

**WORLD HEALTH ORGANIZATION
EXPANDED PROGRAMME ON IMMUNIZATION**

**TRAINING FOR
MID-LEVEL MANAGERS**

COVERAGE SURVEY



Revised 1988

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Introduction

Immunization coverage is the proportion of individuals in the target population that have been immunized. There are several reasons to evaluate immunization coverage. A national immunization programme needs information about who is getting immunized in order to plan, manage and evaluate its activities. Also, if immunization coverage is known, then it is possible to estimate reductions in morbidity and mortality from the vaccine-preventable diseases. (However, providing immunizations does not guarantee these reductions.)

Evaluating immunization coverage is more than simply finding out how many people have been immunized. It includes determining how well a programme has met its coverage target for immunizing children less than one year of age. This is important because if a child does not receive all eight immunizations in his first year of life, he will not receive maximum protection from the vaccine-preventable diseases. This is why many countries set immunization coverage targets for this age group.

Immunization coverage is generally determined from records and reports of immunizations performed. A coverage survey is useful to validate the results of reports and to provide additional information. A coverage survey also determines that the vaccines were given at appropriate ages to protect children from disease, tells you about the reasons for immunization failure, and indicates whether mothers of newborn infants are being vaccinated with Tetanus Toxoid. Another important consideration when evaluating immunization programmes is determining whether the vaccine was potent, but this point is discussed in the module, Manage the Cold Chain System.

A coverage evaluation survey is a survey of small numbers of individuals to determine their immunization status. It includes visiting homes and examining immunization records. 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. It will tell you whether immunization coverage targets are being met.

Health centre records can provide important information about immunization activities, which can help health workers evaluate their own performance. However, coverage estimates based on health centre records may be inaccurate or misleading. For example, health centre records may indicate that 80% of the children in a community were immunized, but would not show that 30% of these children had been immunized at the wrong ages. Nor would it show how many children were immunized by other providers of health care. An advantage of a coverage evaluation survey is that it tells how many people were immunized correctly, and how many were immunized by other providers.

LEARNING OBJECTIVES:

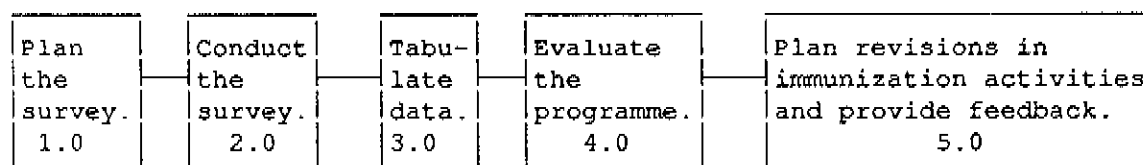
The purpose of this module is to provide you with the skills you need to:

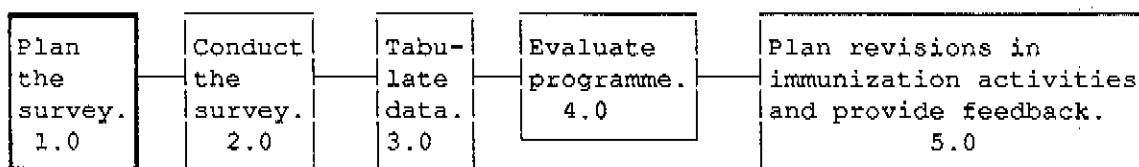
- * plan and conduct a coverage evaluation survey
- * evaluate the results you obtain from the survey

Some of the exercises that you will complete can be used to train surveyors. This module can also be used as a reference manual when conducting coverage evaluation surveys.

FLOWCHART

The major steps in evaluating immunization coverage are:





1.0 PLAN THE SURVEY

The survey method described in this module is a cluster sampling technique. This technique allows a small number of the target population to be sampled while providing data which are statistically valid. A cluster is a randomly-selected group which in this case contains at least 7 children in the age range you want to evaluate, or the mothers of at least 7 children in a specific age group if you want to evaluate Tetanus Toxoid (TT) coverage. A survey will contain 30 clusters, and will meet the following standards of reliability:

- o The results of the survey will have a level of accuracy of within plus or minus 10%. For example, if the survey shows an immunization coverage of 70% in the sample, the coverage in the target population will be between 60% and 80%.
- o The level of confidence is 95%, which means that nineteen out of twenty times the data which results from the survey will be within the stated level of accuracy (i.e., plus or minus 10%).

A survey using this cluster sampling technique will only allow you to draw conclusions about the population surveyed as a whole. It will not permit comparisons among different clusters or subsections of the total population surveyed. If you want to compare, for example, urban with rural populations, or sections of the population using one immunization strategy with other sections using a different strategy, you would have to do separate surveys in each section. If you want to compare coverage in populations in different parts of a country, you would do separate surveys in each part of the country. Each survey could be done using the method described in this module.

The theories behind cluster sampling are complex. You need to know how to use the technique and that statisticians agree that it produces useful results. EPI/WHO can provide more specific information on the statistical basis for this cluster sampling technique, if needed.

1.1 SELECT THE AGE GROUP OF CHILDREN TO BE EVALUATED

A first step in planning for the survey is to decide what age group of children to evaluate. The range may vary from 3 months to one year or more. For most surveys, EPI recommends:

- o using the age range of 12-23 months for evaluating the immunization coverage among children against the six target diseases, and
- o using the age range of children aged 0-11 months for evaluating the TT coverage among their mothers.

In most developing countries children in the age range 12-23 months constitute about 3% or more of the total population. If all children were present, you would need a community of about 500 people to be sure to find at least 7 children in this age range. Because of absenteeism, you may need a larger population to find 7 children in the age range 12-23 months. Therefore, for practical reasons, you should plan to conduct a 30 cluster coverage evaluation survey in a population, or section of a population, greater than 30 000.

1.2 DECIDE WHICH SOURCES OF INFORMATION TO USE

Early in the planning phase and with guidance from the national programme manager, the survey organizer must decide whether to ask surveyors to record only immunizations listed on an immunization card or whether they should also record immunizations which the mother says the child received.

The phrase "by card" means that the information about a child's immunization history is obtained by copying it from an immunization card. Immunization cards are usually kept by the mother at home, and provide an important, reliable source of information. Cards provide the exact date of immunization and, therefore, a way to verify whether the child was the appropriate age when immunized. However, immunization cards are often lost or incompletely filled out. When this happens, the number of immunizations recorded in the survey may be an underestimate.

"By history" means that the child's mother or caretaker reported that the child had received the immunization. Including immunizations that are reported "by history" means that the survey will have a more complete record of immunizations given. However, a problem with this type of information is that errors are often made. For example, exact dates of immunizations are not known, and mothers might not remember the number of immunizations that were given to the child. If the health worker did not explain his actions to the mother, she might think the child received a certain type of immunization when in fact he did not.

In conclusion, there are advantages and disadvantages to the two methods, and each programme must decide based on how the results of the survey will be analyzed and used. The programme manager will decide whether the most useful and important coverage rates are those obtained when more strict criteria are applied, or whether less precise immunization coverage rates based on mothers' recall will be sufficient for programme evaluation. This module describes a survey which uses both sources of information. It measures coverage rates "by card" and by "card plus history".

1.3 DETERMINE HOW MANY INTERVIEWERS ARE NEEDED AND THE LENGTH OF THE SURVEY

The number of interviewers needed to conduct a coverage survey and the number of days needed to conduct it will vary. Considerations include the availability of personnel and transport, the time required to travel to the clusters, and how urgently the data on immunization coverage is needed.

There are, however, some general guidelines to follow. It is recommended that each interview team be composed of two members, so that they can check each other's work and make sure information is recorded accurately and completely. One team of interviewers can complete approximately one cluster each day. The entire survey of 30 clusters should be completed within 1 month, to ensure that the data are as uniform as possible. Finally, the survey should be done by people who did not do the immunization.

If speed is important, personnel are available and can be trained, and transport is adequate, you could have 60 interviewers. They should complete the entire survey of 30 clusters in one day, with 30 interview teams surveying one cluster each. If personnel are very limited, it would be possible for one team to complete the survey in 30 work days, doing one cluster per day.

Decide the number of surveyors and the duration of your survey based on your resources and needs. For example, with 12 interviewers (6 teams) you could complete the survey in five days. The following two-step formula can be used to determine the number of days required to complete the survey with the available number of interviewers.

1)
$$\frac{\text{number of interviewers available}}{2} = \text{number of interview teams available}$$

2)
$$\frac{30}{\text{number of interview teams available}} = \text{number of days required to complete the survey}$$

1.4 IDENTIFY CLUSTERS

To identify clusters you must know the total population of the area to be surveyed and the population of the cities, towns and villages in the area.

1.4.1 CALCULATE A SAMPLING INTERVAL AND SELECT A RANDOM NUMBER

An important concept to understand when identifying clusters is the sampling interval. A sampling interval is used to systematically select clusters. A sampling interval can be calculated by using the formula below:

$$\frac{\text{Total population to be surveyed}}{30 \text{ clusters}} = \text{Sampling interval}$$

The sampling interval should be rounded off to the nearest whole number.

To identify clusters, you will also need to know how to select a random number. You may need to select random numbers for other steps of conducting a survey as well. A random number is a number chosen from many numbers, each of which has an equal chance of being selected. Choosing numbers from memory is not a satisfactory method for selecting random numbers because unconscious biases occur. Certain numbers tend to be selected more often by some people.

You may select a random number from a table of random numbers. (See Annex I for a description of how to use a table of random numbers.) A more practical alternative to using a table of random numbers is to use the last digits of the serial number on currency notes. To find a random number using a currency note, first refer to your sampling interval. The random number must have the same number of digits as the sampling interval. For example, if the sampling interval is 345, then the random number must have 3 digits. Then look at the currency note and identify your random number. If the random number you find from the currency note has a value that is greater than the sampling interval, you will need to use another note to identify another number.

EXERCISE A: SELECTING RANDOM NUMBERS

Your facilitator will demonstrate how to use the serial number on a currency note to select a random number. When the demonstration is finished, use currency notes to complete this exercise on your own.

1. Choose a three-digit random number between 001 and 187 inclusive.
2. Assume the sampling interval is 12 685.
 - How many digits should the random number have?
 - Select a random number from a currency note to use when identifying clusters.
3. The total population of the community is 359 868. Calculate a sampling interval, and then select a random number to use when identifying clusters.

See the facilitator when you are ready to check your answers.

1.4.2 COMPLETE A CLUSTER IDENTIFICATION FORM

On a Cluster Identification Form (see pages 10-12) you will identify the clusters to include in your survey. Read the guidelines below to understand how to complete this form.

1. List all communities (cities, towns, villages and sectors of cities) included in the immunization target area to be evaluated.
2. List the individual population of each community.
3. Calculate and write in the cumulative populations as each community is added. To obtain a cumulative population you must add the population of the next village to the combined total of all populations in preceding villages. The final cumulative population is the same as the total population to be surveyed.
4. Determine the sampling interval, using this formula:

$$\frac{\text{Total population to be surveyed}}{30 \text{ clusters}} = \text{Sampling interval}$$

Round all decimals off to the nearest whole number. Enter the number in the space provided at (a) on the bottom of the Cluster Identification Form.

5. Select a random number which is less than or equal to the sampling interval. The number must have the same number of digits as the sampling interval. Enter this number at (b) at the bottom of the Cluster Identification Form.
6. Identify the community in which Cluster 1 is located. This is done by locating the first community listed in which the cumulative population equals or exceeds the random number. Write "1" beside this community in the column entitled "CLUSTER".
7. Identify the community in which Cluster 2 is located. Use the formula below. The cumulative population listed for that community will equal or exceed the number you calculate.

$$\text{Random number} + \text{sampling interval} = \underline{\hspace{2cm}}$$

Example: If you obtain a random number of 5 734 and a sampling interval of 7 493, you would calculate the following population totals for the first two clusters:

Cluster 1 population = 5 734 (random number)
Cluster 2 population = 5 734 + 7 493 = 13 227 (random number + sampling interval)

Write "2" beside the first community listed on the Cluster Identification Form in which the cumulative population equals or exceeds the Cluster 2 population.

8. Identify clusters 3-30. Use the formula provided below:

Number which identified the location of the pre- vious cluster	+	Sampling interval = _____
--	---	------------------------------

Example: Cluster 2 population = 5 734 + 7 493 = 13 227
Cluster 3 population = 13 227 + 7 493 = 20 720
(number for Cluster 2 + sampling interval)

Write the number of clusters 3-30 beside the appropriate community. A single community may contain more than one cluster.

