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REACH

RESOURCES FOR CHILD HEALTH

Negotiating and Planning for Vaccination Coverage Surveys in the Dominican Republic

Santo Domingo

9-12 October 1990

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LIST OF ACRONYMS

BCG	Bacillus Calmette-Guerin vaccine
COSAS	Coverage Survey Analysis System
DPT	Diphtheria-Pertussis-Tetanus vaccine
DR	Dominican Republic
EPI	Expanded Program on Immunization
ICC	Inter-Agency Coordinating Committee
LAC	Latin American and Caribbean
MCH	Maternal and child health
OPV	Oral Polio Vaccine
PAHO	Pan American Health Organization
REACH	Resources for Child Health
SESPAS	Secretariat of Public Health and Social Assistance
TT	Tetanus toxoid vaccine
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

I. EXECUTIVE SUMMARY

The Latin American and Caribbean (LAC) Bureau of A.I.D. supports child survival activities throughout the region, including in the Dominican Republic (DR). LAC has expressed its concern that unsatisfactory information systems in the region still impede reliable assessments of immunization coverage. Specifically, LAC presently considers that "poor immunization reporting systems and limited use of coverage surveys continue to hamper management and monitoring of progress."

USAID/Santo Domingo and the LAC Bureau contacted REACH several times during the spring of 1990 to discuss a need felt by the government of the Dominican Republic and donors alike for technical assistance in conducting vaccination coverage surveys in the Dominican Republic. REACH received a buy-in from USAID/Santo Domingo to provide the requisite technical assistance owing to the project's experience in conducting such surveys in many countries. The scope of work of the writer during a three-day visit was to meet with USAID/Santo Domingo and other members of the Inter-Agency Coordinating Committee to formulate plans for a series of vaccination coverage surveys.

Community-based vaccination coverage surveys have been found by WHO to be useful tools to assess coverage when routinely reported data are incomplete or poor in quality. Community surveys have the advantage of providing reasonably precise estimates of coverage at low cost and can be useful when questions exist about numerators and denominators in routine reporting systems. Surveys can provide a wealth of data on particular management questions and generate an immunization profile (e.g., average age by antigen and dose, average intervals between doses, missed opportunities, etc.).

The need to improve routine reporting and disease surveillance systems to measure impact is accepted by the Dominican Secretariat of Public Health and Social Assistance (SESPAS) and the donors. While stressing the long-term goal of strengthening the routine reporting system, SESPAS and the donors have expressed doubts about the reliability of the estimates of coverage generated by the routine system. Local SESPAS, PAHO, UNICEF and USAID staff in Santo Domingo unanimously stated a desire to know the national level of coverage.

A 1988 UNICEF assessment of the Expanded Program on Immunization (EPI) in the DR recommended that house-to-house vaccination during campaigns must be "accompanied by the reinforcement of the regular fixed-center vaccination system." This approach has been endorsed by the Inter-Agency Coordinating Committee (ICC). It is now planned that within the coming two years, the Dominican Republic EPI will no longer exclusively rely on national vaccination campaigns. In preparing for this transition, SESPAS and the donors would like to assess current coverage levels.

Up to five vaccination coverage surveys will be conducted by national staff with external technical assistance from USAID/Santo Domingo through the Resources for Child Health (REACH) project. The principle purpose of the surveys is to determine the proportion of individuals in the target population

that have been immunized, but other information will also be provided. An additional purpose is to transfer the research skills needed to conduct future coverage surveys, if required. The surveys are planned for February 1991.

Other donors will collaborate, as well. Local costs will be covered by funds identified by the ICC in their 1991 action plan. It is hoped that local PAHO and UNICEF technical staff will participate in executing the surveys. REACH will provide two survey specialists, one of whom was proposed by PAHO in Washington.

One of the surveys will be national. Up to four surveys will be local in health service areas where doubts about coverage based on routine reports exist or where management questions need answers. The decision as to where to conduct the local surveys will be made by SESPAS. The cluster sampling technique described in WHO's "Coverage Survey" module from the Training for Mid-Level Managers Course (WHO/EPI/MLM/COV/88), revised in 1988, will be followed.

