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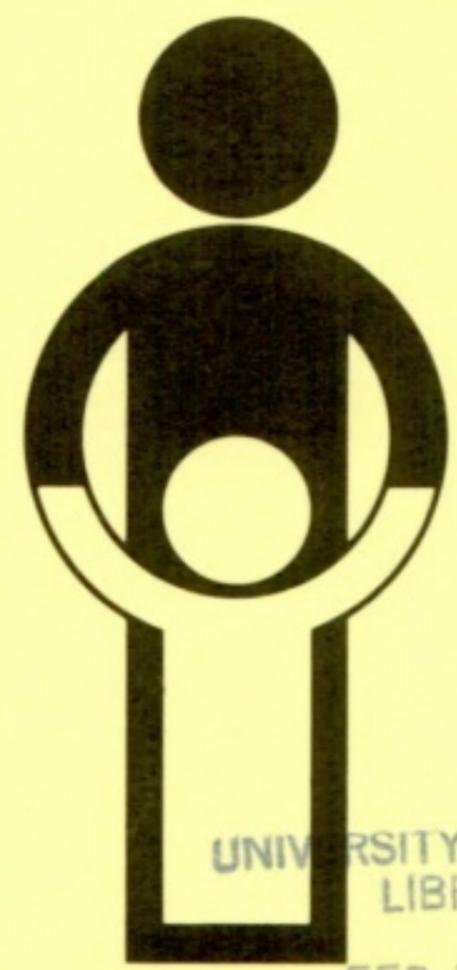
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WORLD HEALTH ORGANIZATION  
EXPANDED PROGRAMME ON IMMUNIZATION

TRAINING FOR  
MID-LEVEL MANAGERS

**EVALUATE  
VACCINATION COVERAGE**



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EVALUATE VACCINATION COVERAGE



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# EVALUATE VACCINATION COVERAGE

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## EVALUATE VACCINATION COVERAGE

### 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

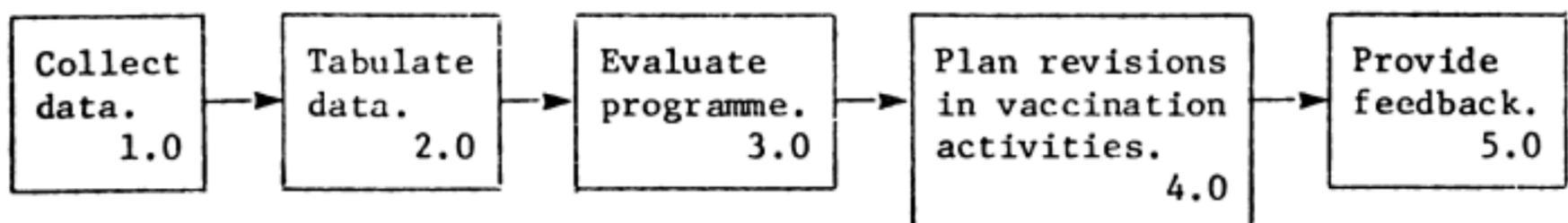
show that 30% of these children have been vaccinated at the wrong ages. In order to have an accurate idea of how many people you are vaccinating, you must conduct a field survey. This can be done in a systematic way so that only a small sample of homes will need to be surveyed in order to obtain valid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

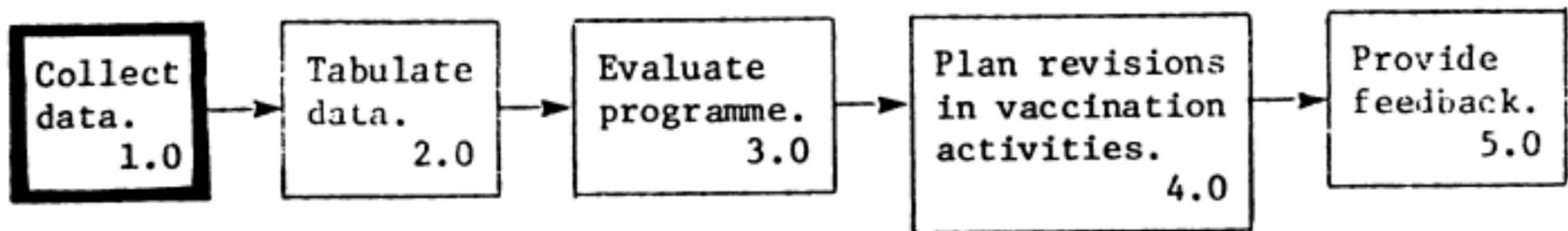
#### FLOWCHART

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.

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

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 10.

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

(continued on next page)

Figure 1: Worksheet for Exercise A



**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	Waniti	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	Maitu	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	Cafecopa	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	Ullah	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	3,385	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 = Total Cumulative Population = 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:

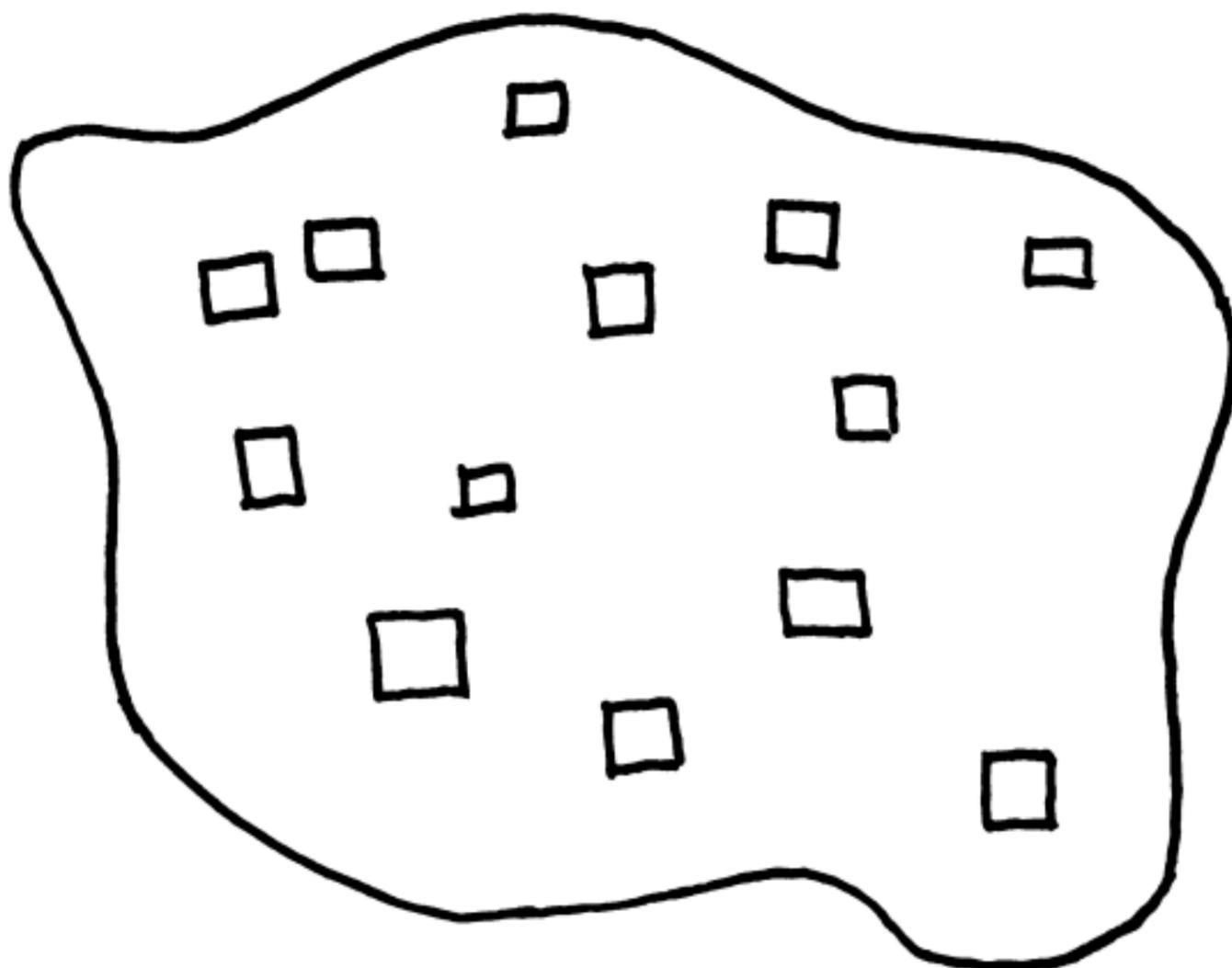
- (1) Aamoa
- (2) Ammoa
- (3) Bdagbo
- (4) Bru

\_\_\_\_\_ }  
\_\_\_\_\_ }  
\_\_\_\_\_ }  
\_\_\_\_\_ }  
(99) Zye

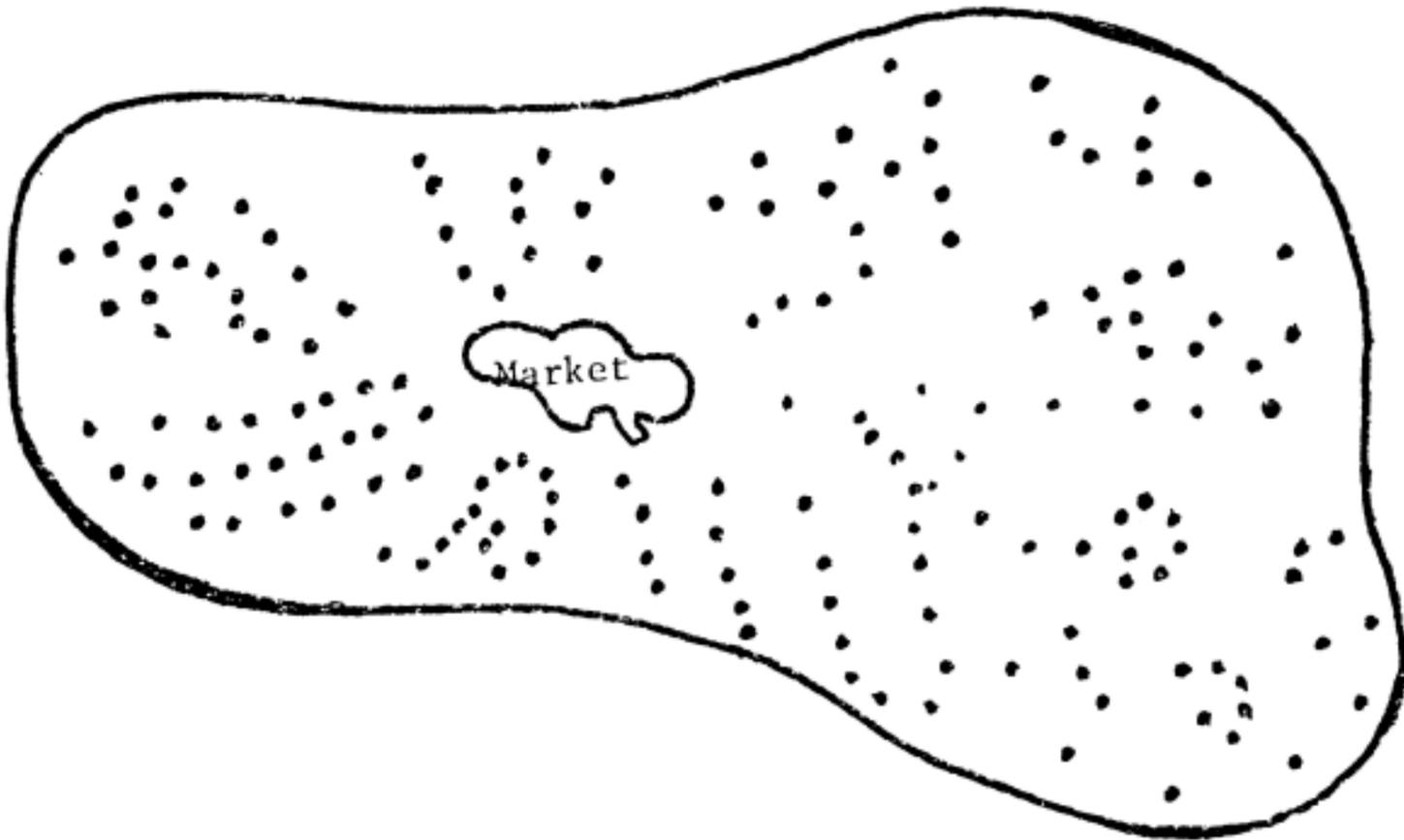
Other names, numbered 5-98, are on the tax list but have not been reproduced here. For the exercise, however, consider that all names have been written and numbered.