EXERCISE B: IDENTIFYING CLUSTERS

In this exercise you will practice identifying clusters. You will calculate a sampling interval, identify clusters, and label the communities selected on the Cluster Identification Form provided on pages 10-12. Information you need to complete the exercise follows:

The immunization target area to be evaluated in the exercise is the coastal region of a hypothetical country. All cities, towns and villages of the coastal region have been listed. The cumulative population of each city, town or village has been calculated.

1. For this exercise, use the random number 12 762. Record this number at (b) at the bottom of pages 10-12.
2. Follow the guidelines for identifying clusters listed on pages 8-9 to identify clusters 1-5 (clusters 6-30 have already been identified for you).

See the facilitator when you are ready to check your answers.

FIGURE 1. CLUSTER IDENTIFICATION FORM

(Sample format)
CITIES, TOWNS AND VILLAGES OF COASTAL REGION

NO	NAME OF COMMUNITY	POPULATION	CUMULATIVE POPULATION	CLUSTER	NO	NAME OF COMMUNITY	POPULATION	CUMULATIVE POPULATION	CLUSTER
1	Utaral	12 888	12 888		26	Nozop	17 808	157 117	6
2	Bolama	3 489	16 377		27	Mapasko	3 914	161 031	
3	Talum	6 826	23 203		28	Lothoah	15 006	176 037	7
4	Wara-Yali	4 339	27 542		29	Voattigan	9 584	185 621	
5	Galey	2 203	29 745		30	Plitok	4 225	198 846	
6	Tarum	4 431	34 086		31	Dopoltan	2 652	193 489	
7	Hamtato	1 544	35 630		32	Cococopa	35 000	227 489	8, 9
8	Nayjaff	885	36 515		33	Famezgi	3 945	231 452	
9	Nuviya	2 962	39 477		34	Jiggelay	2 115	233 567	
10	Cattical	4 234	43 711		35	Mewoah	507	234 074	
11	Paralai	1 520	45 231		36	Odigala	3 516	237 590	
12	Egala-Kuru	3 767	48 988		37	Sanbati	14 402	251 992	
13	Uwanarpol	3 053	52 051		38	Andidwa	2 575	254 567	10
14	Hilandia	60 000	112 051		39	Ore-Mikam	3 105	257 672	
15	Puratna	2 207	114 348		40	Duno-Mikam	4 176	261 848	
16	Kegalni	1 355	115 703		41	Kedi-Sina	1 919	263 767	
17	Hamali-Ura	833	116 536		42	Panabalok	3 261	267 028	
18	Kameni	4 118	120 654		43	Rokini	4 270	271 298	
19	Kiroya	2 782	123 436		44	Talosso	3 301	274 599	
20	Yanwela	3 285	126 721		45	Djaragna	3 250	277 849	
21	Bagvi	4 416	131 137		46	Bibachi	4 670	282 519	11
22	Atota	3 188	134 325		47	Bilam	757	283 276	
23	Kogouva	1 179	135 504		48	Sisse	12 037	295 313	
24	Ahekpa	612	136 116		49	Anda-Dali	2 155	297 468	
25	Yandot	3 193	139 309		50	Varok	3 702	301 170	

Sampling interval:

(a) _____

Random number:

(b) _____

(Continued on next page)

CLUSTER IDENTIFICATION FORM, cont.

NO	NAME OF COMMUNITY	POPUL.	CUMULAT POPULAT	CLU ST.
51	Boul	2 262	303 432	12
52	Boul-Malal	791	304 223	
53	Dapnan	3 468	307 691	
54	Umpybo	4 338	312 029	
55	Goumam	3 930	315 959	
56	Nzelji	2 112	318 071	13
57	Wagasa	3 953	322 024	
58	Onam	2 198	324 222	
59	Koundo	9 891	334 113	
60	Faona	3 154	337 267	
61	Nagbi	2 548	339 851	14
62	Ponakpo	1 034	340 849	
63	Auguromi	2 415	343 264	
64	Fali	4 325	347 589	
65	Ngol	13 233	360 822	
66	Majagdi	511	361 333	
67	Yardi	2 313	363 646	
68	Chankam	3 108	366 754	
69	Livaspa	4 163	370 914	
70	Rhomastiput	4 250	375 167	
71	Anghor	784	375 951	15
72	Ransiha	3 423	379 374	
73	Phajip	4 098	383 472	
74	Dumakpa	4 540	388 012	
75	Baktari	2 322	390 334	

NO	NAME OF COMMUNITY	POPUL.	CUMULAT POPULAT	CLU ST.
76	Wako	3 987	394 321	
77	Ganda	4 211	398 532	
78	Sapa-Barchi	2 541	401 073	
79	Nuwa	848	401 921	
80	Nangja	1 281	403 202	
81	Kuwassak	3 310	406 512	16
82	Waniti	4 313	410 825	
83	Lukkumsa	4 762	415 587	
84	Jopu	3 647	419 234	
85	Thynupa	2 530	421 764	
86	Yanlasul	16 983	438 747	17
87	Mali-Ilo	2 730	441 477	
88	Papalo	4 869	446 346	
89	Agrakhan	3 300	449 646	
90	Tido	4 150	453 796	
91	Jubara	3 760	457 556	18
92	Pilasta	1 587	459 143	
93	Lejaple	16 699	475 842	
94	Lahisa	2 703	478 545	
95	Chapmar	747	479 292	
96	Dhulisk	4 451	483 743	19
97	Briko	4 425	488 168	
98	Hummu	3 860	492 028	
99	Baryidda	2 835	494 863	
100	Lekdai	1 725	496 588	

Sampling interval:

(a) _____

Random number:

(b) _____

(Continued on next page)

CLUSTER IDENTIFICATION FORM, cont.

NO	NAME	POPUL.	CUMULAT POPULAT	CLU ST.
101	Izigba	3 988	500 576	
102	Loaz	4 124	504 700	
103	Jikoud	4 389	509 089	
104	Gopouda	1 126	510 215	
105	Akafo	2 166	512 381	
106	Endera	3 393	515 774	
107	Seyou	4 787	520 561	20
108	Lallos	3 447	524 008	
109	Dobaba	3 689	527 697	
110	Somdi	4 696	532 393	
111	Granoli	60 000	592 303	21 22
112	Nehoa	3 990	596 383	
113	Melo	4 754	601 137	23
114	Tabli	4 121	605 258	
115	Evot	3 214	608 472	
116	Pamtakapo	16 008	624 480	
117	Otoyang	4 732	629 212	24
118	Tosi	2 769	631 981	
119	Sarsabba	532	632 513	
120	Okode-Bua	3 394	635 907	
121	Toubussi	1 143	637 050	
122	Domno	8 147	645 197	
123	Sarip	4 555	649 752	
124	Rakachi	695	650 447	
125	Chelle	3 634	654 081	25

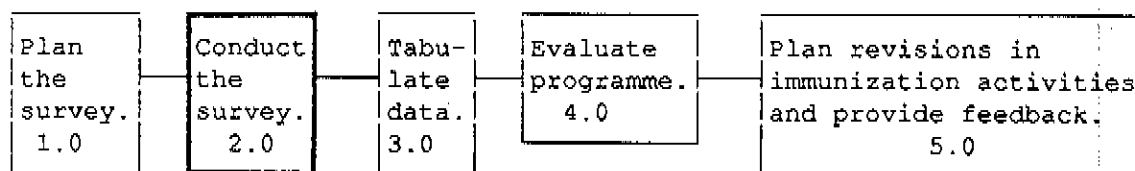
NO	NAME	POPUL.	CUMULAT POPULAT	CLU ST.
126	Waitu	2 115	656 196	
127	Mobbay	4 507	660 703	
128	Baidu	3 516	664 219	
129	Herattan	2 402	666 621	
130	Thenu	3 575	670 196	
131	Comosdi	14 005	684 201	26
132	Churiz	676	684 877	
133	Caiecopa	45 000	729 877	27
134	Angko	4 261	734 138	28
135	Luru-Ala	4 919	739 057	
136	Kartaj	17 270	756 327	
137	Lemno	3 837	760 164	29
138	Deysibba	2 149	762 313	
139	Ongo-On	3 702	766 015	
140	Ullah	1 927	767 942	
141	Ukkaru	4 971	772 913	
142	Akla	2 468	775 381	
143	Tagalo	3 383	778 764	
144	Patto-In	3 930	782 694	
145	Pridasu	2 211	784 905	
146	Ollimi	3 585	788 490	30
147	Hakuda	1 355	789 845	
148	Limaki	4 285	794 130	
149	Rutadupi	3 177	797 307	
150	Alam-Neki	2 693	800 000	

Sampling interval:

(a) _____

Random number:

(b) _____



2.0 CONDUCT THE SURVEY

Conducting the coverage evaluation survey means collecting data by interviewing members of households and recording the information they give you so that it can be analyzed. This section describes how to do this.

2.1 SELECT THE STARTING HOUSEHOLD

The first house to be visited in each cluster should be selected at random. The method for selecting the first house will vary according to the population density (rural versus urban areas) and whether household lists are available.

A. IN RURAL AREAS WHERE HOUSEHOLD LISTS ARE AVAILABLE.

- o Obtain a list of 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.
- o Number the households on the list.
- o 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 visit.

B. IN RURAL AREAS WHERE HOUSEHOLD LISTS ARE NOT AVAILABLE.

METHOD 1:

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.

- o Select a central location in the village or town, such as a market, a mosque or church. The location should be near the approximate geographical centre of the village or area.
- o Randomly select the direction in which the first household will be located. This can be done in a variety of ways. 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.
- o Once you have selected the direction, count the number of houses which exist along that directional line from the central location to the edge of the village. Then select a 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.

METHOD 2:

If practically all children attend school, randomly select one child from the attendance list and use the house of that child as the starting point.

C. IN URBAN AREAS

- o 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.
- o 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 a household list exists for the subdivision identified, select the first household to visit by following the procedure described for "In rural areas where household lists are available" (see page 13). If these lists are not available, follow one of the methods described under "In rural areas where household lists are not available" (see page 14).

- o If subdivisions do not exist, you will need to divide the urban area into sub-units of approximately equal population, for example, blocks of about 100 houses. This may be done by examining a map and discussing population distribution with government and health officials in the area. Once the subdivisions are established, number each subdivision and follow the procedure described in Method 1 above (see page 14).

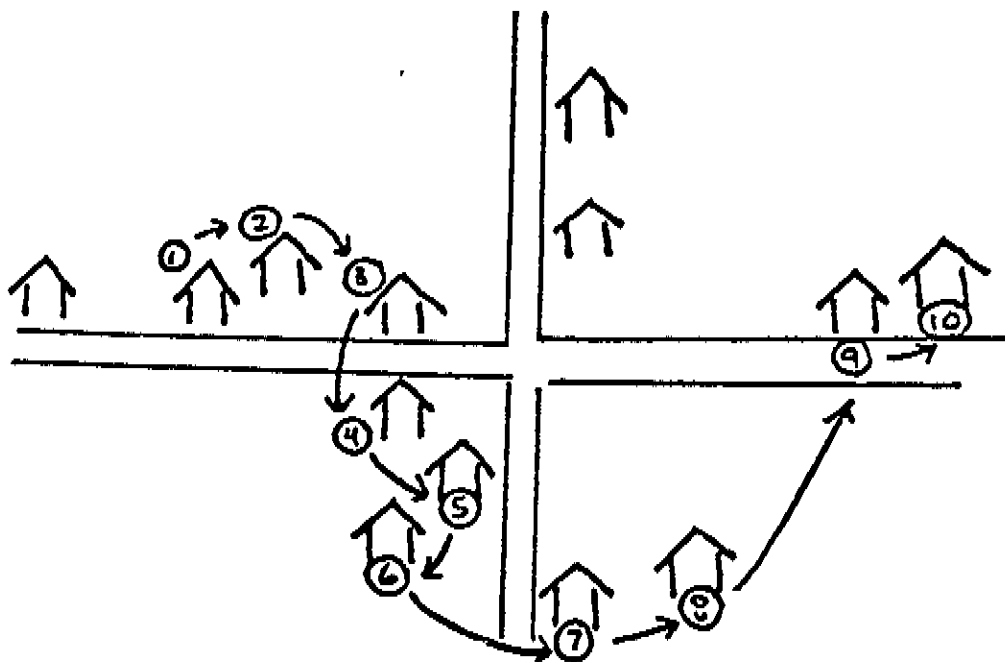
2.2 SELECT SUBSEQUENT HOUSES.

Single dwellings.

Once you have selected the first household to visit, the second household you should visit will be the one which is nearest to 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 diagram below for the movement from nearest household to nearest household.

