WORLD HEALTH ORGANIZATION
EXPANDED PROGRAMME ON IMMUNIZATION

TRAINING FOR MID-LEVEL MANAGERS

EVALUATE VACCINATION COVERAGE

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Introduction

Vaccination activity should not be considered an end in itself. It is the first step in a three-step process. Vaccinations lead to immunity against a particular disease which in turn leads to a reduction in morbidity and mortality.

The accurate measurement of vaccination coverage is therefore an essential step in determining expected reductions in morbidity and mortality from the vaccine-preventable diseases. It is one of the ways to evaluate the effective operation of your programme. It should be remembered that providing vaccinations does not guarantee a reduction in disease morbidity and mortality. The vaccines must be given at the right time to the correct target population (that is, at appropriate ages to protect children from the disease), and the vaccines must be potent. Vaccine potency is discussed fully in the cold chain module. The other factors listed can be evaluated through a process called a coverage evaluation survey.

The steps for performing a coverage evaluation survey and for analyzing its results form the content of this module. The process is a relatively simple one which is more complicated to read about than it is to perform. A coverage evaluation survey provides important information about the people being vaccinated in your area. This information often cannot be obtained in other ways. In order to know who is and is not being vaccinated, you must visit homes and examine vaccination records. Done on a periodic basis (for example, once a year) a coverage evaluation survey will provide you with reliable information which you can use to make changes, if necessary, in your vaccination activities. Specifically, it will tell you whether or not you are meeting your vaccination coverage objective. This objective states the number of people you are expected to vaccinate in a given year.

Without the use of surveys, you will be forced to rely on health centre records which may provide inaccurate or misleading information. For example, health centre records may indicate that 80% of the children in a community are being vaccinated. A coverage evaluation survey may

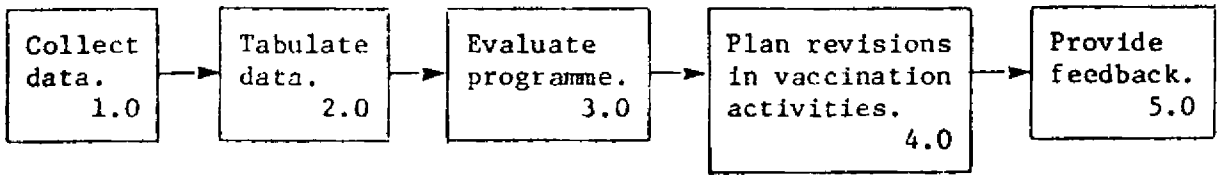
show that 30% of these children have been vaccinated at the wrong ages. In order to have an accurate idea of how many people you are vaccinating, you must conduct a field survey. This can be done in a systematic way so that only a small sample of homes will need to be surveyed in order to obtain valid results.

STATEMENT OF PURPOSE

The purpose of this module is to provide you with the skills you will need to conduct a coverage evaluation survey and to evaluate the results you obtain from the survey.

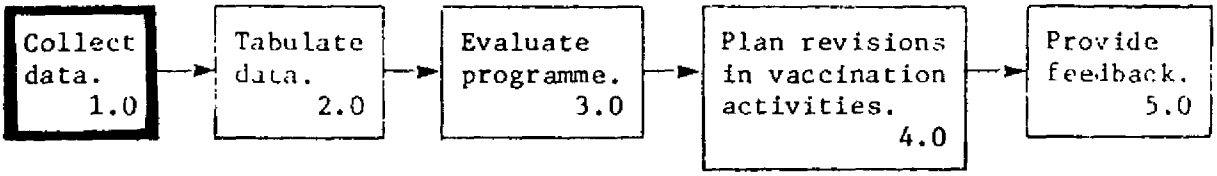
FLOWCHART

The major steps involved in the evaluation of vaccine coverage are:



EXERCISES

The exercises in this module are organized differently from those you have done in other modules. Because the exercises are long and sometimes complicated, they have not been separated from the text of the module. In other words, you will sometimes be asked to read an explanation before you are asked to write down an answer. Sometimes the answers will be provided to save you time in making calculations. All *italicized instructions* indicate that you should calculate and record answers. Ask a course manager for help whenever you are unsure about what you are supposed to do.



1.0 COLLECT DATA.

The first step for any evaluation process is the systematic collection of data. For an evaluation of vaccination coverage, data need to be systematically collected on the number of people vaccinated, by antigen and by age. The assessment should be done by people who did not do the vaccinating. The system being proposed here uses a cluster sampling technique. A cluster is a randomly-selected group. In this case it is a group which contains at least 7 children in the age range you wish to evaluate.

When large numbers of people are being vaccinated, it is not practical to question all or most of the target population to determine who has been vaccinated. Fortunately, the technique of cluster sampling allows small numbers of the target population to be sampled while providing data which are statistically valid.

For most target populations in immunization activities, a survey containing 30 clusters will tell you approximately how many people are being properly vaccinated statistically. It will meet the following standards of reliability:

- The data which result from the survey will have a level of accuracy of plus or minus 10%. For example, if the survey shows a vaccination coverage of 70% in the sample, the coverage in the target population will be between 60% and 80%, and
- Nineteen out of 20 times the data which result from the survey will be within the stated level of accuracy. The level of confidence is 95%, which means there is a 95% probability that the survey results will fall within the range listed above (plus or minus 10% of the coverage in the target population).

Data will be valid only if the thirty groups are randomly selected.