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.

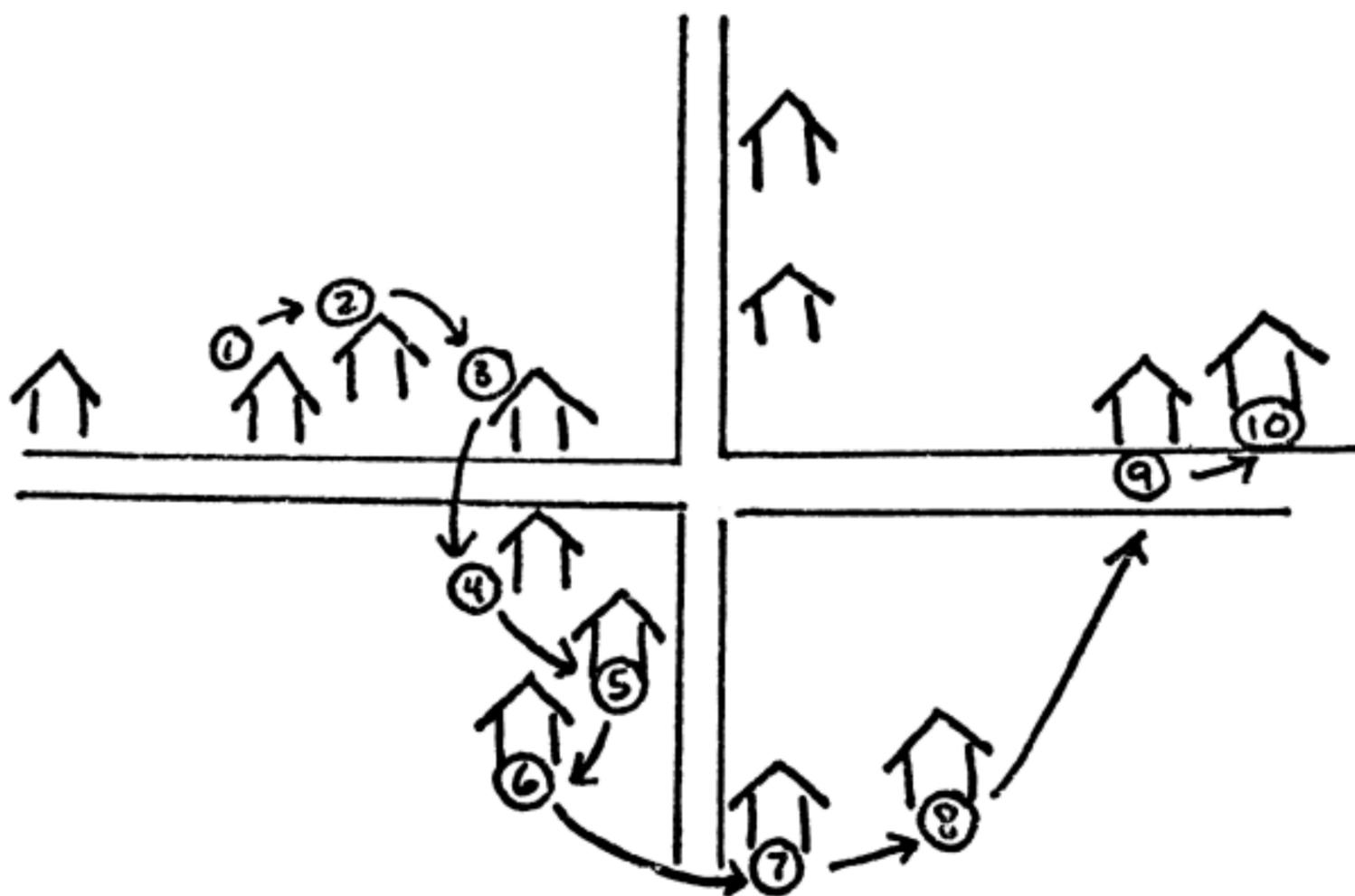
### Order for Visiting Houses

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

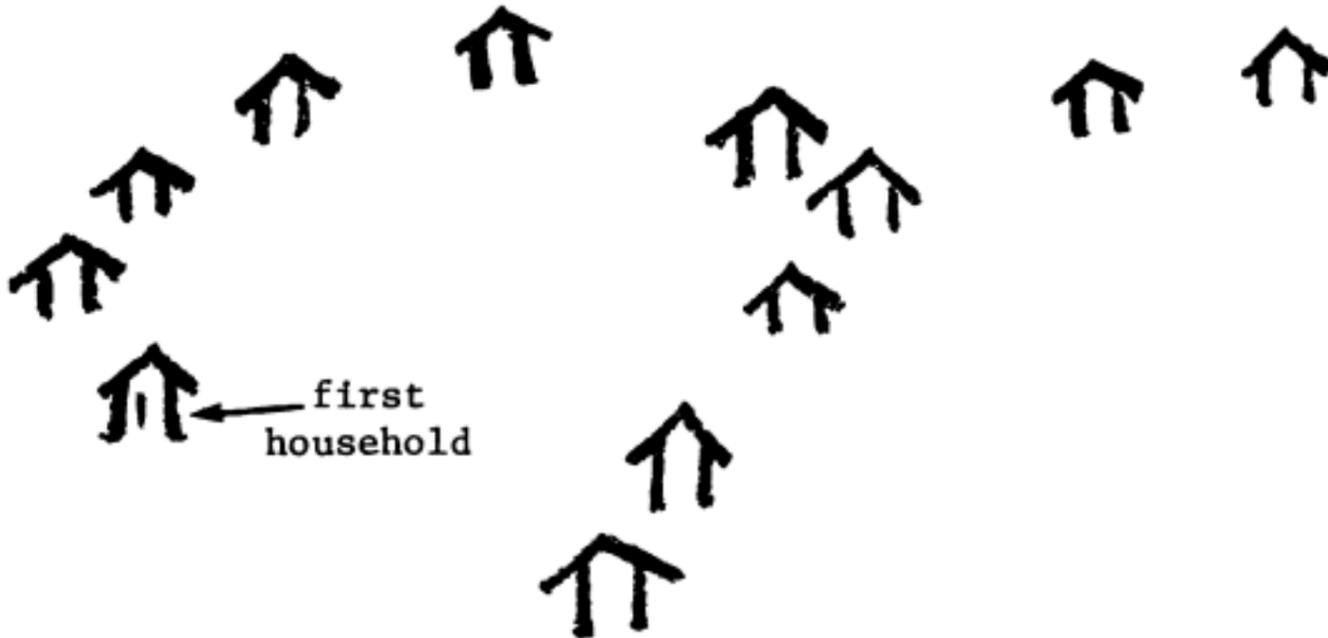
### Single Dwellings

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 25 (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 not vaccinated 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 26, to complete items 8-12 on the Household Summary Form on page 25 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 27, 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 \_\_\_\_\_ (5) Region \_\_\_\_\_  
 (2) Age Group Being Evaluated \_\_\_\_\_ To \_\_\_\_\_ Months (6) City, Town, or Village \_\_\_\_\_  
 (3) Date of Interview \_\_\_\_\_ (7) Interviewer(s) \_\_\_\_\_  
 (4) Birthdate of Age Range To Be Evaluated \_\_\_\_\_ To \_\_\_\_\_

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 <sub>1</sub> )	Polio 2 (P <sub>2</sub> )	Polio 3 (P <sub>3</sub> )	DPT 1 (D <sub>1</sub> )	DPT 2 (D <sub>2</sub> )		DPT 3 (D <sub>3</sub> )	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:

<u>Name</u>	<u>Sex</u>	<u>Birthdate</u>
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	UTara		
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:

<u>Name</u>	<u>Sex</u>	<u>Birthdate</u>
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 29 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 (5) Region Coastal  
 (2) Age Group Being Evaluated 12 To 17 Months (6) City, Town, or Village \_\_\_\_\_  
 (3) Date of Interview 3/5/78 (7) Interviewer(s) Lu  
 (4) Birthdate of Age Range To Be Evaluated 8/12/76 To 8/5/77

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 <sub>1</sub> )	Polio 2 (P <sub>2</sub> )	Polio 3 (P <sub>3</sub> )	DPT 1 (D <sub>1</sub> )	DPT 2 (D <sub>2</sub> )	DPT 3 (D <sub>3</sub> )		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	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	3/8/77	
3		Alaba Idris	13/4/77	-	14/2/77	20/9/77	20/12/77	1/4/78	20/9/77	20/12/77	1/4/78	0	0	
4	3	Mu Abas	2/2/77	+	7/2/77	17/4/77			17/4/77				2/12/77	
5	4	Mety Hbaye	15/1/77	+	16/1/77	2/4/77	5/6/77	19/9/77	2/4/77	5/6/77	19/9/77	3/8/77	3/8/77	
6		Atumane Mbaye	.											
7	6	Ijone Kone	5/3/77	+	1/3/77	6/6/77	2/10/77	14/11/77	6/6/77	2/10/77	14/11/77	14/11/77	14/11/77	
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	0	
9														
10														
											TOTAL FULLY VACCINATED			

Figure 6: Worksheet for Exercise E and F

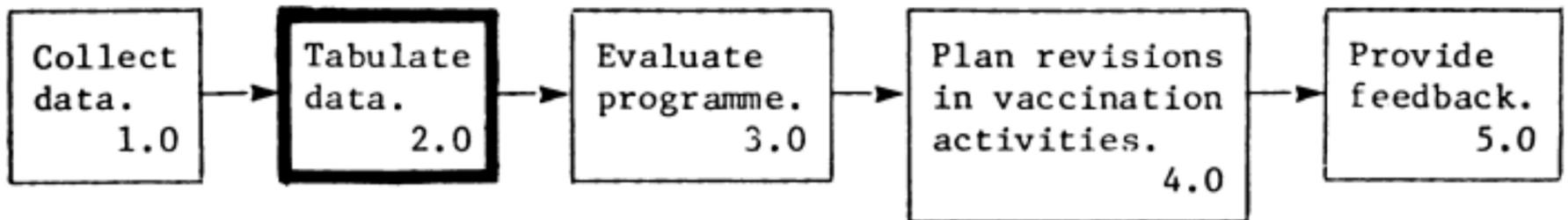