DIAGRAM OF HOUSEHOLDS TO BE VISITED

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

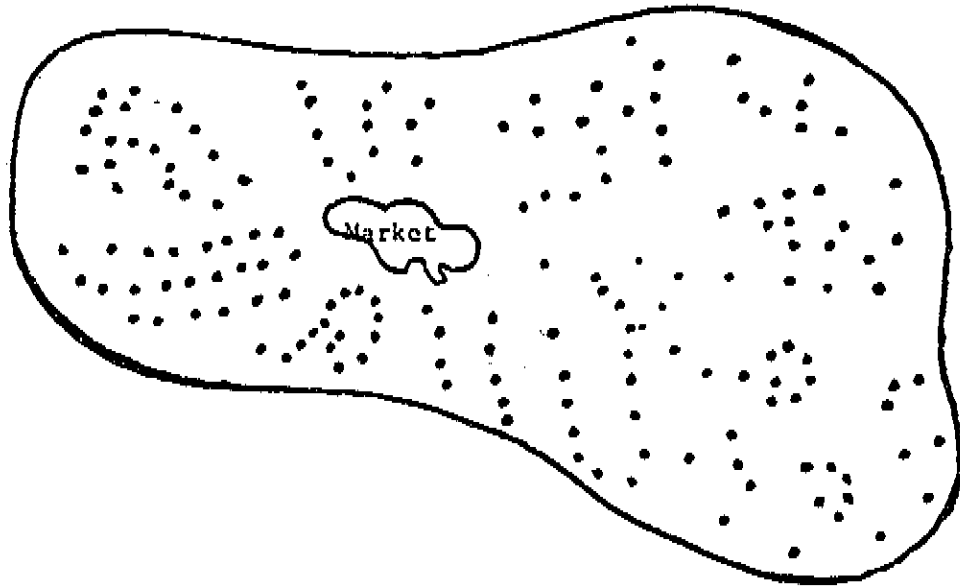


Multi-family dwellings.

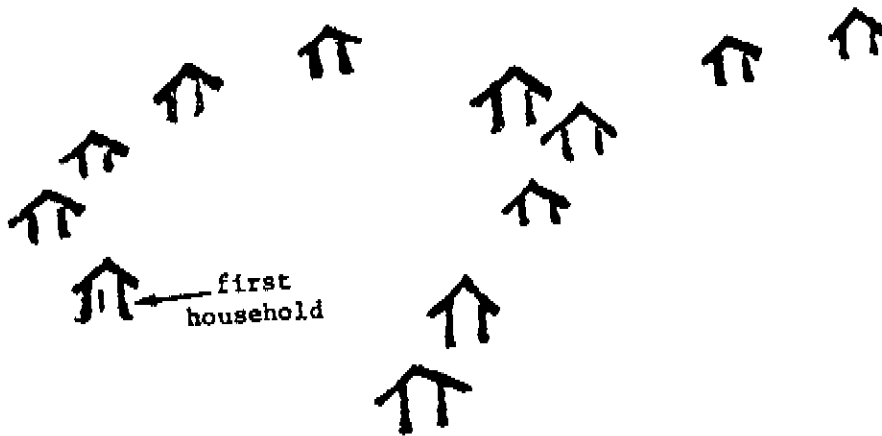
In densely populated urban areas where more than one family live in a single dwelling, a more complicated method for selecting the first household is used. A household is defined as a group of people sharing the same kitchen, and you may find many households in a single building in urban areas. To ensure an unbiased selection of households in buildings such as apartment buildings, use the following system.

First, choose one floor at random. Then number the households on the selected floor and randomly select the first household visit. The second household to visit is the door nearest to the first. After you have visited all the households on the floor, randomly choose a direction (that is, up or down). Visit all the households on that floor. Continue from floor to floor visiting the next nearest floor which has not been visited previously. After the whole building has been visited, go to the nearest door of the nearest building and repeat the process.

2. 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.)



3. In the diagram below, the first household has been selected for you. Number the houses in the order in which you would visit them.



Check your answer with a facilitator.

2.3 COMPLETE THE CLUSTER FORMS.

The cluster forms list the questions to be asked at each house and provide space to record information on the seven children and seven mothers in the cluster. Three cluster forms will be completed:

- (1) Cluster Form for Infant Immunization;
- (2) Cluster Form for Reasons for Immunization Failure
- (3) Cluster Form for Tetanus Toxoid (TT) Immunization of Women.

Turn to pages 30-32 to see these forms. Refer to the forms as you read the explanation of how to fill them out. The first four items on the three forms are identical. Complete these items by following the guidelines below.

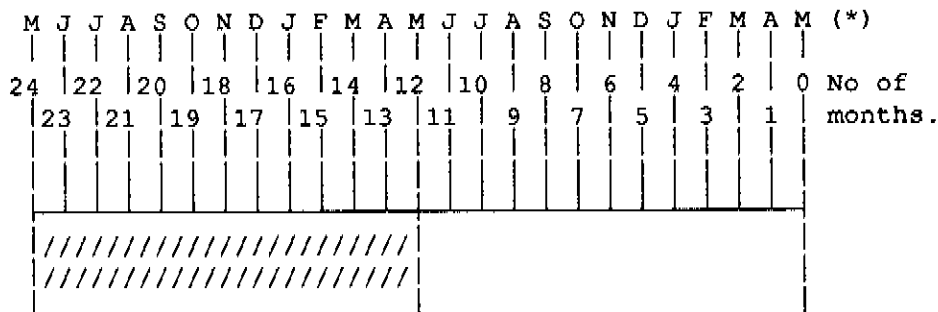
Introductory data on all forms (Items 1-4)

- Item 1 Record the cluster number.
- Item 2 Record the date of the interview.
- Item 3 Identify the city, town or village of the cluster by referring to the Cluster Identification Form.
- Item 4 Identify the range of birthdates of children aged 12-23 months who will be evaluated in the survey. These dates will be based on the date of the interview. You will calculate two different ranges of birthdates: (a) for the Cluster Forms for Infant Immunization and the Reasons for Immunization Failure; and (b) for the Cluster Form for Tetanus Toxoid Immunization of Women. The method of calculating the ranges is described below:

a. For Infant Immunization and Reasons for Immunization Failure Cluster Forms:

To determine the earliest acceptable birthdate, subtract exactly 24 months from the date of the interview. (You subtract 24 months instead of 23 months because you wish to include all children who are even one day less than 24 months of age. By subtracting 24 months, you will also include children who are exactly 24 months of age. This is an acceptable error.) To determine the latest acceptable birthdate, subtract exactly 12 months from the date of the interview.

- Example: (1) Assume an interview date of 15 May 1988.
 (2) Count back from the interview date exactly 24 months to determine the earliest acceptable birthdate.
 (3) Count back from the interview date exactly 12 months to determine the latest acceptable date.



Earliest acceptable birthdate: 15 May 1986	Latest acceptable birthdate: 15 May 1987	Interview date: 15 May 1988
---	---	--------------------------------

The shaded area represents the birthdates of the age range to be evaluated if the interview date is 15 May 1988, i.e. birthdates falling on or between 15 May 1986 and 15 May 1987.

(*) The capital letters represent the months of the year.

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

b. For Tetanus Toxoid Immunization of Women Cluster Form:

To determine the earliest acceptable birthdate, subtract exactly 12 months from the date of the interview. The latest acceptable birthdate is the date of the interview.

After completing items 1-4 on all three forms, visit the first household.

- o Ask to see the head of the household. If the head of the household is not present, ask to speak to the spouse, another adult or a mature child.
- o Explain what you are doing and why you will be asking them questions. Ask the ages of the children living in the household.
- o Determine if there are any resident children in the household aged 0-23 months. (A resident child is defined as one who spent the previous month in the household although the child does not have to be present for the interview.)

IF THERE IS A CHILD WHO IS	THEN
0 - 11 months ----->	Complete the Cluster Form for Tetanus Toxoid Immunization of Women.
12 - 23 months ----->	Complete the Cluster Forms for Infant Immunization & Reasons for Immunization Failure.
24 months or more -----> or no children	Do not fill out form, but tally the household visited on the Cluster Forms for Infant Immunization and Tetanus Toxoid Immunization of Women. Go to next nearest house and begin again.

Specific guidelines on completing each of the three forms follow. The numbers listed in the guidelines correspond to the Item numbers on the Cluster Forms.

The Cluster Form for Infant Immunization (see page 30)

Item 5 Write the name(s) of the child(ren) in the household whose age(s) is(are) between 12-23 months. There are eight lines. If in a household where you find the seventh child there is another child who is between the ages of 12-23 months, then list the eighth child here.

Item 6 Write the birthdate for each child listed.

Item 7 Ask to see the immunization card(s) for each child on the list. (It is possible that a single individual may have several immunization cards). Write "Yes" in the appropriate box if the child has an Immunization Card. Write "No" if he does not have an Immunization Card.

Items 8-11 The row "DATE/+/0" is completed by using a coding system. If the immunization card is present and the immunization was given, copy the date of the immunization. This is known as verifying the immunization "by card".

If the immunization card is not present, ask the mother whether the child received the immunization. If the mother reports that the immunization was given, write "+" in the box. This is known as verifying the immunization "by history".

If the immunization was not given, write "0" in the box. It does not matter whether that information is obtained from the mother or from the immunization card.

The chart below will help you complete Items 8-11 correctly.

IF:		THEN RECORD:
<u>For DPT, Measles, Polio and BCG:</u>		
Card available	Immunization given ----->	Date
	Immunization not given ----->	0
Card not available	Mother reports immunization given ----->	+
	Mother reports immunization not given ----->	0
<u>For BCG:</u>		
Scar visible ----->		Yes
No scar visible ----->		No
Child not present ----->		A

o Ask the mother where the child received the immunization, and record it in the relevant box in the row titled "SOURCE". Use the following abbreviations: HOS - Hospital, OUT - Outreach, HC - Health Centre, and PRIV - Non governmental or private. If the mother does not remember where the child received the immunization, leave the box blank.

o After listing the information on all the children in the household aged 12-23 months, check the data recorded for any obvious errors. (Are there blank spaces? Are there immunization dates which occurred prior to the date of the child's birth? Did you mistakenly record the same birth date for two children?)

Item 12 Determine whether the child is fully immunized or not. Count immunizations that were recorded by card and by history. The immunization status of the child is recorded as FULLY, PARTIALLY or NOT immunized by marking "X" in the relevant box:

Mark "Fully immunized" if the child received 3 DPT, 3 Polio, 1 BCG and 1 Measles immunization.

Mark "Partially immunized" if the child received fewer than eight immunizations, but at least one immunization.

Mark "Not immunized" if the child did not receive any immunizations.

- Item 13 Interviewers will leave this item blank. It will be completed by the supervisor.
- Item 14 Tally each household you visit. This keeps track of the total number of houses you visit in order to find seven mothers and children.

At this point, before the interview ends, complete the Cluster Form for Reasons for Immunization Failure. You must complete Item 5 on this form for each of the seven children in the cluster, even if the child is fully immunized.

- Item 15 Print your name as the interviewer when the Cluster Form for Infant Immunization has been completed for seven children.

NOTE: Interviewers will leave the "Total" columns blank. They will be completed by the supervisor.

The Cluster Form for Reasons for Immunization Failure (page 31)

- Item 5 Record the immunization status of every child that is in the cluster. This information comes from Item 12 on the Cluster Form for Infant Immunization Status.
- Item 6 If one or more immunization(s) have not been given, ask the responsible person to give you the most important reason why the child did not receive all the immunizations in the series. This is an open-ended question. Wait until the respondent answers in her own words. Do not read the list of possible answers. Put a mark "X" in the box for the most relevant reason. Remember, only the ONE most important reason should be marked. If a reason is given that is not on the list, then write in the answer in one of the blank spaces under the appropriate heading: lack of information, lack of motivation, or obstacles.

NOTE: Interviewers will leave the "Total" column blank. It will be completed by the supervisor.

The Cluster Form for Tetanus Toxoid Immunization of Women (see page 32)

Upon reaching a household where there is a child aged 0-11 months, ask to speak to the mother of that child. If the mother is not available, then for the purpose of TT coverage, go to the next household.

- Item 5 If there are any resident children in the household whose ages fall within the age range for their mothers to be evaluated, record the name of the mother.
- Item 6 Record the birth date of the child.
- Item 7 If a card or any other record is present documenting the immunizations, write "YES" in the appropriate box. If no record is available, write "NO".
- Item 8 Put the date of the first or earliest dose of TT in the "Date/+0" box for TT1. (See page 24 for an explanation of the phrase "Date/+0".) If any other doses of TT were given, record that in the "Date/+0" box for TT2, TT3, TT4 and TT5.

If an immunization card is not available, ask the mother if she has ever been immunized. Try to determine if the immunization was for tetanus.

- o If you are convinced that the mother received at least one dose of TT, put "+" in the "Date/+0" box for TT1.
- o If the mother has received more than one dose of TT, put "+" in the "Date/+0" box for TT2, TT3, TT4 or TT5 (depending on how many doses she received). If possible try to verify the immunizations with records at the health centre.
- o If the mother has not received any TT, put "0" in the appropriate "Date/+0" box for the relevant dose.