A randomly-selected group is one which is chosen by chance. This module will teach you to choose such groups. To do this, you must know how to select a random number. A random number is a number chosen from many numbers, each of which has as much chance of being selected as the number finally chosen. Choosing numbers from memory is not a satisfactory method for selecting random numbers because unconscious biases occur. Certain numbers tend to be selected more frequently than others by certain individuals. If you do not have a table of random numbers to use for this purpose, another possible source of random numbers is the serial numbers on currency notes. To find a random number using a currency note, decide before looking at the serial number how many digits your random number must have and whether you are going to use the first or last digits of the serial number.

Under the direction of a course manager, *work through the following examples using the serial numbers on currency notes to select random numbers:*

1. Choose a one-digit random number between 1 and 9 inclusive.
2. Choose a two-digit random number between 01 and 87 inclusive.
3. Choose a three-digit random number between 001 and 345 inclusive.
4. Choose a four-digit random number between 0001 and 9,053 inclusive.
5. Choose a five-digit random number between 00001 and 48,321 inclusive.

If the random number you select from a currency note is larger than the highest acceptable number, you will need to use another note to select another number. For example, in number 3, if you select a number which is more than 345, you will need to choose another random number.

It is important to recognize that the survey methods described in this module will only allow you to draw conclusions about the area surveyed as a whole. They will not permit you to make comparisons among different subsections of the total area. Therefore, if you want to compare, for example, urban with rural sections, or sections using one strategy with sections using some other strategy, you would have

to do separate surveys in each section. As another example, if you wanted to evaluate an entire large country, you would probably want to compare coverage in different parts of the country. To do so you would have to do separate surveys in each part of the country. Each individual survey, however, could be done using the method you are now going to learn.

It should be emphasized that the 30 clusters must all be surveyed within a restricted period of time (ideally within 1 month, but certainly within no more than 3 months). This is necessary to ensure that they accurately represent the same population.

The theories behind cluster sampling are statistically valid but complex. What you will need to know is how to use the technique and the fact that statisticians agree it produces useful results. For more specific information on the statistics involved, you should consult a statistician.

1.1 Identify Clusters (Exercise A).

The following guidelines describe the steps necessary to identify clusters. Refer to the example provided on pages 9 and 10 as you read. [You will note that some information is missing from this example (for example, the sampling interval number)]. In this exercise you will be asked to supply the missing information. *Italicized instructions* in this exercise and those that follow indicate actions you should perform. Most of the actions will require writing in the appropriate spaces on worksheets provided in the module. Using the instructions given below for completing a cluster identification form, you will identify clusters 1-5 (clusters 6-30 have already been identified).

1. List all cities, towns, villages, and sectors of cities included in the vaccination target area for which vaccination coverage is to be evaluated. This step has already been completed for you. In this exercise the vaccination target area to be evaluated is the coastal region of a hypothetical country, and all cities, towns, and villages of the coastal region have been listed on Figures 1 and 2 on pages 9 and 10.

2. List the individual population of each city, town, or village. This has been completed for you.

3. Calculate and write in the cumulative population of each city, town, or village. This has already been completed. The total cumulative population of the coastal region is 800,000.

4. Determine the sampling interval. Use the formula provided below. Round all decimals off to the nearest whole number.

$$\frac{\text{Total cumulative population}}{\text{30 clusters}} = \text{Sampling interval}$$

Enter the number in the space provided at (a) on the bottom of Figure 2, page 10.

5. Select a random number which is less than or equal to the sampling interval. The number you select must have the same number of digits as the sampling interval. As your sampling interval in the exercise turns out to be a five-digit number, the number selected must also be a five-digit number that is between 00001 and the sampling interval.

   For the purposes of this module, a random number, 12,762, has been pre-selected. Enter this number at (b) on the bottom of Figure 2 on page 11.

6. Identify the community in which Cluster 1 is located. This is done by locating the first village on Figure 1, page 9, in which the cumulative population equals or exceeds the random number. *Write "1" beside this village.*

7. Identify the community in which Cluster 2 is located. Use the formula provided below. Note that the cumulative population listed for that village will equal or exceed the number you calculate.

Random number	+	Sampling interval	=	_____

Example: If you obtain a random number of 5734 and a sampling interval of 7493, you would calculate the following population totals for the first two clusters:

Cluster 1 population = 5734 (random number)

Cluster 2 population = 5734 + 7493 = 13,227 (random number + sampling interval)

Write "2" beside the appropriate village on Figure 1, page 9.

8. Identify Clusters 3, 4, and 5. (Clusters 6-30 are already identified.) Use the formula provided below.

Number which identified the location of the previous cluster	+	Sampling interval	=	_____

Example: Cluster 2 population = 5734 + 7493 = 13,227

Cluster 3 population = 13,227 + 7493 = 20,720 (number for Cluster 2 + sampling interval)

Using the data provided on Figures 1 and 2, write the number of each cluster 3, 4, and 5 beside the appropriate villages on Figure 1, page 9. A single village may contain more than one cluster.

After you have completed Step 8, compare your answers with those on the available answer sheet. Discuss any difficulties you may have had in identifying Clusters 1-5 with a course manager.