Preliminary survey results will be available within a few days of completing the field work. Senior staff involved in the field work and staff responsible administratively and technically for EPI in the surveyed health service areas will be brought together for a problem-solving de-briefing based on the survey findings. Issues of policy formulation and implementation, health services organization, and delivery strategies will be discussed at this workshop and recommendations prepared.

A list of follow-up actions which must be completed in December and January prior to the arrival of the REACH consultants appears in Section VII of this report.

II. BACKGROUND

Since the early 1980s, house to house vaccination campaigns have been carried out three times a year in the Dominican Republic (DR). Initially, only polio vaccine was administered. After 1985, DPT, measles and finally tetanus toxoid for women was added. Campaigns account for virtually all vaccinations given by the public sector.

Available official data indicate that since the initiation of the campaigns there has been a significant increase in coverage. As of July, 1990, immunization coverage for infants in the DR, based on routine reports to the World Health Organization (WHO), stood at 41% for BCG, 47% for DPT3, 75% for OPV2 and 46% for measles. Coverage of pregnant women with two or more doses of TT was 24%. (Coverage figures were based by WHO on routine reports from 1987 and 1989.) An historical view of coverage appears below:

Percent of children immunized by 12 months of age and percent of pregnant women immunized against tetanus based on information received from routine reporting systems, Dominican Republic.

	1985	1986	1987	1988	1989
BCG	51	--	--	38	41
DPT3	18	--	80	39	47
Polio	11	--	79	64	75*
Measles	24	--	71	26	46
Tetanus 2+	--	--	25	--	24

* two doses only
Source: WHO data

In a report entitled "Follow-Up Assessment of House-to-House Vaccination in the Dominican Republic, 15-27 May 1988," a UNICEF evaluation team questioned the reliability of these coverage figures. The report stated that the "denominators used to estimate the coverage were unreliable: data from 1983-1986 failed to record vaccination coverage disaggregated by age groups and the coverage information on children under-one was not recorded; data in 1988 was still presented as an average for children of different age groups."

Once routine reports allowed coverage to be recorded by age groups in late 1987, coverage of infants fell drastically in 1988. The above-mentioned report also noted that the campaign information system had improved and allowed for identification of low coverage administrative units. Nevertheless, this writer was informed that only 67% of the expected reports from health service areas had been received at the national level in a recent year.

Coverage with DPT and measles has lagged considerably behind that with polio. This has reinforced the impression that, while good for polio eradication efforts, the campaign approach has not sufficiently stressed the need to fully immunize infants and women. For example, measles vaccination is offered on only one campaign annually.

The 1988 UNICEF assessment recommended that house-to-house vaccination must be "accompanied by the reinforcement of the regular fixed-center vaccination system." This approach has been endorsed by the Inter-Agency Coordinating Committee (ICC). It is now planned that within the coming two years, the Dominican Republic EPI will no longer exclusively rely on national vaccination campaigns. In preparing for this transition, the Dominican Secretariat of Public Health and Social Assistance (SESPAS), USAID and UNICEF would like to assess current immunization coverage levels.

The Latin American and Caribbean (LAC) Bureau of A.I.D. supports child survival activities throughout the region, including in the DR. LAC has expressed its concern that unsatisfactory information systems in the region still impede reliable assessments of immunization coverage. Specifically, LAC presently considers that "poor immunization reporting systems and limited use of coverage surveys continue to hamper management and monitoring of progress."

Community-based vaccination coverage surveys have been found by WHO to be useful tools to assess coverage when routinely reported data are incomplete or poor in quality. These surveys are also increasingly being conducted by the U.S. Centers for Disease Control within the United States because of dissatisfaction with the quality of routine data. Community surveys have the advantage of providing reasonably precise estimates of coverage at low cost and can be useful when questions exist about numerators and denominators in routine reporting systems.

Surveys are particularly useful in places (as in the National District area of Santo Domingo, for example) where a significant proportion of immunizations are performed by the private sector, but are not reflected in SESPAS figures. Surveys also permit an estimation of the percent of infants fully immunized and the percent of babies born protected against neonatal tetanus (by virtue of the tetanus toxoid doses ever received by the mothers prior to delivery).

Finally, surveys can provide a wealth of data on particular management questions and generate an immunization profile (e.g., average age by antigen and dose, average intervals between doses, missed opportunities, proportion of vaccination given at specified points of time, etc.). The validity of survey findings is much improved if dates of birth and immunization can be verified from family-retained documents (e.g., birth certificates and vaccination cards).