The chart below will help you complete Item 8:

For Tetanus Toxoid Immunization of Women

IF	AND	THEN RECORD:
Card available →	Immunization given →	Date
	Immunization not given →	0
Card not available →	Mother says immunization given →	+
	Mother says immunization not given →	0

- Item 9 If the mother has been to one or more antenatal visits during the pregnancy with this child, write "YES" in the box. Otherwise write "NO".
- Item 10 If the mother visited any health facility for any other reason than antenatal (sickness of mother, sickness of another child, immunization of another child) during this last pregnancy, write "YES" in the box. Otherwise write "NO".
- Item 11 Write "YES" in the relevant box for the place of delivery of this child.
- Item 12 This item will be completed by the supervisor. Interviewers should leave it blank.
- Item 13 Tally each household you visit.
- Item 14 Print your name as the interviewer.

NOTE: Interviewers should leave the "Total" columns blank. They will be filled in by the supervisor.

In the survey you would continue visiting houses until the seventh child in the age range to be evaluated and seven children whose mothers are to be evaluated have been located. At this point you would have completed one cluster. The survey is completed by repeating the same process for the remaining 29 clusters.

EXERCISE D: COMPLETING CLUSTER FORMS

In this exercise you will practice completing the Cluster Forms for Infant Immunization, for Reasons for Immunization Failure, and for Tetanus Toxoid Immunization of Women.

Complete the forms for three households in the first cluster of a survey, the village of Utaral (refer to the Cluster Identification Form). The date of the interview is March 7, 1988. Refer to the information on pages 33-35, and follow the guidelines for completing each form. Record your answers on the sample cluster forms found on pages 30-32.

See the facilitator when you are ready to check your answers with the answer sheet.

**Figure 2. Cluster Form
Infant Immunization**

(1) Cluster Number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____		(5) N A M E									TOTAL	
											Card	Card plus history
Child number in cluster			1	2	3	4	5	6	7	8		
(6) Birth date												
(7) Immunization Card	Yes/No											
(8) BCG	Date/+/0											
	Scar: Yes/No											
	Source											
(9) DPT 1	Date/+/0											
	Source											
DPT 2	Date/+/0											
	Source											
DPT 3	Date/+/0											
	Source											
(10) OPV 1	Date/+/0											
	Source											
OPV 2	Date/+/0											
	Source											
OPV 3	Date/+/0											
	Source											
(11) Measles	Date/+/0											
	Source											
(12) Immunization Status	Not											
	Partially											
	Fully											
(13) Fully immunized before one year of age	Yes/No											

(14) Tally of households visited: _____

(15) Name of interviewer: _____

Signature: _____

KEY: Date/+/0:

Date = copy date of immunization from card, if available
+ = mother reports immunization was given
0 = immunization not given

Source:

OUT = Outreach
HOS = Hospital
HC = Health Centre
PRIV = Private/non-government

**Figure 3. Cluster Form
Reasons for Immunization Failure**

(1) Cluster number: _____		(4) Range of birthdates: From: _____								
(2) Area: _____		Until: _____								
(3) Date: _____										
NOTE: ASK ONLY ONE QUESTION: "Why was the child not fully immunized? Mark (X) the single most important reason according to your judgment.										
Child number in cluster		1	2	3	4	5	6	7	8	TOTAL
(5) Immunization Status	Not immunized									
	Partially immunized									
	Fully immunized									
Lack of information	a. Unaware of need for immunization									
	b. Unaware of need to return for 2nd or 3rd dose.									
	c. Place and/or time of immunization unknown									
	d. Fear of side reactions									
	e. Wrong ideas about contraindications									
	f. Other									
(6) Lack of motivation	g. Postponed until another time									
	h. No faith in immunization									
	i. Rumors									
	j. Other									
Obstacles	k. Place of immunization too far									
	l. Time of immunization inconvenient									
	m. Vaccinator absent									
	n. Vaccine not available									
	o. Mother too busy									
	p. Family problem, including illness of mother									
	q. Child ill - not brought									
	r. Child ill - brought but not given immunization									
	s. Long waiting time									
t. Other										

**Figure 4. Cluster Form
Tetanus Toxoid Immunization of Women**

(1) Cluster number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____		(5) Mother's name								TOTAL		
										Card	Card plus History	
Woman number in cluster			1	2	3	4	5	6	7	8		
(6) Birth date of child												
Mother	(7) Immunization card	Yes/No										
	(8) TT 1	Date/+/0										
		Source										
	TT 2	Date/+/0										
		Source										
	TT 3	Date/+/0										
		Source										
	TT 4	Date/+/0										
		Source										
	TT 5	Date/+/0										
		Source										
	(9) Antenatal care	Yes/No										
(10) Other visits to health facility during last pregnancy	Yes/No											
(11) Delivery of baby	Home											
	HC/HOS											
	Other											
(12) Child protected against neonatal tetanus	Yes/No											

(13) Tally of households visited: _____

(14) Name of interviewer: _____

Signature: _____

KEY: Date/+/0:
Date = copy date of immunization from card, if available
+ = mother reports immunization was given
0 = immunization not given

Source:
HC = Health Centre
HOS = Hospital
OUT = Outreach
PRIV = Private

Figure 5
Household residents and Immunization card
Household number 1

Persons in household:

<u>Name</u>	<u>Sex</u>	<u>Birthdate</u>
Okal Mbaye	M	1949
Onwa Mbaye	F	1960
Mety Mbaye	F	1958
Bineta Mbaye	F	1982
Babi Mbaye	F	14/3/84
Ayo Mbaye	F	1/3/87
Atumane Mbaye	M	8/9/86
John Mbaye	M	1977

Immunization Card:

Health Centre Immunization Card				
Name	Ayo Mbaye			
Name of mother	Mety Mbaye			
Name of father	Okal Mbaye			
Male or Female	Female			
Birthdate of child	01 Day	03 Month	87 Year	
Name of village				
Vaccines	Date given			
	Day	Month	Year	
BCG	1	3	87	
DPT 1	10	5	87	
DPT 2	18	6	87	
DPT 3	20	8	87	
OPV 1	10	5	87	
OPV 2	18	6	87	
OPV 3	20	8	87	
Measles	5	1	88	
Mother	Tetanus 1	5	9	86
	Tetanus 2	10	1	87
	Tetanus 3			
	Tetanus 4			
	Tetanus 5			

Information obtained from interviewing the mothers of Ayo and Atumane Mbaye:

Both children had a visible BCG scar on their arm, and Ayo's mother said that all of Ayo's immunizations were obtained at the health centre. There was no immunization card available for Atumane, but her mother said that Atumane had received the BCG, DPT 1 and OPV 1 at the health centre. She did not receive the other immunizations because she (Atumane's mother) had fallen very sick at that time and could not take Atumane for immunization.

Figure 6
Household residents and Immunization card
Household number 2

Persons in household:

Name	Sex	Birthdate
Ljoma Kone	M	1955
Fati Kone	F	1965
Daba Kone	F	1/2/87
Biga Kone	F	9/1/85

Immunization Card:

Health Centre Immunization Card			
Name	Daba Kone		
Name of mother	Fati Kone		
Name of father	Ljoma Kone		
Male or Female	Female		
Birthdate of child	01 Day	02 Month	87 Year
Name of village			
Vaccines	Date given		
	Day	Month	Year
BCG	5	2	87
DPT 1	10	4	87
DPT 2			
DPT 3			
OPV 1	10	4	87
OPV 2			
OPV 3			
Measles			
Mother	Tetanus 1	8	9 86
	Tetanus 2		
	Tetanus 3		
	Tetanus 4		
	Tetanus 5		

Information obtained from interviewing the mother of Daba Kone:

Daba had a visible BCG scar on her arm. Although the DPT 2, DPT 3, OPV 2, OPV 3 and measles immunizations were not marked on the immunization card, Daba's mother said that she had received all those immunizations by outreach.

Figure 7
Household residents and immunization card
Household number 3

Persons in household:

<u>Name</u>	<u>Sex</u>	<u>Birthdate</u>
Omar Koffi	M	1960
Fatima Koffi	F	1965
Emma Koffi	F	1/6/87

Immunization Card:

Health Centre Immunization Card				
Name	Emma Koffi			
Name of mother	Fatima Koffi			
Name of father	Omar Koffi			
Male or Female	Female			
Birthdate of child	01 Day	06 Month	87 Year	
Name of village	Utaral			
Vaccines	Date given			
	Day	Month	Year	
BCG	1	6	87	
DPT 1	5	9	87	
DPT 2	10	10	87	
DPT 3	1	12	87	
OPV 1	5	9	87	
OPV 2	10	10	87	
OPV 3	5	9	87	
Measles				
Mother	Tetanus 1	2	2	87
	Tetanus 2	18	4	87
	Tetanus 3			
	Tetanus 4			
	Tetanus 5			

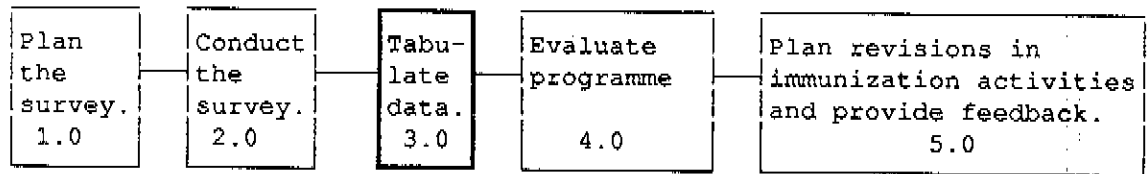
Information obtained from Interviewing Fatima Koffi:

Fatima Koffi received both Tetanus Toxoid immunizations at the health centre, received antenatal care, made several visits to the health centre during her last pregnancy, and the baby was delivered at home.

2.4 IMPLEMENT A CONTROL SYSTEM ON DATA COLLECTION.

During data collection the supervisor should observe and check that interviewers are collecting and recording data accurately, and that the forms are filled in completely. The forms must be checked by the supervisor before the interviewers leave so that they can be corrected, if needed. You will need to review every form to ensure that:

- o 30 clusters have been surveyed. To do this, you must look through the Cluster 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.
- o Seven children who are 12-23 months have been listed on each Cluster Form for Infant Immunization and each Cluster Form for Reasons for Immunization Failure.
- o Seven mothers of children who are 0-11 months have been listed on each Cluster Form for TT Immunization of Women.
- o There are no blank items on the forms.



3.0 TABULATE DATA.

Collected data is useless unless and until it is analyzed. Coverage evaluation information must be analyzed quickly in order to serve a useful purpose. The first step in analyzing the collected data is to complete the Cluster Form. The information on the Cluster Forms is then transferred to the Summary Forms.

3.1 COMPLETE THE CLUSTER FORMS

Interviewers collected the basic information needed for the survey, but there are some additional steps supervisors must take to complete the Cluster Forms.

3.1.1 Complete the Cluster Form for Infant Immunization

To complete this Cluster Form, the supervisor follows three steps: (1) checks that the immunizations recorded on the Cluster Form for Infant Immunization are valid and revises Item 12 if needed, (2) determines which children were fully immunized before one year of age (Item 13), and (3) completes the "Total" columns.

STEP 1: Check that immunizations are valid and revise Item 12:

"Valid" means that immunizations were given when the child was the appropriate age and, if the immunization is one of a series, that they were given after an appropriate interval of time. There are three situations that would cause an immunization to be considered not valid:

(1) If the immunization did not follow the immunization schedule:

For example, a second or third DPT or OPV immunization which is given less than 28 days after the preceding immunization should be considered invalid. Appropriate ages for immunizations and acceptable intervals vary from country to country and will also vary according to the vaccine. However, the following immunization schedule is the schedule recommended by WHO for childhood immunizations:

RECOMMENDED CHILDHOOD IMMUNIZATION SCHEDULE

BCG	---	As soon as possible after birth.
OPV	---	One dose at birth, (this being called Dose Zero). Dose 1 at 6 weeks of age, Doses 2 and 3 spaced at least four weeks apart.
DPT	---	Dose 1 at 6 weeks of age, Doses 2 and 3 spaced at least 4 weeks apart.
MEASLES	-	As soon as possible after 9 months of age.

NOTE: WHO recommends that one dose of OPV be given at birth in countries where polio is still a health problem. This is called Dose Zero. The child should still receive the three doses recommended at 6, 10 and 14 weeks of age. This survey, however, only counts doses 1, 2 and 3. It will not count dose zero.

(2) If the immunization is recorded "by history":

Immunizations recorded by a "+" are not considered valid because the dates of immunizations recorded by history cannot be confirmed. Therefore, it is impossible to determine whether the correct schedule was followed.