CLUSTER IDENTIFICATION FORM

(SAMPLE FORMAT)

CITIES, TOWNS, AND VILLAGES OF COASTAL REGION

No.	Name	Population	Cumulative Population	Location of Cluster
1	Utaral	12,888	12,883	
2	Bolama	3,489	16,377	
3	Talum	6,826	23,203	
4	Wara-Yali	4,339	27,542	
5	Galey	2,203	29,745	
6	Tarum	4,341	34,086	
7	Hamtato	1,544	35,630	
8	Nayjaff	885	36,515	
9	Nuviya	2,962	39,477	
10	Cattical	4,234	43,711	
11	Paralai	1,520	45,231	
12	Egala-Kuru	3,767	48,998	
13	Uwanarpol	3,053	52,051	
14	Hilandia	60,000	112,051	
15	Puratna	2,207	114,348	
16	Kegalni	1,355	115,703	
17	Haraili-Ura	833	116,536	
18	Kumeni	4,118	120,654	
19	Kiroya	2,782	123,436	
20	Yamwela	3,285	126,721	
21	Bagvi	4,416	131,137	
22	Atota	3,188	134,325	
23	Kogouva	1,179	135,504	
24	Ahekpa	612	136,116	
25	Yondot	3,193	139,309	
26	Nozop	17,808	157,117	6
27	Mapasko	3,914	161,031	
28	Lotohah	15,006	176,037	7
29	Voattigan	9,584	185,621	
30	Plitok	4,225	189,846	
31	Dopoltan	2,652	193,498	
32	Cococopa	35,000	227,498	8, 9
33	Famegzi	3,954	231,452	
34	Jigpelay	2,115	233,567	
35	Mewonh	507	234,074	
36	Odigla	3,516	237,590	
37	Sanbati	14,402	251,992	
38	Andidwa	2,575	254,567	10
39	Ore-Mikam	3,105	257,672	
40	Domo-Mikam	4,176	261,848	
41	Kudi-Sina	1,919	263,767	
42	Panbalok	3,261	267,028	
43	Rokini	4,270	271,298	
44	Talosso	3,301	274,599	
45	Djaragna	3,250	277,849	
46	Bibachi	4,670	282,519	11
47	Bilam	757	283,276	
48	Sisse	12,037	295,313	
49	Anda-Dalai	2,155	297,468	
50	Varok	3,702	301,170	
51	Boul	2,262	303,432	
52	Boul-Malal	791	304,223	
53	Dapnan	3,468	307,691	12
54	Umpybo	4,338	312,029	
55	Goumam	3,930	315,959	
56	Nzelji	2,112	318,071	
57	Wagasa	3,953	322,024	
58	Onam	2,198	324,222	
59	Koundo	9,891	334,113	13
60	Paona	3,154	337,267	
61	Nagbi	2,548	339,815	
62	Ponakpo	1,034	340,849	
63	Auguromi	2,415	343,264	
64	Pali	4,325	347,589	
65	Ngol	13,233	360,822	14
66	Majagdi	511	361,333	
67	Yardi	2,313	363,646	
68	Chankam	3,108	366,754	
69	Livaspa	4,163	370,917	
70	Rhomastiput	4,250	375,167	
71	Anghor	784	375,951	
72	Ransiha	3,423	379,374	
73	Phojip	4,098	383,472	
74	Dumakpa	4,540	388,012	15
75	Baktari	2,322	390,334	
76	Wako	3,987	394,321	

Figure 1: Worksheet for Exercise A

(continued on next page)

CLUSTER IDENTIFICATION FORM

CITIES, TOWNS, AND VILLAGES OF COASTAL REGION

No.	Name	Population	Cumulative Population	Location of Cluster	No.	Name	Population	Cumulative Population	Location of Cluster
77	Ganda	4,211	398,532		114	Tabli	4,121	605,258	
78	Sapa-Barchit	2,541	401,073		115	Evot	3,214	608,472	
79	Nuwa	848	401,921		116	Pamtakapo	16,008	624,480	
80	Nangja	1,281	403,202		117	Otoyang	4,732	629,212	24
81	Kuwassak	3,310	406,512		118	Tosi	2,769	631,981	
82	Wanitt	4,313	410,825		119	Sarsabba	532	632,513	
83	Lukkumsa	4,762	415,587	16	120	Okode-Bua	3,394	635,907	
84	Jopu	3,647	419,234		121	Toubussi	1,143	637,050	
85	Thynupa	2,530	421,764		122	Domno	8,147	645,197	
86	Yanlasul	16,983	438,747		123	Sarip	4,555	649,752	
87	Mali-Ilo	2,730	441,477	17	124	Rakachi	695	650,447	
88	Papalo	4,869	446,346		125	Chelle	3,634	654,081	25
89	Agrakhan	3,300	449,646		126	Waitu	2,115	656,196	
90	Tido	4,150	453,796		127	Nobbay	4,507	660,703	
91	Jubara	3,760	457,556		128	Baidu	3,516	664,219	
92	Pilasta	1,587	459,143		129	Herattan	2,402	666,621	
93	Lejaple	16,699	475,842	18	130	Thenu	3,575	670,196	
94	Lahisa	2,703	478,545		131	Comosdi	14,005	684,201	26
95	Chapmar	747	479,292		132	Churiz	676	684,877	
96	Dhulisk	4,451	483,743		133	Carecopa	45,000	729,877	27
97	Briko	4,425	488,168		134	Angko	4,261	734,138	28
98	Hummu	3,860	492,028		135	Luru-Ala	4,919	739,057	
99	Baryidda	2,835	494,863	19	136	Kartaj	17,270	756,327	
100	Lekdai	1,725	496,588		137	Lemno	3,837	760,164	29
101	Izigba	3,988	500,576		138	Deysibba	2,149	762,313	
102	Loaz	4,124	504,700		139	Ongo-On	3,702	766,015	
103	Jikoud	4,389	509,089		140	Pliah	1,927	767,942	
104	Gopouda	1,126	510,215		141	Ukkaru	4,971	772,913	
105	Akafo	2,166	512,381		142	Akla	2,468	775,381	
106	Endera	3,393	515,774		143	Tagalo	3,383	778,764	
107	Seyou	4,787	520,561	20	144	Patto-In	3,930	782,694	
108	Lallos	3,447	524,008		145	Pridasu	2,211	784,905	
109	Dobaba	3,689	527,697		146	Ollimi	3,585	788,490	30
110	Somdi	4,696	532,393		147	Hakuda	1,355	789,845	
111	Granoli	60,000	592,303	21, 22	148	Limaki	4,285	794,130	
112	Nehoa	3,990	596,383		149	Rutadupi	3,177	797,307	
113	Melo	4,754	601,137	23	150	Alam-Neki	2,693	800,000	