In 1980, WHO described the methodology of coverage surveys in a separate module included in the EPI Mid-Level Managers Course. This methodology was revised by WHO in 1988. WHO has supported the training of tens of thousands of health staff in coverage survey techniques. Since then, 3,563 coverage

surveys have been performed up to 1989. (Two percent of these have been conducted in the American Region of WHO, and 6 out of the 2,334 during the past five years. From 1988 to the present, two EPI program reviews out of 77 have been conducted in the Americas.)

In the DR itself, no national vaccination coverage survey using the WHO methodology has ever been conducted, the last comprehensive EPI review was in 1982, and less than 1% of the $14.6 million five-year multi-party EPI budget is devoted to evaluation.

Too many coverage surveys can distract program managers from the need to improve routine reporting and disease surveillance systems to measure impact. However, managers do need to have reliable intermediate indicators of coverage as a basis for disease control. Local SESPAS, PAHO, UNICEF and USAID staff in Santo Domingo all expressed a desire to know the national level of coverage. While stressing the long-term goal of strengthening the routine reporting system, SESPAS and the donors cannot wait for the routine system to generate reliable estimates. Each of the three days that this writer was in the DR, full-page articles appeared in the national newspaper critical of the low level of vaccination coverage, high rate of drop-out and missed opportunities, and exclusive dependance on campaigns to the detriment of strengthening routine delivery systems.

III. PURPOSE OF VISIT

The scope of work of the writer was to:

1. Meet with USAID/Santo Domingo and other members of the Inter-Agency Coordinating Committee to formulate plans and establish dates for vaccination coverage surveys.

2. Make a critical review of the timing of the coverage surveys to determine if the program would benefit from their being held prior to the November National Vaccination Days.

3. Identify the organizations and individuals who would be available to take part in the surveys.

4. Identify the scope of the survey - one nationwide 30 cluster survey versus eight surveys in the seven regions and one national district.

5. Develop the data collection forms and identify the information (maps, population by towns) that will be needed prior to the arrival of the EPI survey specialists.

IV. ACTIVITIES

Discussions were held on 10 October with USAID/Santo Domingo and local PAHO staff prior to an ICC meeting. The meeting was convened on 11 October under the chairmanship of Dr. Brigido Garcia Sanchez, National Director of Health. Representatives from USAID, PAHO, UNICEF, and SESPAS attended. A second meeting with USAID, PAHO and SESPAS staff was convened on 12 October to discuss finer technical and logistical considerations of the coverage surveys. However, this second meeting was practically entirely devoted to repeat discussions as to the need for and purpose of the surveys.

A list of persons contacted is in Annex 1.

V. RESULTS AND CONCLUSIONS

Since 1983, some 23 rounds of national vaccination days have been conducted in the DR. The next one is scheduled for one day only on 11 November 1990 and will offer only polio and DPT vaccines.

A series of five vaccination coverage surveys will be conducted by national staff with external technical assistance provided by the Resources for Child Health (REACH) project. See Annex 2 for the scope of work of the two REACH survey specialists, one of whom was proposed by PAHO in Washington. **The principle purpose of the surveys is to determine the proportion of individuals in the target population that have been immunized, but other information will also be provided.** An additional purpose is to transfer the research skills needed to conduct future coverage surveys, if required. The surveys are planned for February 1991.

Other donors will collaborate, as well. Local costs will be covered by funds identified by the ICC in their 1991 action plan. It is hoped that local PAHO and UNICEF technical staff will participate in executing the surveys.

One of the surveys will be national. Up to four surveys will be local in health service areas where doubts about coverage based on routine reports exist or where management questions need answers. For example, a health service area with a large population and low reported coverage, which therefore contributes to low overall national coverage, may be selected for a survey. An area with reported BCG or OPV/DPT1 coverage of greater than 95% may be selected because the routine reports are suspect. An area reporting coverage in excess of the vaccine doses distributed could be surveyed. Areas of high drop-out between the first and third doses could be selected. Or an area in which vaccinations are offered by an unusual strategy or where health services are organized differently may be surveyed to answer specific management questions. The decision as to where to conduct the local surveys will be made by SESPAS.