(3) If there is no visible BCG scar on the child's arm:

If a child received a BCG immunization, but no scar was visible, the immunization is considered not valid because it means the immunization was probably ineffective.

Circle all immunizations that are not valid according to the definitions given above. Then check that the "Fully/Partially/Not" immunized row on the Cluster Form (Item 12) is marked correctly. The interviewers completed this item in the field, but they were not asked to consider whether the immunizations were valid. At this point the supervisor must revise the determination of whether a child was fully, partially or not immunized, making sure that only valid immunizations are counted.

STEP 2: Determine which children were fully immunized before one year of age (Item 13)

Item 13 asks how many children were fully immunized before one year of age. By comparison, the category "fully immunized" in Item 12 tells you how many children were immunized under the age of two years.

To identify children that were fully immunized by their first birthday, consider only those children that were recorded as "fully immunized" in Item 12. You need to eliminate any valid immunizations that were given after the child was one year old. This can be easily done by looking at the birthdate of the child and comparing it to the date of immunization. Mark any valid immunization given to a child older than one year of age by drawing a triangle around the date. Then place a "Y" in Item 13 for each child who was fully immunized before the age of one year. Record a "N" in Item 13 for all other children.

NOTE: Immunizations given after a child's first birthday may still be "valid" and protect him from disease. These immunizations are not, however, included when evaluating how well a country has met its immunization coverage target.

STEP 3: Complete the "Total" column

While completing the "Total" columns on the Cluster Form for Infant Immunization remember that:

- o When calculating the "Total/Card" column, only count the number of valid immunizations that were verified by the presence of an immunization card (that is, for which a date was recorded).
- o When calculating the "Total/Card plus History" column, add together the immunizations that fall into the following three categories:
 - (1) valid immunizations verified by card,
 - (2) immunizations recorded by history (that is, a "+" was recorded), and
 - (3) immunizations that were recorded on an immunization card but were determined to be not valid.

3.1.2 Complete the Cluster Form for Reasons for Immunization Failure

To complete this cluster form, you will follow two steps: (1) revise Item 5 if needed; and (2) complete the "Total" column.

STEP 1: Revise Item 5

In the preceding step you checked to see if the immunizations recorded on the Cluster Form for Infant Immunization were valid and then, if necessary, revised Item 12 which stated whether a child was fully, partially or not immunized. In this step you must revise Item 5 on the Cluster Form for Reasons for Immunization Failure for those cases where a child's immunization status changed because one or more immunizations were determined to be not valid. In these cases, you will not record a reason for immunization failure on the Cluster Form.

STEP 2: Complete the "Total" column

When completing the "Total" column on the Cluster Form for Reasons for Immunization Failure, remember that:

- o Every child in the cluster must be marked on this form in Item 5.
- o If there are fewer than 7 children, it is possible that only those children who were not fully immunized were recorded. If this is so, it is likely that the reason given for immunization failure does not correspond to the correct child in the cluster. Check with the interviewer of that cluster and correct the form so that all seven children are correctly recorded.

3.1.3 Complete the Cluster Form for TT Immunization of Women

To complete this form, you will follow two steps: (1) complete Item 12, and (2) complete the "Total" columns.

STEP 1: Complete Item 12 on the Cluster Form

Item 12 on the Cluster Form for Tetanus Toxoid Immunization of Women asks whether the child was protected from neonatal tetanus. The child can only be protected at birth if the mother received the Tetanus Toxoid immunizations at appropriate intervals. Therefore, no immunizations recorded by history can be used because the date of immunization cannot be confirmed. To find out if the child was protected from neonatal tetanus, follow the process below:

- 1) Check how many valid doses of tetanus toxoid the mother received by reviewing the minimum interval between doses. Circle any doses that are not valid because they were not given according to the minimum interval schedule below, or because they were recorded with a "+".

<u>DOSES</u>	<u>MINIMUM INTERVAL</u>
TT1 and TT2	four weeks
TT2 and TT3	six months
TT3 and TT4	one year
TT4 and TT5	one year

- 2) Determine the exact period of protection after the last valid dose.

One dose	no protection
Two doses	15 days to 3 years protection
Three doses	15 days to 5 years protection
Four doses	15 days to 10 years protection
Five doses	lifelong protection

- 3) Determine whether the child was protected. The child is protected if he was born during the period of protection identified in step two. Put "Y" or "N" in Item 12 of the cluster form.

NOTE: Women who produce written documentation of having received three doses of DPT in childhood should be treated as having received TT1 and TT2. All three doses do not count because the minimum interval between DPT2 and DPT3 is 4 weeks. This is shorter than the recommended interval between TT2 and TT3: 6 months.

STEP 2: Complete the "Total" columns

While completing the "Total" column on the Cluster Form for Tetanus Toxoid Immunization of Women remember that:

- o When calculating the "Total/Card" column, only count the number of valid immunizations that were verified by the presence of an immunization card, (that is, for which a date was recorded).
- o When calculating the "Total/Card plus History" column, count:
 - (1) valid immunizations verified by card
 - (2) immunizations recorded by history (that is, a "+" was recorded)
 - (3) immunizations that were recorded on an immunization card but were determined to be not valid.

EXERCISE E: COMPLETING THE CLUSTER FORMS

In this exercise you will complete the Cluster Forms for Infant Immunization, for Reasons for Immunization Failure, and for Tetanus Toxoid Immunization of Women found on pages 43-45. Follow the guidelines for completing each Cluster Form.

Check your answers with a facilitator when you are finished with the exercise.

Figure 8. Cluster Form
Infant Immunization

(1) Cluster Number: <u>1</u> (2) Date: <u>7 March 1988</u> (3) Area: <u>Utaral</u> (4) Range of birth dates: From: <u>7 March 1986</u> Until: <u>7 March 1987</u>		(5) N A M E	Ayo Mbaye	Atumane Mbaye	Daba Kone	Muhammed Coli	Abo Mbakaie	Balla Diallo	Christopher Ofu	TOTAL		
										Card	Card plus history	
Child number in cluster			1	2	3	4	5	6	7	8		
(6) Birth date			1/3/87	2/4/86	1/2/87	2/8/86	12/2/86	14/1/87	1/1/87			
(7) Immunization Card	Yes/No		Y	N	Y	Y	Y	Y	Y			
(8) BCG	Date/+0		1/3/87	+	5/2/87	2/8/86	0	10/3/87	1/1/87			
	Scar: Yes/No		Y	Y	Y	N	N	Y	Y			
	Source		HC	HC	OUT	HOS		HOS	HC			
(9) DPT 1	Date/+0		10/5/87	+	10/4/87	10/11/86	2/3/87	10/3/87	0			
	Source		HC	HC	OUT	HC	HC	HC				
DPT 2	Date/+0		18/6/87	0	+	15/2/86	0	20/4/87	0			
	Source		HC		OUT	HC		HC				
DPT 3	Date/+0		20/8/87	0	+	0	0	1/5/87	0			
	Source		HC		OUT			HC				
(10) OPV 1	Date/+0		10/5/87	+	10/4/87	10/11/86	21/3/87	10/3/87	0			
	Source		HC	HC	OUT	HC	HC	HC				
OPV 2	Date/+0		18/6/87	0	+	15/12/86	0	20/4/87	0			
	Source		HC		OUT	HC		HC				
OPV 3	Date/+0		20/8/87	0	+	0	0	1/5/87	0			
	Source		HC		OUT			HC				
(11) Measles	Date/+0		5/1/88	0	+	1/0/87	2/2/87	0	0			
	Source		HC		OUT	HC	HC					
(12) Immunization Status	Not											
	Partially			X		X	X	X	X			
	Fully		X		X							
(13) Fully immunized before one year of age	Yes/No											

(14) Tally of households visited: |||| ||| ||| ||| ||| ||| |||

(15) Name of interviewer: A. Mutane

Signature: A. Mutane

KEY: Date/+0:
Date = copy date of immunization from card, if available
+ = mother reports immunization was given
0 = immunization not given

Source:
OUT = Outreach
HOS = Hospital
HC = Health Centre
PRIV = Private/non-government

Figure 10. Cluster Form
Tetanus Toxoid Immunization of Women

(1) Cluster number: <u> / </u> (2) Date: <u>7/3/88</u> (3) Area: <u>Utara</u> (4) Range of birth dates: From: <u>7/3/87</u> Until: <u>7/3/88</u>		(5) Mother's name	Fatima Koffi	Ljoma Kone	Lucy Musona	Enima Mbeya	Okol Lawamo	Mety Kone	Anna Mbabane	TOTAL		
										Card	Card plus History	
Woman number in cluster			1	2	3	4	5	6	7	8		
(6) Birth date of child			1/6/87	10/11/87	1/4/87	2/2/88	13/1/88	9/7/87	12/11/87			
Mother	(7) Immunization card	Yes/No	Y	Y	N	Y	Y	N	Y			
	(8) TT 1	Date/+0	2/2/85	10/1/83	+	4/1/85	1/3/84	0	1/5/84			
		Source	HC	HC	OUT	OUT	HC		HC			
	TT 2	Date/+0	18/4/87	18/5/83	0	10/6/85	5/6/84	0	9/11/84			
		Source	HC	HC		HC	HC		HC			
	TT 3	Date/+0	0	1/9/83	0	5/10/87	0	0	19/8/85			
		Source		HC		HC			HC			
	TT 4	Date/+0	0	3/12/84	0	0	0	0	14/10/86			
		Source		HC					HC			
	TT 5	Date/+0	0	12/8/85	0	0	0	0	0			
		Source		HC								
	(9) Antenatal care	Yes/No	Y	N	N	Y	Y	N	N			
(10) Other visits to health facility during last pregnancy	Yes/No	Y	N	Y	N	N	Y	Y				
(11) Delivery of baby	Home		Y	Y				Y				
	HC/HOS	Y			Y	Y						
	Other						Y					
(12) Child protected against neonatal tetanus	Yes/No											

(13) Tally of households visited: ### ## ## ## ## ## ## ##

(14) Name of interviewer: _____

Signature: _____

KEY: Date/+0:
Date = copy date of immunization from card, if available
+ = mother reports immunization was given
0 = immunization not given

Source:
HC = Health Centre
HOS = Hospital
OUT = Outreach
PRIV = Private

3.2 COMPLETE THE SUMMARY FORMS

To determine the number of people receiving valid immunizations in your survey of 30 clusters, you will need to transfer information from the Cluster Forms to a Summary Form. There are three types of Summary Forms:

- (1) the Summary Form for Infant Immunization;
- (2) the Summary Form for Reasons for Immunization Failure; and
- (3) the Summary Form for Tetanus Toxoid Immunization of Women.

Refer to these forms as you read the guidelines for completing each Summary Form below.

NOTE: The item numbers on the Summary Forms correspond to the item numbers on the Cluster Forms. Notice that not all items on the Cluster Form need to be transferred, and that the introductory information on the three forms is identical.

Introductory data on all three summary forms (Items 2-4)

- Item 2 Write in the period of time over which the survey was conducted. Begin with the date of the first household interview and finish with the date of the final interview.
- Item 3 Write the name of the geographic area in which the 30 clusters are located.
- Item 4 Write the age in months of the children you have evaluated, or of the children whose mothers you have evaluated. (For infant immunization coverage, the age group is 12-23 months; for TT immunization of women, 0-11 months.)

The Summary Form for Infant Immunization (pages 48-49)

- Item 6 Record the total number of infants in the cluster.
- Item 7 Record the total number of "YES" answers for immunization card. NOTE: You are not transferring the "NO" answers to the Summary Form.
- Item 8 Record the number of children that have BCG immunization confirmed by card. This number you get from the "Total/Card" column on the Cluster Form.

Record the number of children that have BCG immunization confirmed by card plus the number by history. This number you get from the "Total/Card plus History" column on the Cluster Form.

Record the number of children that have a BCG scar that was seen by the interviewer. This number is obtained from the "Total" column on the Cluster Form.

Count, for the whole cluster, and record the total number of times each source was indicated for BCG. Use the following figure to tally each time a source is indicated:

Health Centre	Hospital
Outreach	Private

After having tallied all sources for BCG, summarize the times each source was indicated.

- Items 9-11 Repeat the process described in step 8 for DPT, OPV, and Measles. However, when recording the total number of times a source was listed for OPV and DPT, total the sources for the three doses of each antigen together.
- Item 12 Record the number of Fully, Partially and Not immunized. These numbers are found at the bottom of the "Total" column on the cluster form.
- Item 13 Record the number of children in each cluster who were fully immunized before one year of age.
- Item 14 Record the number of households visited.

Complete the "Total" column on the Summary Form by adding all numbers in each row.