(a) Sampling Interval = $\frac{\text{Total Cumulative Population}}{\text{30 Clusters}}$ = _____

(b) Random No. =

Figure 2 :

1.2 Implement the Coverage Evaluation Survey.

Before you implement the coverage evaluation survey, there are at least two important decisions you will need to make regarding the content of the survey and the method of collecting the data.

- What age group of children do you plan to evaluate?
- How will you determine which houses to visit within each cluster?

Age group of children to be evaluated

The age range of children to be evaluated may vary from 3 months to one year or more. It will depend on several factors:

- the frequency of the coverage evaluation survey
- the population density of the area you are surveying
- the specific information you wish to obtain (total immunization, number vaccinated with first or second DPT doses, etc.)

In this module, the age range of 12-17 months is used for the practice exercises. In most developing countries this will constitute about 1.5% of the total population. If all children were present, you would need a village with about 500 people to find at least 7 children in the age range 12-17 months. In practice, because of absenteeism, you may need a total population of 700-1000 to find 7 children in the age range 12-17 months of age.

In areas of low population density you may need to use a wider age range such as one year (for example, 12-24 months). If you do surveys frequently, you may select a smaller age range such as 3 months (for example, 12-14 months).

The children in the age group 12-17 months of age should be "fully vaccinated." This means that they should have had 3 DPT, 3 Polio, 1 BCG, and 1 Measles vaccination. As time, money, and personnel allow, you may wish to evaluate younger age groups separately to determine how many have received their first or second DPT and Polio, or to identify children who have received Measles vaccine too early.

Determination of households to be visited within each cluster

The first house to be visited in each area should be selected at random (that is, all houses in the sample area should have an equal chance of being selected). The method you use to select the first house will vary according to the population density (rural versus urban areas) and the information which is available to you (for example, household lists).

Rural areas where household lists are available

- Obtain a list of the households in the village being evaluated. Census records, tax lists, and voting lists are the lists most commonly available, but any reasonably complete listing is acceptable.
- Number the households on the list.
- Select a random number from 1 to the highest numbered household on the list (inclusive) by using a table of random numbers or a currency note. Then find the household on the numbered list whose number corresponds to the random number selected. This will be the first household to be visited.

Rural areas where household lists are not available

- Define precisely the limits of the village.
- Number each house in the village with chalk.
- Select a random number between 1 and the highest numbered household by using a table of random numbers or a currency note. Then find the numbered household selected. This will be the first household to be visited.
- If there are more than 100 households in a village, and it is not feasible to number them, you will need to use another method to randomly select the first household to be visited.
  - Select a central location in the village or town, such as a market, mosque, or church. The location should be near the approximate geographical center of the village or area.

- As a first step, you will randomly select the direction in which the first household will be located. This may be done in a variety of ways. You may choose to randomly select a single-digit number (last number on a bill) which can indicate direction, 1 = North, 2 = East, 3 = South, 4 = West. You may choose to spin a bottle on even ground. Wherever the bottle points when it stops will be the direction for the first household. If you have a compass, you may select a random number between 0° and 360°.
- Once you have selected the direction, you will need to count the number of houses which exist along that directional line from the central location. You will select a second random number between 1 and the total number of houses along the directional line selected. This will identify the first house to be visited. For example, if you randomly select the number 9, you will visit the ninth house from the central location along the chosen direction.

Urban areas

- Determine if there are subdivisions (geographical, political) of the urban area which contain approximately equal populations or which can be grouped to obtain equal population distribution.
- If such subdivisions exist, number each subdivision and select a random number between 1 and the total number of subdivisions. The selected number will indicate the subdivision in which the initial household is located.
- If the household lists exist for the subdivision identified, follow the procedures described on page 12 for "Rural areas where household lists are available." If these lists are unavailable, follow the procedures outlined under "Rural areas where household lists are not available."
- If subdivisions do not exist, you will need to divide the urban area up into sub-units of approximately equal population, for instance, blocks with about 100 houses. This

may be done by examining a map and making an automobile survey of the area to determine population distribution. Distribution of population should also be discussed with government and health officials in the area. Once the subdivisions are established, you should proceed to number each subdivision. Select a random number between one and the total number of subdivisions. This will indicate the area in which the initial household is located. You should then identify the first household to be visited by following the procedures on page 12 under "Rural areas where household lists are not available."

Exercise B

The examples provided below are designed to give you practice in selecting a starting household. Work through each example and compare your answers with an answer sheet provided by a course manager. There will be more than one possible right answer.