### 1.3 Implement a Control System on Data Collection.

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.



## 2.0 TABULATE DATA.

Collected data of any type are useless unless and until they are analyzed. Coverage evaluation information must not only be analyzed, but it must be analyzed quickly in order to serve a useful purpose. When a coverage evaluation team has finished collecting data from its 30 assigned clusters, the Household Summary Forms should be turned over immediately to the supervisor of the coverage evaluation. He will check to see that the forms are complete and accurate, and he will review the section on the Household Summary Form entitled "Vaccination Record" (Item 12) to determine which immunizations are valid (given at the correct age and at the correct interval). He will then complete the "Fully Vaccinated" section of the form (Item 13). The information should then be transferred to the Cluster Summary Form (Figure 10, page 38). The calculations of sub-totals and totals on the Cluster Summary Form are a basic part of the analysis of the collected data.

### 2.1 Complete the Household Summary Form (Exercise F).

The fact that a vaccination was given does not ensure that it was valid. To be effective, vaccines must be given at appropriate ages and, if the vaccination is one of a series, it must be given after an appropriate interval. Appropriate ages for vaccinations and acceptable intervals vary from country to country. They will also vary according to the vaccine. The following schedule was used in the Coastal Region:

Measles -- as soon after 9 months as possible

BCG -- any time after birth

Polio/DPT -- first shot as soon after 3 months as possible.

Subsequent doses spaced at least one month apart.

In practice mothers may bring children to be vaccinated who have not quite reached the established age for a particular vaccination, and health staff may be reluctant to vaccinate such children. The risk that they may not return a few days later may be considered more serious than the risk that they will not be protected by vaccinating them when they are available. The rules established for coverage evaluation should take this practice into consideration.

In order for a vaccination to be considered valid in the Coastal Region, it must have been given within the following time limits:

Measles -- Child must have been at least 8 months and 15 days of age at time of vaccination

BCG -- Any time after birth

Polio/DPT -- Child must have been at least 2 months and 21 days of age at time of first dose. Subsequent doses must be spaced at least 28 days apart.