The cluster sampling technique described in WHO's "Coverage Survey" module from the Training for Mid-Level Managers Course, revised in 1988 (WHO/EPI/MLM/COV/88), will be followed. Within each of the four health

- The level of confidence is 95%, which means that nineteen out of twenty times the data which result from the survey will be within the stated level of accuracy (i.e., plus or minus 10%).

Sample questionnaires promoted by WHO are attached in Annex 3. The questionnaires are used only for the 210 eligible children 12-23 months old and 210 mothers in each survey. (The "Reasons for Immunization Failure" form is a single, open-ended question.) Forms for manually consolidating and analyzing data are also available in the WHO module, copies of which were presented by the writer to SESPAS and the donors.

With technical assistance from REACH and local PAHO staff, SESPAS will want to carefully review these samples and add or delete questions according to local needs. For example, it is possible that children or mothers have immunization cards documenting administration of some of the doses, but offer a verbal history of having received other undocumented doses. This may occur with vaccination campaigns, since careful record-keeping is sometimes not stressed. Cards may not have been issued or retained for each round of campaign. Therefore, it may be appropriate to include for each vaccine and dose whether the information comes from an immunization card.

A few especially pertinent questions could be asked to inform and guide the transition from campaigns to routine delivery at fixed health facilities. Some examples of questions which could be asked of the 210 individuals in each survey are:

1) How many times in the past 12 months has your child been brought to a SESPAS health facility for whatever reason?

2) How long does it take you to reach the nearest SESPAS health facility?

3) Which health facilities are the usual source of health care for your family (SESPAS, private physician, etc.)

4) Do you believe your child is in need of any more vaccinations?

5) Did your child 12-23 months old receive any vaccinations during the national vaccination campaign on November 11?

6) On what source of information do you rely to learn about the dates of vaccination campaigns?

7) Do you think it is safe for an infant to receive more than one injection on the same visit?

8) If an injection was given on the last campaign on November 11, where in the body did the child receive it? (Since DPT is the only injection given on November 11 and since SESPAS norms state that it should be given in the thigh, this question will permit analysis as to the reliability of mothers' recall by antigen -- DPT and measles -- when no card is present.)

The analysis of survey data will provide an immunization profile and answers to the following typical questions (as well as others determined by the design of the questionnaire such as coverage by sex and TT coverage by maternal age):

-- what proportion of children 12-23 months of age have been vaccinated with each vaccine and dose?

-- what proportion were vaccinated by 12 months of age?

-- what proportion were fully vaccinated by 12 months of age or by the date of the survey?

-- what proportion of infants were born protected against neonatal tetanus by virtue of TT received by their mothers?

-- what proportion of mothers received antenatal care during the last pregnancy?

-- which antigen had the highest (lowest) coverage?

-- what proportion of each vaccine were received during door-to-door vaccination campaigns? by the private sector (private physicians, private voluntary organizations, etc.)?

-- what was the percent coverage according to cards and what was it according to "cards plus history?"

-- what was the drop-out rate between doses?

-- what was the reason for immunization failure?

-- what was the average and median age for each dose?

-- what was the average interval between successive doses?

-- what proportion of vaccinations were given at inappropriate ages or with inappropriate intervals?

-- what would the coverage by 12 months have been, if no missed opportunities to immunize had occurred on the date of any vaccination?

-- what proportion of children (mothers) were ever given cards and what proportion still retain them?

-- what proportion of children (mothers) were fully, partially or never vaccinated?

Special methodological issues, some of which are particularly relevant to the situation in the DR, need to be addressed with the technical assistance of the REACH consultants in the period of intensive planning immediately prior to the survey and in the training of the surveyors.

- A birth dose of OPV is recommended in the DR in addition to the three doses recommended at age two, three, and four months. The coverage survey normally counts only OPV1, OPV2 and OPV3 but can be modified to count the dose at birth as well. (COSAS allows the birth dose to be entered.)

- A decision is needed as to whether or not to exclude from questioning those children and mothers who have not been resident for some pre-determined period in the cluster.

- A decision is needed on how many times to return to the same home, when the mother is absent at the first visit but neighbors report that small children reside there.

- A decision is needed as to the type of persons acceptable to interview (e.g., mothers only, fathers, other guardians).