1. The tax list of a village shows the following names:

   (1) Aamoa
   (2) Ammoa
   (3) Bdagbo
   (4) Bru

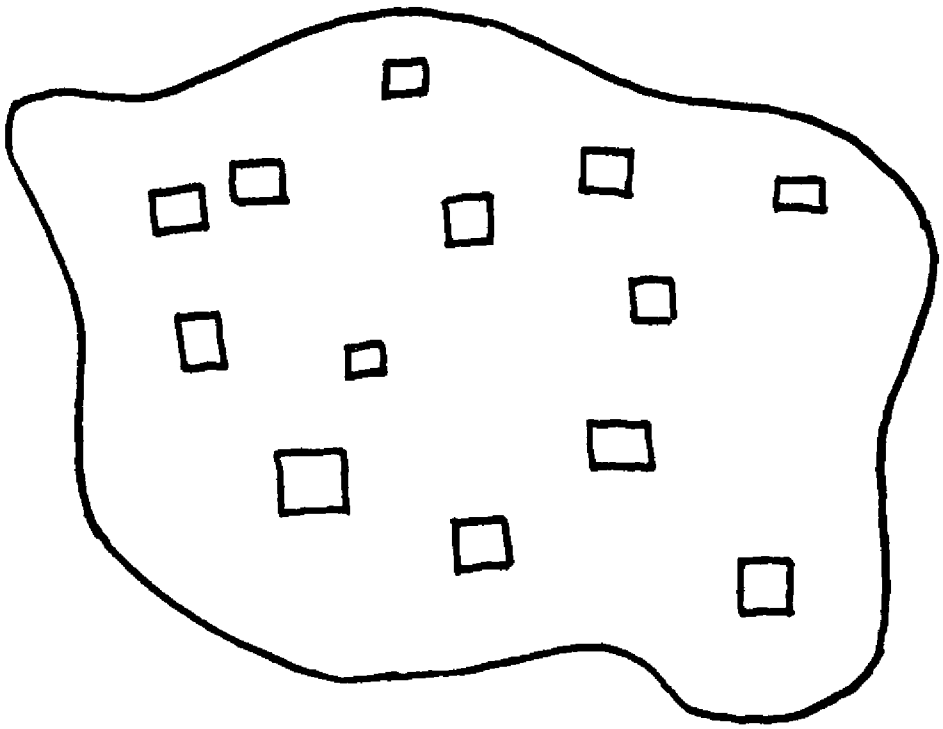
   _____
   _____
   _____
   _____

   (99) Zye

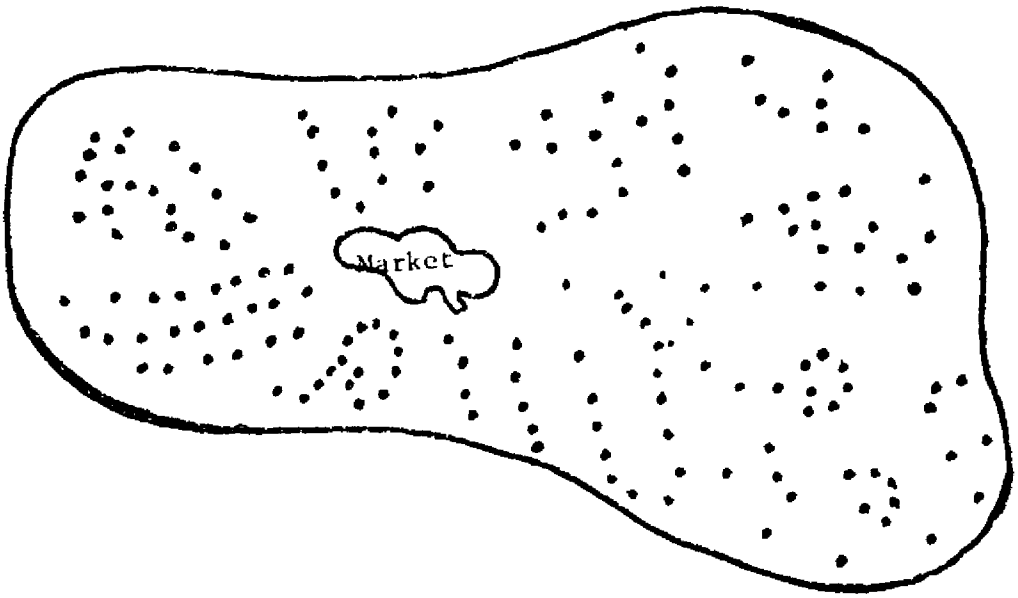
Other names, numbered 5-98, are on the tax list but have not been reproduced here. For the exercise, however, consider that all names have been written and numbered.

Describe in writing how you would select the number of the starting household. Select the number.

2. A map of another village is reproduced below. No list of household names exists. Select the starting household. Mark the household on the map below and describe in writing how you selected it.



3. You must select a starting household in a village which has about 150 households. No household list and no map exist for this village. A picture of the village is given below. Each dot represents a household. Select the starting household and describe in writing how you selected it. (Remember that in the real situation you would have no map.)