EXERCISE F: COMPLETING THE SUMMARY FORM FOR INFANT IMMUNIZATION

In this exercise you will record information on a Summary Form on pages 48-49 by following the guidelines above. Record the information from the Cluster Form on page 43 on the Summary Form. Information on clusters 2-30 has already been completed.

When you have completed this exercise go to the facilitator to check your answers.

Summary Form
Infant Immunization, page 2

Cluster Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL
(10) OPV 1 card	6	6	6	6	6	7	6	5	4	4	6	5	6	5	6	7	5	6	5	4	6	6	4	4	3	6	6	5	6	5	162
Card plus history	6	6	7	7	7	7	7	5	4	4	7	7	7	5	6	7	6	6	7	6	7	7	5	5	5	6	6	7	6	5	185
OPV 2 card	6	6	6	6	6	7	6	3	5	4	6	5	6	3	6	7	5	6	5	4	6	6	4	4	3	6	5	5	6	3	153
Card plus history	6	6	7	7	7	7	7	3	7	4	7	7	7	3	6	7	6	6	7	6	7	7	4	4	5	6	5	7	7	3	175
OPV 3 card	4	5	5	6	6	7	6	3	5	4	5	5	6	3	5	6	4	4	5	4	6	5	4	4	3	5	4	5	6	3	138
Card plus history	4	5	5	7	7	7	6	3	7	4	5	6	6	3	5	6	4	4	7	4	6	5	4	4	4	5	5	6	6	3	149
Source: HOS	0	0	4	0	4	0	4	0	0	0	4	6	0	0	0	6	0	0	5	4	0	4	2	3	0	0	2	3	0	2	49
HC	14	16	14	15	13	6	10	21	12	14	11	15	10	16	8	13	14	10	12	17	14	11	10	14	15	12	17	15	8	377	
OUT	3	1	1	6	0	14	1	0	0	1	0	5	1	1	0	3	2	5	0	13	1	0	0	0	0	1	3	0	3	1	69
PRIV	0	0	0	0	0	5	0	0	0	0	0	3	0	0	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	14
(11) Measles card	3	4	5	6	6	6	6	4	5	3	5	5	5	3	5	6	3	3	5	4	6	5	3	3	3	5	3	5	5	3	129
Card plus history	3	4	5	6	6	7	4	6	4	6	5	6	6	3	5	6	3	3	6	4	6	5	3	3	4	5	4	5	6	3	140
Source: HOS	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	0	0	9
HC	3	6	5	3	3	2	4	3	2	4	3	3	2	5	4	1	3	2	4	2	5	2	3	2	2	6	2	5	3	2	94
OUT	1	0	0	3	0	5	0	3	2	0	0	3	1	0	0	2	0	3	0	5	0	0	0	0	0	0	0	0	2	1	32
PRIV	0	0	0	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
(12) Not immunized	1	0	0	0	0	0	0	0	1	0	1	1	1	0	0	1	0	1	0	1	0	0	0	2	3	0	0	1	1	1	16
Partially immunized	3	4	2	1	1	2	3	3	3	2	1	2	3	2	1	4	3	2	2	2	2	2	4	3	2	2	4	1	2	3	72
Fully immunized	3	3	5	6	6	6	6	4	5	3	5	6	5	3	5	6	3	3	5	4	6	5	3	2	3	5	3	5	5	3	127
(13) Fully immunized before one year of age	5	1	4	5	4	1	2	4	5	5	4	4	5	4	5	2	4	5	3	4	4	4	3	5	3	3	3	2	4	6	110
(14) Households visited	32	27	33	40	42	38	29	40	45	31	33	41	28	37	30	29	32	35	28	31	35	43	46	40	30	31	29	30	25	1028	

The Summary Form for Reasons for Immunization Failure
(pages 51-52)

Item 6. Transfer the information from the Total column on the Cluster Forms to the corresponding column on the Summary Form. The reasons are listed in the same order on the Summary Form as found on the Cluster Form. Then calculate the subtotal for all clusters in the category "Lack of Information".

Repeat the process described in step 5 for the categories "Lack of motivation" and "Obstacles".

Complete the "Subtotal" and "Total" columns on the Summary Form by adding all numbers in each row.

EXERCISE G: COMPLETING THE SUMMARY FORM FOR REASONS FOR IMMUNIZATION FAILURE

In this exercise you will record information on a Summary Form for Reasons for Immunization Failure (pages 51-52). Obtain the information you need to complete Cluster 1 from the Cluster Form for Reasons for Immunization Failure on page 44. Information from Clusters 2-30 has been filled in for you.

Check your answer with the answer sheet and discuss any differences you have with a facilitator.

Figure 12. Summary Form
Reasons for Immunization Failure

(2) Date of first interview: 7/3/88
 Date of last interview: 2/3/88
 (3) Area: Coastal Region
 (4) Age group evaluated: 12 - 23 months

Cluster Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL
a. Unaware of need for immunization	1	0	1	0	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0	1	1	0	2	2	0	0	1	0	0	0	14
b. Unaware of need to return for 2nd or 3rd dose	1	0	0	0	0	0	0	2	2	0	0	0	0	2	0	0	3	1	0	0	0	0	0	0	0	0	2	0	1	2	16
c. Place and/or time of immunization unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
d. Fear of side reactions	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	0	7
e. Wrong ideas about contraindications	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	0	1	0	0	0	0	0	1	0	0	1	0	8
f. Other	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	3
SUBTOTAL	2	2	1	0	0	0	0	2	2	3	1	1	0	4	2	0	3	2	1	3	1	1	3	1	3	1	3	1	3	2	49
g. Postponed until another time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
h. No faith in immunizations	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	8
i. Rumors	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	4
j. Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
SUBTOTAL	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0	1	3	0	1	1	0	1	1	14

Summary Form
Reasons for Immunization Failure, page 2

Cluster number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL	
k. Place of immunization too far to go	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
l. Time of immunization inconvenient	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	4
m. Vaccinator absent	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
n. Vaccine not available	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	3
o. Mother too busy	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
p. Family problem, including illness of mother	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
q. Child ill - not brought	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
r. Child ill - brought but not given	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	5
s. Long waiting time	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
t. Other	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	5
SUBTOTAL	2	1	1	1	1	1	0	1	0	1	1	2	0	0	0	0	1	2	1	0	1	1	0	1	2	0	0	2	0	0	26	
TOTAL	4	4	2	1	1	1	0	3	4	4	2	3	4	2	1	4	4	4	2	3	2	2	4	5	5	2	4	3	4	89		

Obstacles

The Summary Form for Tetanus Toxoid Immunization of Women
(page 55-56)

- Item 6 Record the total number of mothers in the cluster.
- Item 7 Record the total number of "YES" answers for immunization card.
NOTE: You are not transferring the "NO" answers to the Summary Form.
- Item 8 Record the total number of women that have the TT1 immunization confirmed by card. You will get this number from the box on the left hand side in the "Total/Card" column on the Cluster Form.

Record the total number of women that have the TT1 immunization confirmed by card plus the number by history. This number you will get from the box on the right hand side in the "Total/Card plus History" column on the Cluster Form.

Repeat steps 4 and 5 above for TT2, TT3, TT4 and TT5.

Count, for the whole cluster, and record the total number of times each source was indicated for TT1, TT2, TT3, TT4 and TT5 together. For this purpose the following figure can be used:

Health Centre	Hospital
Outreach	Private

Each time a source is indicated, tally in the appropriate box of the figure. Total all sources for TT1, TT2, TT3, TT4 and TT5.

- Item 9 Record the total number of "YES" answers for antenatal visits.
NOTE: You are not transferring the "NO" answers to the Summary Form.
- Item 10 Record the total number of "YES" answers for other visits to health facilities during last pregnancy.
NOTE: You are not transferring the "NO" answers to the Summary Form.
- Item 11 Record the total number of "YES" answers for delivery of baby at home, at health centre and at other locations.
- Item 12 Record the total number of "YES" answers for children aged 0-11 months who were protected against neonatal tetanus.
NOTE: You are not transferring the "NO" answers to the Summary Form.
- Item 13 Record the number of households visited.

Complete the "Total" column on the Summary Form by adding all numbers in each row.

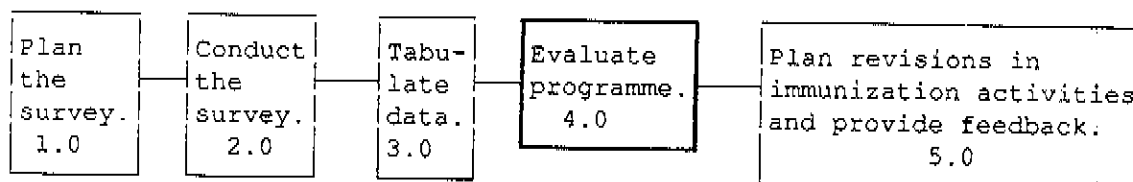
EXERCISE H: COMPLETING THE SUMMARY FORM FOR TETANUS TOXOID
IMMUNIZATION OF WOMEN

In this exercise you will record information on a Summary Form for TT Immunization of Women, on page 55-56. You will obtain this information from the Cluster Form for TT Immunization of Women, page 45. The information for clusters 2-30 has already been completed.

See the facilitator when you are ready to check your answers with the answer sheet.

Summary Form
Tetanus Toxoid Immunization of Women, page 2

Cluster Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL
(9) Antenatal care/Yes	5	5	4	4	5	3	4	4	4	4	5	3	5	4	4	5	5	3	3	4	4	6	3	5	5	4	4	3	3	5	124
(10) Other visits to health facilities during last pregnancy	3	5	3			3	5	3	3	3	3	4	5	3	3	5	3	4	5	3	3	3	4	3	5	3	3	5	4	3	109
(11) Delivery of baby:																															
Home	4	3	4	4	3	5	4	4	4	4	4	3	3	4	4	3	4	3	5	4	4	3	3	4	3	4	4	5	3	4	112
HC/HOS	3	4	3	3	3	2	3	3	3	3	3	3	4	3	3	4	3	3	2	3	3	3	3	3	4	3	3	2	3	3	91
Other	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	7
(12) Children protected against neonatal tetanus	3	4	2	3	3	1	3	2	3	3	3	2	3	3	2	4	3	2	1	2	3	3	2	3	4	2	3	1	2	3	79
(13) Households visited	4	1	50	39	41	37	33	38	40	38	31	35	47	41	33	39	45	53	43	44	55	38	43	41	51	40	36	34	59	51	1251



4.0 EVALUATE THE PROGRAMME

The purpose of collecting and analyzing immunization data is to evaluate the extent to which immunization programme coverage objectives are being achieved. Is the target age group being reached? Why are mothers not bringing their children for immunization? Are women being immunized with TT? These are some of the questions that any immunization programme must be able to answer. A coverage evaluation survey provides information that can be used to answer these questions.

4.1 EVALUATE INFANT IMMUNIZATION.

Completion of the Evaluation Form for Infant Immunization Coverage (see page 60) will help evaluate the extent to which the immunization target age group has been immunized. Follow the guidelines below to complete the Evaluation Form.

1. Complete the introductory data on the top of the Evaluation Form for Infant Immunization Coverage.
2. Transfer the data from the "Total" column on the Summary Form, to the appropriate "Number" columns on the Coverage Evaluation Form.
3. Calculate the percentage coverage for each immunization and for BCG scar. This can be done by using the formula below.

Number of children who received the immunization or had visible BCG scar		Percentage coverage
_____	x 100 =	for the
Total number of children in the survey		immunization

Example: The number of children having DPT 1 immunization confirmed by card is 162. The total number of children in the survey is 215.

$$\frac{162}{215} \times 100 = 75\%$$

To get the percentage for the "Source" of the immunization, first add up the total number of doses of each antigen given by card plus history. Then use the following formula:

Number of immunizations from the source				
_____	x 100	=	Percentage given by	
Total number of doses of the antigen given by card plus history			this source	

Example: The total number of doses of OPV 1, OPV 2 and OPV 3 given confirmed by card and history is 509. The source "HC" was indicated 377 times.

$$\frac{377}{509} \times 100 = 74\%$$

4. Calculate the percentage for "Fully", "Partially" and "Not" immunized, and for "Fully immunized before age one" (Items 12 and 13) by using the formula below:

Number of children with the immunization status				Percentage with
_____	x 100	=	the immunization	
Total number of children in the survey			status	

5. Calculate the average number of households per cluster by dividing the total number of households by 30.

EXERCISE I: COMPLETING THE EVALUATION FORM FOR INFANT IMMUNIZATION

1. Complete the first six and the last six lines of the Evaluation Form on page 60. Refer to the completed Cluster Summary Form on pages 48-49, and follow the guidelines above. The rest of the form has been completed for you.
2. Examine the completed evaluation form. How would you judge the immunization performance that you have evaluated?
 - a. Were a large percentage of infants "fully immunized" at the time of the survey? Were a large percentage of infants "fully immunized before age one"? Compare the numbers. What does this tell you about the immunization programme?
 - b. Which antigen had the highest coverage?
 - c. Which source was used most frequently?
 - d. Was there a big difference between immunization coverage calculated "by card" and coverage calculated "by card plus history"?
 - e. Do the programme have a high drop out rate?
 - f. What are the implications of the answers to these questions for the future of this immunization programme?