A person vaccinated at the wrong age should be considered not vaccinated. A second or third DPT or Polio vaccination which is given less than one month after the preceding vaccination should be considered invalid.

1. Using the corrected Household Summary Form on page 29 which you completed in Exercise E (Figure 6), *circle all shots which are not valid according to the schedule listed above.*
2. If a child has received a full series of vaccinations (there are no blank spaces and no circled vaccinations), *record a " + " in the column titled "Fully Vaccinated."*
3. If a child has not received a full series of vaccinations (there are blank spaces or circled vaccinations), *record a " - " in the column titled "Fully Vaccinated."*
4. After you have reviewed all vaccinations on the Household Summary Form, *add the number of "+"s" recorded in the "Fully Vaccinated" column and record the number in the space "Total Fully Vaccinated."*
5. Check your answers with the available answer sheet and discuss any differences you have with a course manager.

## 2.2 Complete the Cluster Summary Form (Exercise G).

To determine the number of people receiving valid vaccine in your survey of 30 clusters, you will need to transfer information from the Household Summary Forms to a Cluster Summary Form.

In this exercise you will record information on the partially-completed Cluster Summary Form on page 38 (Figure 10). You will obtain this information from the Household Summary Forms provided on pages 35, 36 and 37 (Figures 7, 8, and 9) and use it to complete the following substeps:

1. Fill in the introductory data on the Cluster Summary Form. (This has been done for you.)
2. The next step is to correct the Household Summary Forms. In Exercise F you circled all of the vaccinations which were not given at the correct time. In some instances a child may have received 2 or 3 doses of DPT and Polio and one or more of them were not valid. An example of this was child number 5, Mety Mbaye, who was born 15 January 1977, and received doses of DPT and Polio on 2 April, 5 June, and 19 September. The first dose was given too early, so the Household Summary Form should be corrected to show that the child received two valid doses instead of three. The first valid dose was received on 5 June, the second valid dose on 19 September, and the child did not receive a third valid dose.

Figures 7, 8, and 9 are corrected Household Summary Forms.

3. On Figure 7, page 35, count the number of valid vaccinations given for each vaccine. These will be uncircled dates. Count each dose separately (DPT 1, DPT 2, DPT 3). *On the Cluster Summary Form (Figure 10) record the total number of valid shots in the "+" columns provided for each vaccine beside Cluster 1.* Since Figure 7 is a corrected form, you may assume that all uncircled dates are valid.

Next count the number of circled dates (showing invalid shots) and " 0's." *Record these totals in the " 0 " columns under each vaccine.*

Count the number of vaccination cards present. *Transfer this number to the column titled "Vaccination Cards" on the Cluster Summary Form.*

Note: In some countries, it may also be worthwhile to record information for those children who did not have vaccination cards. Results can be compared for the population with cards, and those without.

Check the total number recorded for "Fully Vaccinated" and record the number in the last column of the Cluster Summary Form.

Repeat this process for Household Summary Forms on pages 36 and 37 (Figures 8 and 9).

4. Determine the subtotals and totals for the Cluster Summary Form. (This has been done for you.)

When you have completed this exercise, check your answers with an available answer sheet and discuss any differences you have with a course manager.



HOUSEHOLD SUMMARY FORM

- (1) Cluster Number 1  
 (2) Age Group Being Evaluated 12 To 17 Months  
 (3) Date of Interview 7/3/78  
 (4) Birthdate of Age Range To Be Evaluated 7/9/76 To 7/3/77  
 (5) Region Coastal  
 (6) City, Town, or Village Utarel  
 (7) Interviewer(s) AC Hogan

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 <sub>1</sub> )	Polio 2 (P <sub>2</sub> )	Polio 3 (P <sub>3</sub> )	DPT 1 (D <sub>1</sub> )	DPT 2 (D <sub>2</sub> )	DPT 3 (D <sub>3</sub> )		Measles (M)
1	1	Ayo Mbaye	13/12/76	+	15/12/76	16/3/77	14/5/77	30/6/77	16/3/77	14/5/77	30/6/77	30/8/77	+
2	1	ATumane Mbaye	18/2/77	-	0	0	0	0	0	0	0	0	-
3	2	Daba Kone	6/11/76	+	8/11/76	5/3/77	0	0	5/3/77	0	0	0	-
4	3	Muhammed Coulibaly	9/11/76	+	10/11/76	9/2/77	12/4/77	2/6/77	9/3/77	14/4/77	2/6/77	2/6/77	-
5	4	Abu Mbakaie	12/12/76	+	12/12/76	21/3/77	0	0	21/3/77	0	0	2/11/78	-
6	5	Balla Diallo	14/4/77	+	15/4/77	1/9/77	3/10/77	4/11/77	1/9/77	3/10/77	12/11/77	1/5/78	+
7	6	Christopher Ofusa	1/1/77	-	0	0	0	0	0	0	0	0	-
8													
9													
10													
											TOTAL FULLY VACCINATED	2	

Figure 7: Worksheet for Exercise G



HOUSEHOLD SUMMARY FORM

- (1) Cluster Number 2
- (2) Age Group Being Evaluated 12 To 17 Months
- (3) Date of Interview 15/5/78
- (4) Birthdate of Age Range To Be Evaluated 15/11/76 To 15/5/77
- (5) Region Coastal
- (6) City, Town, or Village Nwiga
- (7) Interviewer(s) AN Wolfe

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 (+, -)	
					BCC	Polio 1 (P <sub>1</sub> )	Polio 2 (P <sub>2</sub> )	Polio 3 (P <sub>3</sub> )	DPT 1 (D <sub>1</sub> )	DPT 2 (D <sub>2</sub> )	DPT 3 (D <sub>3</sub> )		Measles (M)
1	1	Ijoma Kone	2/11/76	+	3/11/76	4/3/77	1/5/77	7/7/77	4/3/77	1/5/77	7/7/77	1/3/78	+
2	1	Biga Kone	2/11/76	+	3/11/76	4/3/77	1/5/77	7/7/77	4/3/77	1/5/77	7/7/77	1/3/78	+
3	2	Christopher Idris	1/3/77	+	2/3/77	10/6/77	5/8/77	0	10/6/77	5/8/77	0	0	-
4	3	Babi Nchinda	4/2/77	+	5/2/77	6/6/77	17/7/77	1/8/77	6/6/77	17/7/77	1/8/77	3/9/77	-
5	4	Chike Nchinda	1/12/76	+	2/12/76	7/4/77	19/5/77	0	7/4/77	19/5/77	1/7/77	0	-
6	5	Takre Mbaye	14/2/77	+	15/2/77	9/6/77	20/7/77	19/2/78	9/6/77	20/7/77	19/2/78	19/2/78	+
7	6	Okol Corlibaly	9/4/77	0	0	0	0	0	0	0	0	0	-
8													
9													
10													
											TOTAL FULLY VACCINATED	3	