4. Check your answers with a course manager.

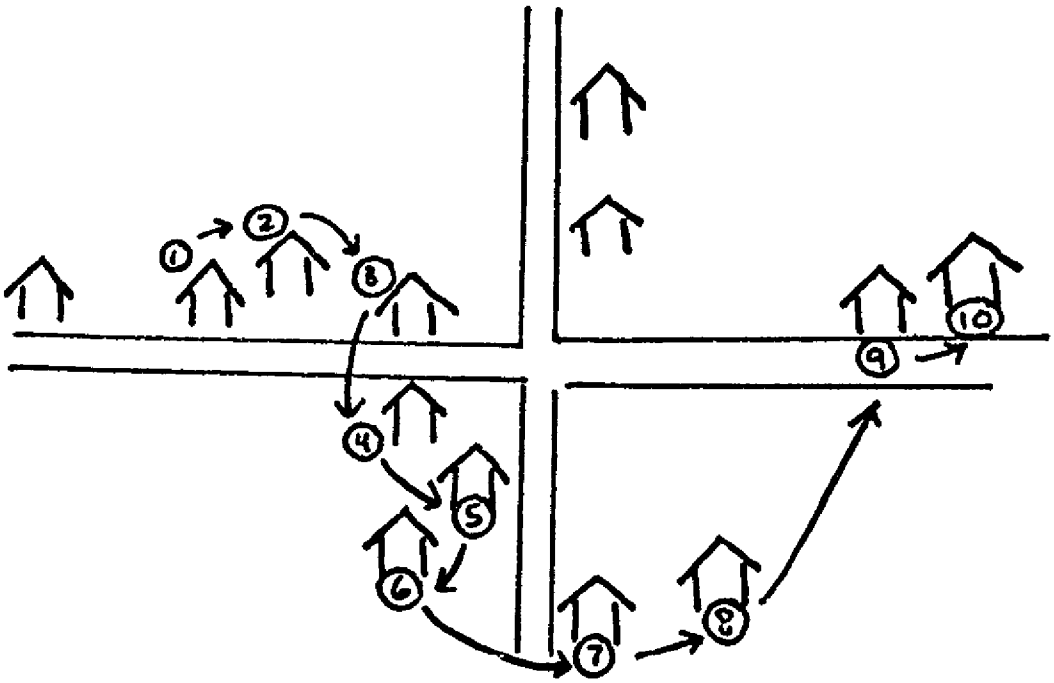
Order for Visiting Houses

Once you have selected the first household to visit, the second household you visit will be the one which is nearest the first. The next nearest household is the one whose front door is closest to the front door of the household you have just visited. See the diagramme below for the movement from nearest household to nearest household.

DIAGRAM OF HOUSEHOLD TO BE VISITED

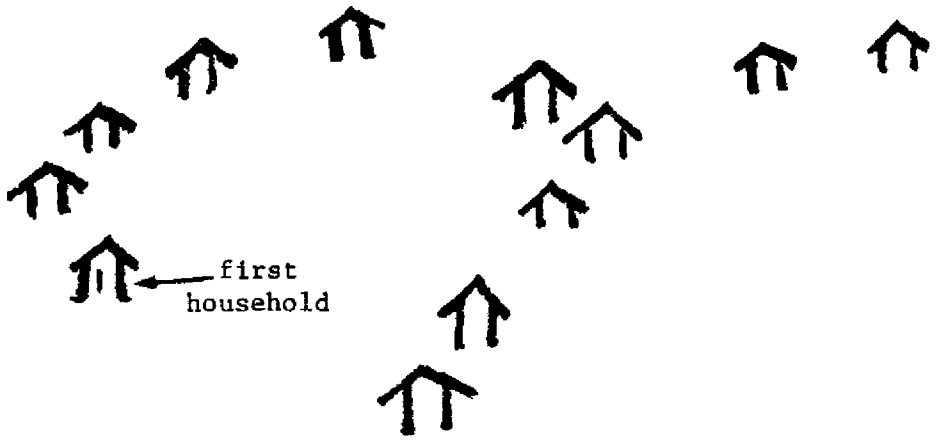
Single Dwellings

Sequence of next nearest households beginning with randomly selected starting household.



Exercise C

1. In the diagramme below, the first household has been selected for you. Assume that you must visit 10 houses in order to find the seven children needed for the cluster. Number the houses in the order in which you would visit them.



Check your answers with a course manager.

In densely-populated urban areas, you will need to devise a slightly more complicated method for selecting the household to be visited. A household is defined as a group of people sharing the same kitchen, and you may find many households in a single building in urban areas. To ensure an unbiased selection of households in such buildings, you can use the following system (or create one of your own).

First, choose one floor at random. Then number the households on the selected floor and choose one of those households at random. Once all the households on that floor have been visited, choose either a higher or lower floor at random and continue the survey.

1.2.1 Complete the Household Summary Form (Exercise D).

After you have determined the age group to be evaluated and the first house to be visited, you are ready to implement the coverage evaluation survey and to complete the Household Summary Form.

Read and follow the guidelines provided below and *fill in the data* indicated on the Household Summary Form on page 27 (Figure 3, Worksheet for Exercise D). Take a few minutes now to review the form to see the type of information you will collect as you do the survey.

1. Identify the cluster number (Item 1). For this exercise you may assume you are doing your survey in Utaral. *Record the correct cluster number on the Household Summary Form.* Refer to Figure 1 on page 9 to identify the number of the cluster in Utaral.