See the facilitator when you are ready to check your answers with the answer sheet.

Figure 14. Evaluation Form
Infant Immunization

Area: Coastal Region
 Date of first interview: 7/3/88
 Number in survey: 215

Age group evaluated: 12-23 months
 Date of last interview: 22/3/88

	TOTAL CARD		TOTAL CARD PLUS HISTORY	
	Number	Percentage	Number	Percentage
BCG	_____	_____	_____	_____
BCG scar	_____	_____	_____	_____
Source: HOS				
HC				
Out				
Priv				
DPT 1	<u>162</u>	<u>75</u>	<u>185</u>	<u>86</u>
DPT 2	<u>153</u>	<u>71</u>	<u>175</u>	<u>81</u>
DPT 3	<u>138</u>	<u>64</u>	<u>148</u>	<u>69</u>
Source: HOS			<u>49</u>	<u>10</u>
HC			<u>376</u>	<u>74</u>
Out			<u>69</u>	<u>14</u>
Priv			<u>14</u>	<u>3</u>
OPV 1	<u>162</u>	<u>75</u>	<u>185</u>	<u>86</u>
OPV 2	<u>153</u>	<u>71</u>	<u>175</u>	<u>81</u>
OPV 3	<u>138</u>	<u>64</u>	<u>149</u>	<u>69</u>
Source: HOS			<u>49</u>	<u>10</u>
HC			<u>377</u>	<u>74</u>
Out			<u>69</u>	<u>14</u>
Priv			<u>14</u>	<u>3</u>
Measles	<u>129</u>	<u>60</u>	<u>140</u>	<u>65</u>
Source: HOS			<u>9</u>	<u>6</u>
HC			<u>94</u>	<u>67</u>
Out			<u>32</u>	<u>23</u>
Priv			<u>5</u>	<u>4</u>
Not immunized	_____	_____		
Partially immunized	_____	_____		
Fully immunized	_____	_____		
Fully immunized before one year of age	_____	_____		
Total number of households: _____				
Average number of households per cluster: _____				

4.2 EVALUATE THE REASONS FOR IMMUNIZATION FAILURE.

The infant immunization coverage data should be evaluated together with the data for reasons for immunization failure. If your coverage figures are high, there will be very little information on reasons for immunization failure. If your coverage figures are low, the Evaluation Form for Reasons for Immunization Failure (see page 63) will provide useful information about why the mothers did not bring their children for immunization. This information will enable you to take necessary action to improve your programme. The guidelines for completing the Evaluation Form for Reasons for Immunization Failure follow:

1. Complete the introductory data on the top of the form.
2. Transfer the data from the "Total" column on the Summary Form to the "Total" column on the Evaluation Form.
3. Complete the "Partially/Not immunized" total line by adding the numbers in the "Total" column on the Evaluation Form. Then compare this figure with the figure in the "Total" column on page 2 of the Summary Form. The numbers should be the same. If they are not the same, check to make sure you accurately transferred the information to the Evaluation Form and that the total on the Summary Form was calculated correctly.
4. Calculate the percentage for each line. This can be done by using the formula provided below. (Note: The number of children not fully immunized is the sum of the number partially immunized and the number not immunized.)

Number of children with a given reason for failure					Percent children with this reason for failure
_____	x	100	=		
Total number of children not fully immunized					

Example: A total number of 88 children were not fully immunized. Out of these 14 gave as reason for not bringing the child for immunization "unaware of need for immunization".

$$\frac{14}{88} \times 100 = 16\%$$

EXERCISE J: COMPLETING THE EVALUATION FORM FOR REASONS FOR IMMUNIZATION FAILURE

1. Complete the first three lines of the Evaluation Form for Reasons for Immunization Failure on page 63. Refer to the completed Cluster Summary Form on pages 48-49 and follow the guidelines listed above. The rest of the form has been completed for you.

2. Examine the completed evaluation form. How would you judge the reasons for immunization failure that you have evaluated?
 - a. What is the most common reason that children are not immunized?

 - b. Is the major problem lack of information, lack of motivation, or the presence of obstacles?

 - c. Are there actions that you and other health workers could take that would eliminate the reasons for immunization failure?

 - d. What are the implications of the answers to these questions for the future of this immunization programme?

See the facilitator when you are ready to check your answers with the answer sheet.

**Figure 15. Evaluation Form
Reasons for Immunization Failure**

Area: Coastal Region
Date of first interview: 7/3/88

Age group evaluated: 12-23 mos.
Date of last interview: 22/3/88

	TOTAL	PERCENTAGE
Partially/not immunized		
Lack of information		
a. Unaware of need for immunization		
b. Unaware of need to return for 2nd and 3rd dose		
c. Place and/or time of immunization unknown	<u>1</u>	<u>1</u>
d. Fear of side reactions	<u>7</u>	<u>8</u>
e. Wrong ideas about contraindications	<u>8</u>	<u>9</u>
f. Other:	<u>3</u>	<u>3</u>
Subtotal	<u>49</u>	<u>55</u>
Lack of motivation		
g. Postponed until another time	<u>1</u>	<u>1</u>
h. No faith in immunization	<u>8</u>	<u>9</u>
i. Rumors	<u>4</u>	<u>4</u>
j. Other:	<u>1</u>	<u>1</u>
Subtotal	<u>14</u>	<u>16</u>
Obstacles		
k. Place of immunization too far to go	<u>0</u>	<u>0</u>
l. Time of immunization inconvenient	<u>4</u>	<u>4</u>
m. Vaccinator absent	<u>1</u>	<u>1</u>
n. Vaccine not available	<u>3</u>	<u>3</u>
o. Mother too busy	<u>2</u>	<u>2</u>
p. Family problem, including illness of mother	<u>2</u>	<u>2</u>
q. Child ill - not brought	<u>2</u>	<u>2</u>
r. Child ill - brought but not given immunization	<u>5</u>	<u>6</u>
s. Long waiting time	<u>2</u>	<u>2</u>
t. Other:	<u>5</u>	<u>6</u>
Subtotal	<u>26</u>	<u>29</u>

4.3 EVALUATE TETANUS TOXOID IMMUNIZATION OF WOMEN.

Completing the Evaluation Form for Tetanus Toxoid Immunization of Women (see page 66) will summarize information about the immunization coverage and also the Maternal and Child Health programme. The guidelines below describe how to complete this form.

1. Complete the introductory data on the top of the Evaluation Form.
2. Transfer data from the "Total" column on the Summary Form to the appropriate "Number" columns on the Evaluation Form.
3. Calculate the percentage for each immunization or service. This can be done by using the formula provided below:

Number of mothers who received the immunization or service		Percentage coverage
_____	x 100 =	for the immunization
Total number of mothers in the survey		or service

Example: The number of mothers who responded "Yes" to the question about antenatal care is 124. The total number of mothers in the survey is 210.

$$\frac{124}{210} \times 100 = 59\%$$

To calculate the percentage for "Source", use the following formula:

Number of TT immunizations given by this source		Percent of TT
_____	x 100 =	immunizations given
Total number of doses of TT1 TT2, TT3, TT4 and TT5 given by card plus history		by this source

Example: The source "HC" was indicated 234 times. The number of times TT1, TT2, TT3, TT4 and TT5 were given confirmed by card and history was 264.

$$\frac{234}{264} \times 100 = 89\%$$

EXERCISE K: COMPLETING THE EVALUATION FORM FOR TETANUS TOXOID
IMMUNIZATION OF WOMEN

1. Complete the last six lines of the Evaluation Form for TT Immunization of Women on page 66. Refer to the completed Summary Form on page 55-56 and follow the guidelines listed above. The rest of the form has been completed for you.

2. Examine the completed evaluation form. How would you judge the immunization performance that you have evaluated?

- a. What percentage of children were protected against neonatal tetanus at birth?
- b. If there is a high percentage of mothers receiving antenatal care, yet you have low TT coverage, what does this tell you about your immunization programme?
- c. Where was the most common place of delivery?
- d. Had a large percentage of mothers received at least two doses of TT?
- e. Which source was used most frequently?
- f. What are the implications of the answers to these questions for the future of this immunization programme?

See the facilitator when you are ready to check your answers with the answer sheet.

When everyone is ready, there will be a group discussion about your judgments of the performance of this immunization programme. To prepare for the discussion, review your answers to the questions on pages 59, 62 and 65.

**Figure 16. Evaluation Form
Tetanus Toxoid Immunization of Women**

Area: Coastal Region
 Date of first interview: 7/3/88
 Date of last interview: 22/3/88

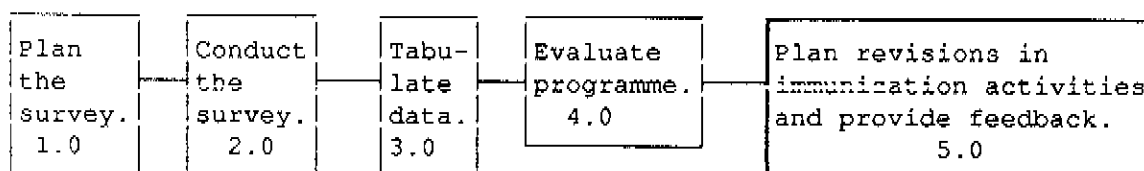
Age group of children whose
 mothers are to be evaluated: 0-11 months
 Number of mothers in survey: 210

	TOTAL CARD		TOTAL CARD PLUS HISTORY	
	Number	Percentage	Number	Percentage
TT 1	<u>102</u>	<u>49</u>	<u>139</u>	<u>66</u>
TT 2	<u>93</u>	<u>44</u>	<u>93</u>	<u>44</u>
TT 3	<u>32</u>	<u>15</u>	<u>32</u>	<u>15</u>
TT 4	<u>11</u>	<u>5</u>	<u>11</u>	<u>5</u>
TT 5	<u>4</u>	<u>2</u>	<u>4</u>	<u>2</u>
Source: HOS			<u>0</u>	<u>0</u>
HC			<u>249</u>	<u>89</u>
OUT			<u>30</u>	<u>11</u>
PRIV			<u>0</u>	<u>0</u>
Antenatal care			<u>124</u>	<u>59</u>
Other visits to health facilities			<u>109</u>	<u>52</u>
Delivery of baby at:				
Home			_____	_____
HC/HOS			_____	_____
Other			_____	_____
Children protected against neonatal tetanus			_____	_____
Total number of households	_____			
Average number of households per cluster:	_____			

EXERCISE 1: CONDUCT AN IMMUNIZATION COVERAGE SURVEY

This course will include an actual coverage survey in the area where the course is being held. You will interview mothers, using the survey forms in this module. Your facilitator will make sure that you are prepared to conduct the interviews.

After conducting the interviews, you will have a chance to participate in analysis of the survey results.



5.0 PLAN REVISIONS IN IMMUNIZATION ACTIVITIES AND PROVIDE FEEDBACK.

Evaluation not only tells you whether your immunization coverage is high or low. It also tells you which components of the immunization programme need to be improved. The next step is to figure out how to improve the programme, and to inform others of the survey results and any changes that are made.

For example, if immunization coverage in your health area was only 30%, you would use the evaluation data to determine the reasons. If you found that staff were not immunizing children and mothers at every possible opportunity, you could inform them that the new immunization policy is to immunize at every opportunity rather than only on immunization days, and monitor their performance to ensure that this was done. If you found that health centre staff were not following the correct immunization schedule, you might retrain them. If very few children had immunization cards, you could obtain additional cards so that adequate supplies were available. If very few infants were protected from neonatal tetanus yet the measles coverage was quite high, you would know that mothers were not getting immunized with TT when they brought their children to the health centre. A solution to this problem would be to retrain your health workers about TT immunization of women, and to more closely supervise this aspect of the programme.

It is important to inform others of the survey results and any changes planned for the programme. This includes health centre workers, other providers in the area, and senior health officials. This feedback should be provided within one month, and is most effective if provided through meetings or newsletters. Feedback is especially valuable because it helps make health centre staff feel that they are an important part of the immunization programme, thereby increasing their motivation to work hard.