Figure 8: Worksheet for Exercise G



HOUSEHOLD SUMMARY FORM

- (1) Cluster Number 3 (5) Region Coastal  
 (2) Age Group Being Evaluated 12 To 17 Months (6) City, Town, or Village Hilandia  
 (3) Date of Interview 15/5/78 (7) Interviewer(s) A.N. Wolfe  
 (4) Birthdate of Age Range To Be Evaluated 15/11/76 To 15/5/77

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 <sub>1</sub> )	Polio 2 (P <sub>2</sub> )	Polio 3 (P <sub>3</sub> )	DPT 1 (D <sub>1</sub> )	DPT 2 (D <sub>2</sub> )	DPT 3 (D <sub>3</sub> )		Measles (M)
1	1	Musa Teru	21/1/77	+	0	21/4/77	20/5/77	0	21/4/77	20/5/77	0	1/2/78	-
2	2	Balu Teru	19/3/77	+	0	1/7/77	9/8/77	2/10/77	1/7/77	9/8/77	2/10/77	1/11/77	-
3	3	Joshka Abbas	10/2/77	+	11/2/77	13/5/77	19/6/77	2/8/77	13/5/77	19/6/77	2/8/77	1/12/77	+
4	4	Obanu Lasiso	9/11/76	+	10/11/77	9/3/77	12/4/77	2/6/77	9/3/77	12/4/77	2/6/77	2/6/77	-
5	5	Abu Savadago	12/12/76	+	13/12/76	0	0	0	0	0	0	2/1/78	-
6	6	Fatuma Kestapha	14/4/77	+	15/4/77	1/9/77	3/10/77	12/11/77	1/9/77	3/10/77	14/11/77	1/5/78	+
7	7	Atumane Kone	1/1/77	+	2/1/77	4/4/77	1/6/77	9/7/77	4/4/77	1/6/77	9/7/77	5/10/77	+
8													
9													
10													
											TOTAL FULLY VACCINATED	3	

Figure 9: Worksheet for Exercise G



CLUSTER SUMMARY FORM

(Summary of Vaccination Status for all children falling in the Age group being evaluated for all 30 clusters in the sample)

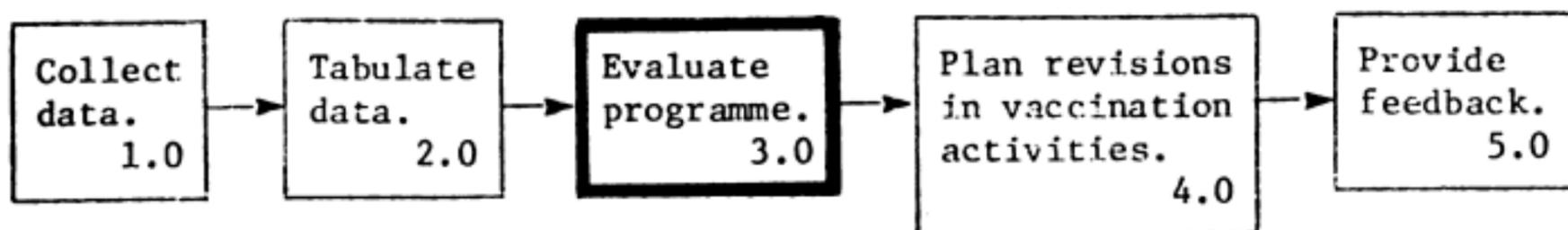
(1) Age Group Being Evaluated: 12 to 17 months

(2) Date: 15/5/78 (3) Region: Coastal

Cluster Number	Vaccination Cards		BCG		Polio 1		Polio 2		Polio 3		DPT 1		DPT 2		DPT 3		Measles		Fully Vaccinated
	0	+	0	+	0	+	0	+	0	+	0	+	0	+	0	+	0	+	
1																			
2																			
3																			
4	6	5	2	5	5	3	4	4	3	4	2	5	4	4	3	2	5	5	3
5	6	6	2	6	5	4	4	4	3	4	3	5	5	3	3	3	5	5	3
6	7	6	1	6	4	1	2	5	3	4	1	4	4	3	1	6	7	6	4
7	6	5	2	5	3	2	3	4	3	2	3	4	3	3	2	3	4	4	2
8	6	6	2	6	5	3	3	5	3	5	3	5	5	3	4	4	4	5	3
9	5	5	2	5	5	2	4	3	2	2	6	4	5	2	3	2	5	5	2
10	6	6	1	6	5	2	4	5	3	2	6	4	6	4	5	7	6	6	2
11	6	6	2	6	5	2	3	4	3	4	2	5	4	3	3	3	5	5	2
12	5	5	2	5	4	3	4	3	3	4	2	4	4	3	2	3	5	5	3
13	7	6	1	6	4	3	4	3	3	4	4	5	3	3	3	3	5	5	3
14	6	6	2	6	5	2	3	5	3	3	4	3	3	3	1	4	4	4	1
15	7	7	1	7	6	1	4	6	2	4	3	6	6	4	5	1	6	5	3
16	7	7	0	7	6	2	3	4	3	3	2	5	4	3	2	3	5	5	3
17	4	4	2	4	3	2	3	4	3	3	2	4	4	3	2	2	4	4	1
18	6	6	1	6	5	2	3	4	3	3	2	5	4	3	2	2	5	5	3
19	5	5	2	5	4	3	4	3	3	4	2	4	4	3	2	2	5	5	3
20	4	4	3	4	3	2	3	4	3	3	2	5	4	3	2	3	4	4	4
21	6	6	1	6	5	2	4	3	3	4	3	6	4	3	2	4	4	4	0
22	6	6	2	6	5	3	4	3	3	4	2	5	4	3	2	2	5	5	4
23	7	7	0	7	6	1	4	6	2	4	3	6	6	4	3	2	5	5	1
24	6	6	2	6	5	2	3	4	3	3	2	5	4	3	2	2	5	5	3
25	5	5	2	5	4	3	4	3	3	4	2	4	4	3	2	2	5	5	3
26	7	7	1	7	6	2	4	5	3	4	3	6	4	3	2	2	5	5	4
27	7	7	2	7	6	3	4	3	3	4	2	5	4	3	2	2	5	5	3
28	5	5	2	5	4	3	4	3	3	4	2	4	4	3	2	2	5	5	3
29	7	7	1	7	6	2	4	5	3	4	3	6	4	3	2	2	5	5	3
30	6	5	2	5	4	3	4	3	3	4	2	4	4	3	2	2	5	5	3
Sub-Total	X		47	167	64	150	88	126	113	101	66	148	92	122	118	96	75	139	X
Total	179	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	214	81