2. Identify the age group to be evaluated (Item 2). In this module, the age group to be evaluated consists of children who are 12-17 months of age at the time of the evaluation. *Fill in Item 2 on Figure 3.*

3. Record the date of interview (Item 3). *For this exercise, record 7 March 1978 as the date of evaluation.*

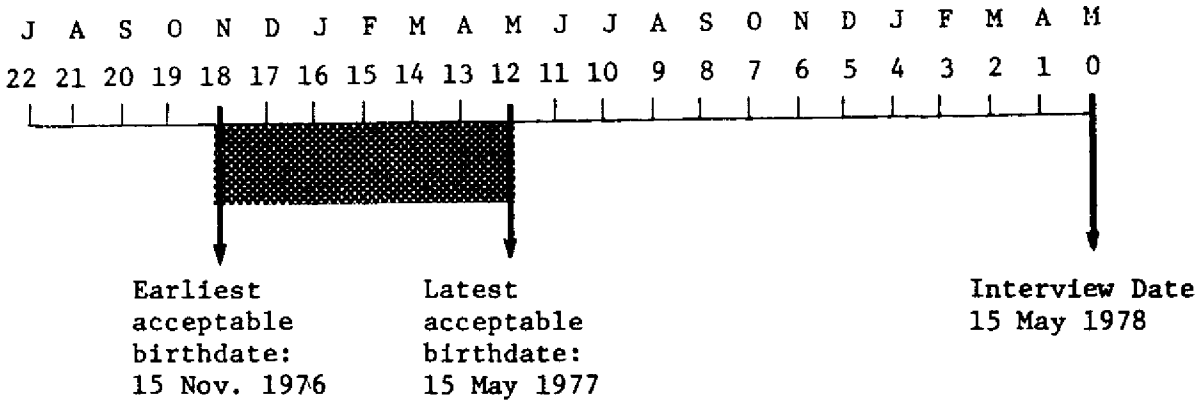
4. Identify the birthdates of children in the age group to be evaluated (Item 4). These dates will be based on the date of interview (Item 3).

To determine the earliest acceptable birthdate, you will need to subtract exactly 18 months from the date of the interview. (You subtract 18 months instead of 17 months because you wish to include all children who are even one day less than 18 months of age. By subtracting 18 months, you will also include children who are exactly 18 months of age. This is an acceptable error.) To determine the latest acceptable birthdate, you will need to subtract exactly 12 months from the date of interview.

Example: (1) Assume an interview date of 15 May 1978.

(2) Count back from the interview date exactly 18 months to determine the earliest acceptable birthdate.

(3) Count back from the interview date exactly 12 months to determine the latest acceptable birthdate.



The shaded area represents the birthdates of the age range to be evaluated if the interview date is 15 May 1978, i.e., birthdates falling on or between 15 Nov. 1976 and 15 May 1977.

Using the interview date of 7 March 1978, calculate and record the birthdates of children in the age group to be evaluated (Item 4).

Note: If no vaccination cards or birth records are available, you may need to use months of birth instead of specific dates.

5. *Identify and record the region (Item 5).*

6. *Identify the city, town, village (Item 6) of the cluster by referring to the Cluster Identification Form (Figures 1 and 2).*

7. *Print your name as the interviewer (Item 7).*

8. In the field situation, you will visit the first household to complete items 8, 9, 10, and 11 on the Household

Summary Form for each child whose birthdate is in the age range to be evaluated.

- Upon reaching the first household, you should ask to see the head of household. If the head of household is not present, ask to speak to the spouse, another adult, or a mature child.
- Determine if there are any resident children in the household whose ages fall within the age range to be evaluated. (A resident child is defined as one who spent the previous month in the household.) If there are not any resident children of the appropriate age, go to the next nearest household and begin this step again.
- If there are resident children in the household who are in the age range being evaluated, list the sequential number of the household being visited (1 = first household, 2 = second household, etc.)
- List the names of all the children in the household whose ages fall in the age range to be evaluated.
- Write the birthdate for each child on the list.
- Ask to see the vaccination record(s) for each child on the list. (It is possible that a single individual may have several vaccination cards.)
- Write the date of each vaccination for every listed child. The vaccination record should state the date that each vaccination dose was given.
- If a vaccination has not been given, record "0" in the appropriate space.
- Any child for whom a vaccination record is not produced should be considered <u>not vaccinated</u> for the purposes of the exercise which follows. In your own country you will need to decide whether or not you will require a vaccination card in order for a vaccination to be considered valid. When you work through the exercise, record "-" in the column titled "Vaccination Card (+, -)" for each child without a vaccination card. Record "+" for all children with cards.

NOTE: In order to identify age errors on the vaccination record(s), it is best if the child whose record(s) is being reviewed is physically present at the time of the review. If there appears to be an age discrepancy, you should attempt to verify the listed birthdate by asking to see the child's birth certificate (if available) or through questioning.

If a vaccination card is presented for a child who is not present, but who falls in the age range to be evaluated, record the information on the card.

Use the information on parts A and B in Figure 4, page 28 *, to complete items 8-12 on the Household Summary Form on* page 27 *for the first household.*

- After listing information on all the children in the household whose ages fall in the age range to be evaluated, check the data recorded for any obvious errors (Are there blank spaces? Are there vaccination dates which occurred prior to the date of the child's birth? Are there children with the same birthdate who are in the same family and not twins?). Then proceed to the next household, which will be the one nearest to the initial household.

Use the information in parts A and B in Figure 5, page 29 *, to complete items 8-12 on the same Household Summary Form for the second household.* When you have recorded all relevant information for the second household, review your form with a course manager.

In a real survey situation you would continue the process until the seventh child in the age range to be evaluated has been located. Other children in this age range who are residents in the household where the seventh child is identified should also be listed.

The survey would be completed by using the same process for the remaining 29 clusters.