GLOSSARY

Cluster	A small group that is part of a population that is being surveyed; for the purposes of evaluating immunization coverage, a cluster is defined as 7 or more children in the age range being evaluated.
Coverage evaluation survey	A survey of a small number of individuals to determine their immunization status. When done correctly, results can be considered representative of a much larger area (i.e., population) from which the individuals were selected.
EPI cluster sampling technique	A survey done in 30 systematically selected clusters of 7 or more children to estimate the immunization coverage of all the children that live in the area (i.e. population) being surveyed.
Immunization coverage	Proportion of individuals in the target population who are immunized.
Immunization coverage objective	Proportion of individuals in the target population who are to be immunized with specific vaccines in a given time period.
Morbidity	Sickness.
Mortality	Death.
Random number	A number selected by chance.
Target population	Group of individuals who are included in the immunization programme based on their age and area in which they live.

ANNEX I

HOW TO USE A RANDOM NUMBER TABLE

Choosing a random number is an important step in a coverage survey because it is the only way to ensure that there is no unconscious bias in the selection of houses and individuals to be interviewed (see page 6). There are several ways to select a random number, but using a random number table is one common method. This annex describes how to use a random number table. On the following page is a random number table that you may use when conducting a survey.

- Step 1 Choose a direction (right, left, up or down) in which you will read the numbers from the table.
- Step 2 Select a starting point by using one of the following methods:
- a. Using a currency note, select a single digit random number between 0 and 9 to identify a column. Select a two-digit random number between 01 and 25 to identify a row. (NOTE: The numbers 01-09 each count as two-digit numbers.) The five-digit number in the table that is at the intersection of the column and row you have selected is the starting point.
 - b. Close your eyes, and touch the random number table with a pointed object. Open your eyes. The digit closest to the point where you touched the table is the starting point.
- Step 3 Read the number of digits required (determined by the sampling interval) in the direction chosen in step 1. Because each individual digit in the table is random, the sequence(s) of digits can be used across spaces between the five-digit numbers. The number you end up with is your random number.

For example, let's say you decided to read numbers to the right, and by using method b in step 2 you identified your starting point as the number 7 in row 01, column 8 (see the random number table on page 71). If your sampling interval had four digits, then your random number would be "7813". The numbers 1 and 3 come from row 01, column 9.

NOTE: Remember that your random number must be equal to or smaller than your sampling interval. If it is not, then you must select another random number.

TABLE OF RANDOM NUMBERS

	<u>Column</u>									
	0	1	2	3	4	5	6	7	8	9
<u>Row</u>										
01	44689	54994	14911	62414	78085	18910	39772	00017	01178	13563
02	56811	20730	65177	89748	84459	06043	72385	84402	14200	93511
03	56412	15949	73584	59593	46841	18463	06845	07974	63016	30136
04	04576	04739	79884	49252	06132	96840	41028	85689	51396	54599
05	81564	50271	88625	89193	97979	96982	37730	63963	72478	08333
06	38926	89980	54322	63699	18475	91018	13286	06243	71666	02529
07	97132	51838	31847	30237	68016	41288	57395	51333	36202	89595
08	55618	40873	60069	94816	02205	26176	97712	85777	36870	89633
09	10287	07237	95759	44055	26247	48886	81309	15868	95587	41042
10	19420	10916	03096	67942	94577	81085	54619	50538	07305	61411
11	19131	29434	31739	94717	14453	40565	83631	87159	81073	69904
12	54092	38575	58042	98087	04520	73553	38448	00982	07557	78757
13	03268	12734	19706	86182	81681	03026	51892	85384	90730	01614
14	49655	98461	04291	28133	33212	78497	87176	99490	64457	68355
15	35948	59176	34140	34788	16403	28186	18121	04584	66607	99740
16	59327	46487	63348	84466	14499	56627	25399	00394	57966	07036
17	80425	01071	66643	49957	26089	24045	01807	41623	63599	10666
18	87190	03835	32110	43505	40826	50931	03656	85049	56774	94075
19	08610	63708	55971	31543	10283	37737	48744	43042	42796	01853
20	25461	08322	26316	22349	84347	40611	49930	80833	19803	15878
21	30372	72054	98586	94559	59237	31180	89565	61427	25626	47515
22	12899	24245	36391	55611	01626	09836	33366	98272	21570	16498
23	97374	28121	40007	75107	13590	51321	73990	83518	45569	98357
24	23764	31267	88976	84872	53035	19542	79593	32987	08248	17390
25	81881	24337	18893	66195	22709	79534	87746	26584	53251	03096

ANNEX II

COMPUTER PROGRAMMES FOR ANALYSIS OF
EPI IMMUNIZATION COVERAGE SURVEYS

EPI/WHO has developed several computer programmes which have been designed to facilitate the analysis of data collected in immunization coverage surveys. COSAS (Coverage Survey Analysis System) is used to analyse data relating to infant immunization coverage, and COSAS-TT is used to analyse survey data relating to Tetanus Toxoid coverage in women of childbearing age.

Data are entered in COSAS and COSAS-TT on a computer data entry screen which resembles an individual immunization record. From those data the programmes automatically generate a number of summary tables and graphs relating, for example, to:

- o vaccine coverage (by card, or by card OR history)
- o drop out rates
- o immunization age profiles (the distribution of age at which doses of vaccines were administered to the children surveyed)
- o immunization data interval profiles: the distribution of time intervals between successive doses in the DPT, polio, and TT vaccines.
- o immunization date profiles: the distribution of calendar dates on which doses of vaccine were administered

Users may easily perform further analyses (line listings, frequency distributions, cross-tables, and graphs) according to their individual and programme needs. These may also be converted to formats used by LOTUS-123 or EPIINFO.

A set of statistical utilities is also included and can be run either from within COSAS and COSAS-TT or as a stand-alone module called COSTAT. COSTAT includes arithmetic and statistical epidemiologic calculators, a pop-up perpetual calendar, and programmes which:

- o automate the process of selecting cluster sites for cluster surveys
- o calculate sample sizes needed for simple random surveys

- o calculate confidence intervals for results of simple random cluster surveys, or groups of cluster surveys
- o calculate vaccine efficiency for 1, 2, or 3 dose vaccines
- o perform calculations which show the relationship between vaccine efficiency (VE), the proportion of a population which is vaccinated (PPV), and the percentage of cases occurring among the vaccinated (PCV)

In order to run the programme, the following are required:

1. An IBM-XT, AT or compatible microcomputer equipped with a hard disk drive and preferably 512-640 kilobytes of random access memory;
2. At least one person who is familiar with DBASE-III/IV and DOS (Disk Operating System) as they run on IBM compatible microcomputers as well as with the EPI coverage survey methodology;
3. The COSAS, COSAS-TT, and COSTAT diskettes (no additional commercial software is needed). The diskettes and User's Guide are available from the EPI units in Geneva and in the WHO regional offices.

**Cluster Form
Infant Immunization**

(1) Cluster Number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____		(5) N A M E									TOTAL	
											Card	Card plus history
Child number in cluster			1	2	3	4	5	6	7	8		
(6) Birth date												
(7) Immunization Card	Yes/No											
(8) BCG	Date/+/0											
	Scar: Yes/No											
	Source											
(9) DPT 1	Date/+/0											
	Source											
DPT 2	Date/+/0											
	Source											
DPT 3	Date/+/0											
	Source											
(10) OPV 1	Date/+/0											
	Source											
OPV 2	Date/+/0											
	Source											
OPV 3	Date/+/0											
	Source											
(11) Measles	Date/+/0											
	Source											
(12) Immunization Status	Not											
	Partially											
	Fully											
(13) Fully immunized before one year of age	Yes/No											

(14) Tally of households visited: _____

(15) Name of interviewer: _____

Signature: _____

<p>KEY: Date/+/0: Date = copy date of immunization from card, if available + = mother reports immunization was given 0 = immunization not given</p>	<p>Source: OUT = Outreach HOS = Hospital HC = Health Centre PRIV = Private/non-government</p>
--	--

Cluster Form Tetanus Toxoid Immunization of Women

(1) Cluster number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____		(5)	Mother's name								TOTAL	
											Card	Card plus History
Woman number in cluster			1	2	3	4	5	6	7	8		
(6) Birth date of child												
Mother	(7) Immunization card	Yes/No										
	(8) TT 1	Date/+/0										
		Source										
	TT 2	Date/+/0										
		Source										
	TT 3	Date/+/0										
		Source										
	TT 4	Date/+/0										
		Source										
	TT 5	Date/+/0										
		Source										
	(9) Antenatal care	Yes/No										
(10) Other visits to health facility during last pregnancy	Yes/No											
(11) Delivery of baby	Home											
	HC/HOS											
	Other											
(12) Child protected against neonatal tetanus	Yes/No											

(13) Tally of households visited: _____

(14) Name of interviewer: _____

Signature: _____

KEY: Date/+/0: Date = copy date of immunization from card, if available + = mother reports immunization was given 0 = immunization not given	Source: HC = Health Centre HOS = Hospital OUT = Outreach PRIV = Private
--	--

Summary Form
Reasons for Immunization Failure, page 2

Cluster number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL		
k. Place of immunization too far to go																																	
l. Time of immunization inconvenient																																	
m. Vaccinator absent																																	
n. Vaccine not available																																	
o. Mother too busy																																	
p. Family problem, including illness of mother																																	
q. Child ill - not brought																																	
r. Child ill - brought but not given																																	
s. Long waiting time																																	
t. Other																																	
SUBTOTAL																																	
TOTAL																																	

Obstacles

EVALUATION FORM
INFANT IMMUNIZATION

Area: _____

Age group evaluated: _____

Date of first interview: _____

Date of last interview: _____

Number in survey: _____

	TOTAL CARD		TOTAL CARD PLUS HISTORY	
	Number	Percentage	Number	Percentage
BCG	_____	_____	_____	_____
BCG scar	_____	_____	_____	_____
Source: HOS				
HC	_____	_____	_____	_____
Out	_____	_____	_____	_____
Priv	_____	_____	_____	_____
DPT 1	_____	_____	_____	_____
DPT 2	_____	_____	_____	_____
DPT 3	_____	_____	_____	_____
Source: HOS				
HC	_____	_____	_____	_____
Out	_____	_____	_____	_____
Priv	_____	_____	_____	_____
OPV 1	_____	_____	_____	_____
OPV 2	_____	_____	_____	_____
OPV 3	_____	_____	_____	_____
Source: HOS				
HC	_____	_____	_____	_____
Out	_____	_____	_____	_____
Priv	_____	_____	_____	_____
Measles	_____	_____	_____	_____
Source: HOS				
HC	_____	_____	_____	_____
Out	_____	_____	_____	_____
Priv	_____	_____	_____	_____
Not immunized	_____	_____		
Partially immunized	_____	_____		
Fully immunized	_____	_____		
Fully immunized before one year of age	_____	_____		

Total number of households: _____

Average number of households
per cluster: _____

EVALUATION FORM
REASONS FOR IMMUNIZATION FAILURE

Area: _____

Age group evaluated: _____

Date of first interview: _____

Date of last interview: _____

	TOTAL	PERCENTAGE
Partially/not immunized	_____	_____
Lack of information		
a. Unaware of need for immunization	_____	_____
b. Unaware of need to return for 2nd and 3rd dose	_____	_____
c. Place and/or time of immunization unknown	_____	_____
d. Fear of side reactions	_____	_____
e. Wrong ideas about contraindications	_____	_____
f. Other:	_____	_____
Subtotal	_____	_____
Lack of motivation		
g. Postponed until another time	_____	_____
h. No faith in immunization	_____	_____
i. Rumors	_____	_____
j. Other:	_____	_____
Subtotal	_____	_____
Obstacles		
k. Place of immunization too far to go	_____	_____
l. Time of immunization inconvenient	_____	_____
m. Vaccinator absent	_____	_____
n. Vaccine not available	_____	_____
o. Mother too busy	_____	_____
p. Family problem, including illness of mother	_____	_____
q. Child ill - not brought	_____	_____
r. Child ill - brought but not given immunization	_____	_____
s. Long waiting time	_____	_____
t. Other:	_____	_____
Subtotal	_____	_____

**EVALUATION FORM
TETANUS TOXOID IMMUNIZATION OF WOMEN**

Area: _____

Age group of children whose

Date of first interview: _____

mothers are to be evaluated: _____

Date of last interview: _____

Number of mothers in survey: _____

	TOTAL CARD		TOTAL CARD PLUS HISTORY	
	Number	Percentage	Number	Percentage
TT 1	_____	_____	_____	_____
TT 2	_____	_____	_____	_____
TT 3	_____	_____	_____	_____
TT 4	_____	_____	_____	_____
TT 5	_____	_____	_____	_____
Source: HOS			_____	_____
HC			_____	_____
OUT			_____	_____
PRIV			_____	_____
Antenatal care			_____	_____
Other visits to health facilities			_____	_____
Delivery of baby at:				
Home			_____	_____
HC/HOS			_____	_____
Other			_____	_____
Children protected against neonatal tetanus			_____	_____
<hr/>				
Total number of households	_____			
Average number of households per cluster:	_____			