Figure 10: Worksheet for Exercise G





### 3.0 EVALUATE PROGRAMME.

The purpose of collecting and analyzing vaccination coverage data is to make possible an evaluation of the extent to which vaccination programme coverage objectives are being achieved. Is the target age group being reached? What is the vaccination coverage of the target age group? Are people outside the target age group being vaccinated? These are some of the questions that any vaccination programme must be able to answer. A coverage evaluation provides a means of answering these questions.

#### 3.1 Evaluate the Extent of Achievement of Programme Vaccination Objectives (Exercise H).

Completion of the Programme Coverage Evaluation Form on page 42 (Figure 11) will provide an evaluation of the extent to which the vaccination target age group for a specified geographical area has been fully vaccinated according to age. Read the guidelines below and complete the practice exercise.

Evaluate the extent of achievement of programme vaccination activities by transferring the completed data from Figure 10, page 38, to the appropriate space on Figure 11, page 42.

1. Complete the introductory data on Figure 11.
2. List on Figure 11 (under column 1, "Dose") each vaccine for which Programme coverage is being evaluated. Record doses separately (DPT 1, DPT 2, etc.). Also list "Fully Vaccinated" as the last item in column 1.
3. For each dose listed under column 1, list under column 2 ("Objective for Percent Vaccination Coverage") the percent vaccination coverage that was expected according to

*the programme objective.* For this exercise, assume that the vaccination coverage objective has been set at 80% for BCG and Measles, 80% for DPT 1 and Polio 1, 75% for DPT 2 and Polio 2, and 70% for DPT 3 and Polio 3. You may assume a 70% vaccination coverage objective for "Fully Vaccinated" children.

4. For each of the doses listed under column (1), utilize the subtotals ("+" and "0") from the Cluster Summary Form to determine the percent vaccination coverage achieved, and *enter these percents under column (3), "Percent Vaccination Coverage Achieved."* This determination can be made by using the formula below:

$\frac{\text{Subtotal "+"}}{\text{Total of "+" and "0"}}$	=	Percent Vaccination Coverage for the Disease
---	---	---

For example, if the subtotal "+" for Measles = 160 and the total of "+" and "0" for Measles = 210

$$\frac{160}{210} = .76 \text{ or } 76\% \text{ Vaccination Coverage for Measles.}$$

The coverage for "Fully Vaccinated" is simply the number of children fully vaccinated divided by the number of children surveyed. Remember that for this exercise 30 clusters each containing at least seven children were surveyed. In this example 214 children were surveyed.

5. For each of the doses listed under column (1), write in the "Difference" between the vaccination objective, column (2), and the vaccination coverage, column (3).

Vaccination Objective	-	Vaccination Coverage	=	Vaccination Difference
--------------------------	---	-------------------------	---	---------------------------

**Note:** Coverage evaluation should be conducted at least annually. It is particularly important to conduct coverage evaluation quickly after vaccination if the population is a migratory one, if weather

conditions might make evaluation impossible later, or if there is a suspicion that the population may lose their vaccination cards.

Is the programme in the coastal region achieving its vaccination coverage objectives? How would you judge the vaccination coverage performance in the coastal region? Good? Bad? Discuss your evaluation with your course manager.

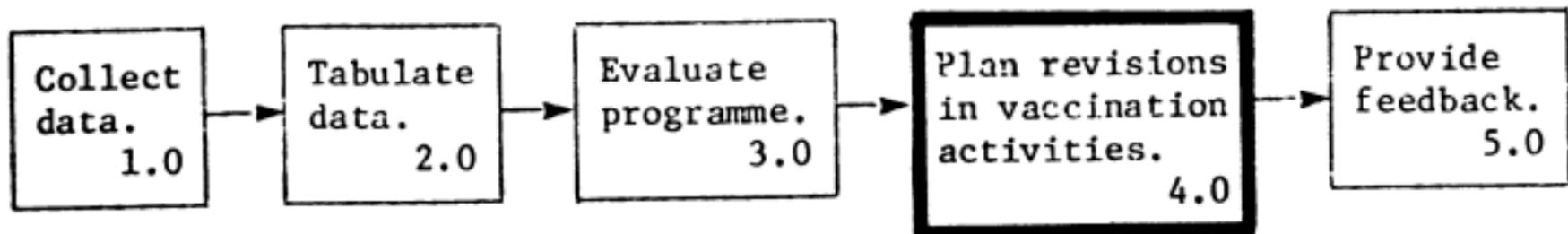
3.2 Evaluate the vaccination status of people not in the target age group.

As a vaccination programme becomes more firmly established, it may be desirable to measure the vaccination status of people younger or older than the target age group. This will enable an evaluation of the extent to which vaccination teams are vaccinating only the target age group. In principle, the procedures to be followed for such an evaluation will be the same as the procedures outlined above for the evaluation of the target age group. The fewer children vaccinated who are outside of the target age group, the better. It can be assumed that children younger than the target age group will frequently have maternal antibodies and that the vaccination will not be effective. Children older than the target age group may be immune from an earlier immunization or the natural occurrence of disease.