HOUSEHOLD SUMMARY FORM

(1) Cluster Number _____

(2) Age Group Being Evaluated _____ To _____ Months

(3) Date of Interview _____

(4) Birthdate of Age Range To Be Evaluated _____ To _____

(5) Region _____

(6) City, Town, or Village _____

(7) Interviewer(s) _____

Person Number	(8) Household Number	(9) Name of Child In Age Range	(10) Birth-Date	(11) Vaccination Card (+,-)	(12) Vaccination Record (Record Date of Vaccination)								(13) Fully Vaccinated(+,-)
					BCG	Polio 1 (P_1)	Polio 2 (P_2)	Polio 3 (P_3)	DPT 1 (D_1)	DPT 2 (D_2)	DPT 3 (D_3)	Measles (M)	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
												TOTAL FULLY VACCINATED	

Figure 3: Worksheet for Exercise D

A. Persons in Household:

Name	Sex	Birthdate
Okal Mbaye	M	1940
Onwa Mbaye	F	1950
Mety Mbaye	F	1952
Bineta Mbaye	F	1965
Babi Mbaye	F	14/3/75
Ayo Mbaye	F	13/12/76
Atumane Mbaye	M	18/2/77
John Mbaye	M	1967

B. Vaccination Card(s) for Children in Selected Age Group:

VACCINATION CARD			
Name	Ayo Mbaye.		
Name of Mother	Mety Mbaye		
Name of Father	Okal Mbaye.		
Male or Female	F		
Birthdate	13 day	12 month	76 year
Name of village	UTaral		
VACCINES	DATE GIVEN day	month	year
BCG	15	12	76
DPT I	16	3	77
DPT II	14	5	77
DPT III	30	6	77
Polio I	16	3	77
Polio II	14	5	77
Polio III	30	6	77
Measles	30	8	77
Tetanus I			
Tetanus II			
Other			

Note: No vaccination card is available for Atumane Mbaye.

Figure 4: Household residents and vaccination cards, Household Number 1.

A. Persons in Household:

Name	Sex	Birthdate
Ljoma Kone	M	1945
Fati Kone	F	1955
Daba Kone	F	6/11/76
Biga Kone	F	9/1/78

B. Vaccination Card(s) for Children in Selected Age Group:

VACCINATION CARD			
Name	DABA KONE		
Name of Mother	FATI KONE		
Name of Father	Ljoma KONE		
Male or Female	F		
Birthdate	6 day	11 month	76 year
Name of village	UTARAL		
VACCINES	DATE GIVEN day	month	year
BCG	8	11	76
DPT I	5	3	77
DPT II			
DPT III			
Polio I	5	3	77
Polio II			
Polio III			
Measles			
Tetanus I			
Tetanus II			
Other			

Figure 5: Household residents and vaccination cards, Household Number 2.

Exercise E

As mentioned earlier, recording errors may occur frequently and need to be checked and corrected before leaving each household. On page 31 is a Household Summary Form (Figure 6, Worksheet for Exercise E and F) which was not carefully reviewed. Review this form and *circle all obvious errors and/or omissions*. Review your work with a course manager and correct the form according to the information provided by the course manager.

HOUSEHOLD SUMMARY FORM

(1) Cluster Number 14

(2) Age Group Being Evaluated 12 To 17 Months

(3) Date of Interview 8/5/78

(4) Birthdate of Age Range To Be Evaluated 8/12/76 To 8/5/77

(5) Region Coastal

(6) City, Town, or Village _____

(7) Interviewer(s) _____

Person Number	(8) Household Number	(9) Name of Child In Age Range	(10) Birth-Date	(11) Vaccination Card (+,-)	(12) Vaccination Record (Record Date of Vaccination)								(13) Fully Vaccinated (+,-)
					BCG	Polio 1 (P_1)	Polio 2 (P_2)	Polio 3 (P_3)	DPT 1 (D_1)	DPT 2 (D_2)	DPT 3 (D_3)	Measles (M)	
1	1	Christopher Idris	17/12/76	+	19/12/76	17/4/77	8/6/77	0	17/4/77	8/6/77	0	0	
2	2	Ayo Idris	8/10/76	+	11/12/76	17/4/77	8/6/77	7/8/77	17/4/77	8/6/77	8/8/77	3/8/77	
3		Alaiza Idris	13/4/77	-	14/2/77	20/4/77	20/12/77	1/4/78	20/9/77	20/12/77	1/4/78	0	
4	3	Mr Abas	2/2/77	+	7/2/77	17/4/77			17/4/77			2/12/77	
5	4	Mely Mbaye	15/1/77	+	16/1/77	2/4/77	6/6/77	19/9/77	2/4/77	6/6/77	19/9/77	3/2/77	
6		Afumane Mbaye											
7	6	Ijone Kone	6/3/77	+	1/3/77	6/6/77	2/10/77	14/11/77	6/6/77	2/10/77	14/11/77	14/3/77	
8	6	Kwame Koffi	28/11/76	+	16/1/77	16/1/77	8/6/77	0	16/1/77	8/6/77	0	0	
9													
10													
												TOTAL FULLY VACCINATED	

Figure 6: Worksheet for Exercise E and F

1.3 Implement a Control System on Data Collection.

The information collected from the assessment teams must be checked to ensure that the survey contains the correct number and locations of clusters and the correct number of children in each cluster.

You will need to ensure that

- 30 clusters have been surveyed. To do this, you must look through the Household Summary Forms submitted by each team to see if there are forms for 30 clusters. When fewer than 30 clusters have been surveyed, the missing cluster(s) will need to be identified and surveyed.
- seven children in the age range to be evaluated have been listed for each cluster. To do this, you must review each Household Summary Form to determine if at least seven children in the age range to be evaluated have been listed for each cluster.