics or skin washes (bleach, chlorine, alcohol, Betadine) are not required. There is no reason for panic. Pricked finger should not be put in mouth. Wound should not be squeezed to bleed it. The designated physician and the District AIDS prevention and control officer should be consulted immediately as per institutional guidelines for management of the occupational exposure.

Example showing effects of 'absentee rate'

Sampling fraction is the ratio of the sample size to the population size. With simple random sampling, the sample fraction represents the proportion of population units that are selected in the sample. If 250 boys are sampled randomly from 1489 boys, the sampling fraction = 250 / 1489 = 0.17. In other words, from 1 boy, 0.17 boy has been sampled. In term of percentage, 17% boys have been sampled from total population of 1489.

Sampling interval is the gap or distance between each sample unit used in systemic random sampling. Using above example, sample interval = 1489 / 250 = 6. The 1st sample will be randomly selected between 1 and 6. Suppose it is 2. The next samples will be 2+6 = 8; 8+6 = 14; 14+6 = 20 and so on till 1489 students are exhausted.

To understand the effect of 'absentee rate' let us say that, in an Evaluation Unit:

- Number of students enrolled in 1st & 2nd standard (≥75% of 6-7 years population) = 33612.
- No. of primary schools = 498.
- Average number of students per school = 67.

Using WHO software (http://www.filariasis.us/resources.html) with different 'absentee rates' (7% to 25%) we will find the same:

- Sample size = 1556 and
- Critical cut off = 18.

But, expected attendance, sampling fraction, sampling interval become different depending on different 'absentee rates'. Up to 'absentee rate' of 20%, the average number of selected students per cluster and available total sample remain same; beyond which they also change. The number of cluster also changes on high absentee rate (25%). The picture is explained below:

Sl. No.	Absentee rate %	Expected attendance / cluster	No. of cluster	Sampling fraction	Sampling interval	Excluded student (every)	Av. No. of selected Students/ cluster #	Available total sample without additional schools
1	7	62	30	0.83	1.21	5th	51*	1530
2	12	59	30	0.87	1.15	7th	51	1530
3	15	57	30	0.90	1.11	9th	51	1530
4	20	54	30	0.96	1.04	25th	51	1530
5	23	52	30	1.00	1.00	None	52	1560
6	25	50	31	1.00	1.00	None	50	1550

*51 = 62 x 0.83; # per school (cluster)

Use of estimated 'absentee rate', when 'sampling fraction' is <1 will yield more reliable survey result. Theoretically in this example, the total required sample size (1556) is not found in case of Sl. No. 1, 2, 3, 4 & 6. Additional schools selected are to be surveyed to get the sample size.

If the number of primary schools is high, say 853, the average number of students per school will be reduced from 67 to 39. Then with 'absentee rates' of 7, 12, 15 & 20 per cents, the number of schools (clusters) to be surveyed will be 43, 45, 47 & 50 respectively.