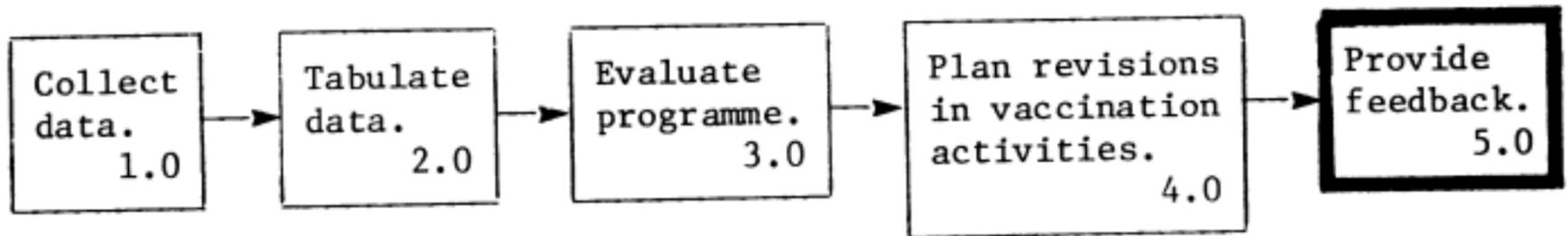


#### 4.0 PLAN REVISIONS IN VACCINATION ACTIVITIES.

Knowledge gained from programme evaluation (Step 3.0) should be used when engaging in further planning of vaccination activities. Evaluation will help identify problems which should be corrected through carefully planned revisions in the vaccination activities. Planning should be a continual process and should be based on (1) the extent to which objectives are not being achieved and an analysis of the underlying reasons for this, (2) the extent to which objectives are being achieved and an analysis of the underlying reasons for this, and (3) the extent to which programme data are not complete, accurate, timely, or utilized.

For example, if a coverage objective of 80% was established and evaluation showed 75% coverage, we could conclude that no major modifications were needed and that a slightly greater effort might well bring the programme to its goal. If evaluation showed only 30% coverage, however, either some major changes would have to be made in activities or objectives would have to be significantly reduced.

Coverage evaluation should be reported to higher levels so that staff at those levels can help in developing improved plans.



## 5.0 PROVIDE FEEDBACK.

Staff responsible for vaccination activities should be provided with planning feedback as existing plans are revised or new plans are developed. Feedback should be provided within one month of plan completion and, if possible, should be presented together with programme evaluation results. Feedback can be provided in two forms: (1) meetings, and (2) newsletters.

### 5.1 Provide feedback via meetings.

While newsletters should serve as an ordered, regular means of providing feedback to programme staff, feedback via newsletters will need to be supplemented from time to time by feedback via meetings. The appropriate timing for providing feedback via meetings is best judged by senior programme staff. One time that would certainly be appropriate would be after a new or revised plan has been adopted. It would then be necessary for senior programme staff to meet with programme staff and other appropriate individuals or organizations in order to explain the new or revised plans and the reasons for their adoption.

Meetings should not be held only for the benefit of senior or mid-level staff. In vaccination programmes particularly, it is the basic level workers who are most often asked to work the hardest and who are most affected by programme changes. These staff in particular must be made to feel that they are an important part of the programme. Special efforts by senior programme staff to meet with basic level workers will do much to serve this purpose.

Also, a meeting is not a meeting if the communication is only one way. Facts and reasoning presented must also be discussed with those attending the meeting. Questions should be invited, and those in attendance should be allowed to have their say.

Finally, at the end of the meeting, those in attendance should be provided with a written copy of the points presented during the meeting.

## 5.2 Provide feedback via newsletters.

Newsletters should ideally combine as many different kinds of related feedback as is practical. For instance, it is generally useful to have vaccination coverage evaluation data and surveillance data presented in the same newsletter. It is uneconomical to have a different newsletter for each kind of feedback. Furthermore, related feedback of several kinds will make a more interesting and informative newsletter.

If programme resources will not permit monthly newsletters, newsletters at less frequent but regular intervals (for example, quarterly) will do. The point is to establish a feedback system that programme staff and other appropriate and interested individuals can expect to receive at regular intervals.

ANNEX

FORMS USED FOR EVALUATION OF VACCINATION COVERAGE

HOUSEHOLD SUMMARY FORM

- (1) Cluster Number \_\_\_\_\_ (5) Region \_\_\_\_\_  
 (2) Age Group Being Evaluated \_\_\_\_\_ To \_\_\_\_\_ Months (6) City, Town, or Village \_\_\_\_\_  
 (3) Date of Interview \_\_\_\_\_ (7) Interviewer(s) \_\_\_\_\_  
 (4) Birthdate of Age Range To Be Evaluated \_\_\_\_\_ To \_\_\_\_\_

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 <sub>1</sub> )	Polio 2 (P <sub>2</sub> )	Polio 3 (P <sub>3</sub> )	DPT 1 (D <sub>1</sub> )	DPT 2 (D <sub>2</sub> )	DPT 3 (D <sub>3</sub> )		Measles (M)		
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
											TOTAL FULLY VACCINATED				

CLUSTER SUMMARY FORM

(Summary of Vaccination Status for all children falling in the Age group being evaluated for all 30 clusters in the sample)

(1) Age Group Being Evaluated: \_\_\_\_\_ to \_\_\_\_\_ months

(2) Date: \_\_\_\_\_ (3) Region: \_\_\_\_\_

Cluster Number	Vaccination Cards	BCG		Polio 1		Polio 2		Polio 3		DPT 1		DPT 2		DPT 3		Measles		Fully Vaccinated
		0	+	0	+	0	+	0	+	0	+	0	+	0	+	0	+	
1																		
2																		
3																		
4																		
5																		
6																		
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24																		
25																		
26																		
27																		
28																		
29																		
30																		
Sub-Total																		
Total																		





3 9015 01773 2093

Glossary

cluster - group that is surveyed; for the purposes of evaluating vaccination coverage, a cluster is defined as 7 or more children in the age range being evaluated

cluster sampling technique - use of surveys in 30 areas to determine vaccination status of a cluster of children (7 or more) in each area. Areas and children are selected randomly.

coverage evaluation survey - random survey of small number of individuals to determine their vaccination status. When done correctly, results can be considered representative of a much larger area which is included in the vaccination programme.

morbidity - sickness

mortality - death

random number - a number selected by chance

target population - group of individuals who are to be included in the vaccination programme based on their age and the area in which they live

vaccination coverage - proportion of individuals vaccinated to individuals in the target population

vaccination coverage objective - proportion or number of individuals in the target population who are to be vaccinated with specified vaccines in a given time period