- The method most appropriate for the DR of randomly selecting the first home in rural and urban clusters needs to be determined.

- Methods to assist the mother in recalling whether TT was ever given will be needed.

- Step-by-step guidelines on how to conduct the field work need to be prepared as a memory aid for the supervisors and surveyors. An example of one prepared by PAHO for use in Bolivia in 1987 will be sent to USAID/Santo Domingo.

There was insufficient time for this writer to discuss the finer details of the survey. A period of intensive planning will need to precede the survey. At least two national staff should be assigned for 30 days as counterparts to the two external advisors in order to facilitate the planning, training and execution of the surveys.

The number of teams needed to conduct a coverage survey and the number of days needed to conduct it will vary depending on the availability of personnel and transport and the time required to travel to the clusters. **Some logistical considerations and provisional solutions for SESPAS and the external technical consultants follow:**

- SESPAS and ICC members need to decide whether the survey should be done by persons who are not involved in immunization, or whether "promoter supervisors" and others with EPI involvement may be used.

- Each survey team should consist of two members, including one health worker (or student nurse, e.g.) trained in the survey technique as an "enumerator" and one "community representative" known to the

local population. Each health worker member of the team must be available full-time for 17 days.

- Plan that one team can complete approximately one cluster per day. In urban areas, one team can complete two clusters per day. Decide the number of teams and the duration of the survey based on resources and needs. For example, 15 teams can complete one 30-cluster survey in 2 days.

- A total of three days is budgeted for each of the four local surveys, which includes two days of field work and one day to travel to the next survey site and to arrange logistics locally. SESPAS will need to decide if field work will continue without interruption over the weekends.

- Four days are budgeted for the national survey. In practice, SESPAS may decide to cover some of the clusters selected for the national survey which are nearby or on the way to the local survey areas. In principle, however, leaving the national clusters to the end will be better, since the enumerators will by then be more experienced.

- To closely control the quality of the survey, a ratio of one field supervisor to four teams should be honored. The four supervisors should have full-time access to a vehicle, so that they can be mobile and supervise the field teams.

- Supervisors should endeavor to oversee two of their four teams daily. They should alternate such that each of their four teams is supervised every second day. Supervisors should be selected with the knowledge that they are to be engaged full-time for 18 days.

- On the assumption that vehicles will not need to carry community representatives, that each vehicle can carry a minimum of six persons (driver, supervisor and four enumerators), and that clusters are not distant from one another, then a ratio of one vehicle per four teams is required. The budget assumes that vehicles can be made available for full-time field use by SESPAS for <u>each</u> survey. A minimum of four vehicles will be needed for two weeks. Additional vehicles will be needed for the national survey because of the greater distances between clusters.

- Enumerators will either find their way to the cluster site by public transport (in urban areas or in larger nearby rural clusters well-served by public transport), or the supervisor's vehicle can deposit some or all of the enumerators at the start of the day.

- Although 15 teams could complete a 30 cluster survey in two days of field work it will be useful to train two additional health workers ("enumerators") in case substitution becomes necessary.

- The seventeen enumerators and four supervisors need to be thoroughly trained in a two-day "theoretical" course, followed by a third day of field practice in nearby localities which are not scheduled for a local survey. Discussion of field problems will also take place on the third day.

- This same cadre of trained supervisors and enumerators will conduct each survey. The quality of the field work is a function of good training, close field supervision, and adequate logistic support. Because only 210 respondents will be questioned in each survey, it is essential that proper survey methods are followed at all times.

- Meticulous planning is required so that the community representative knows where and when to join the enumerator in the cluster. The enumerator should similarly know the name and location of the community representative.

- Arrange travel to each cluster so that teams can begin work when respondents are most likely to be present.

- Two computer-literate SESPAS staff will be trained to enter the data with the guidance of the REACH consultants. REACH will provide a computer, printer and software.

With the guidance of REACH consultants, data will be entered, analyzed and displayed on COSAS (Coverage Survey Analysis System) software, which was designed by WHO with REACH input. The utility of COSAS for analysis depends on the use and retention of vaccination cards, on which dates of birth and vaccination are recorded. Without cards, many of the elegant analyses to give an immunization profile cannot be done -- either manually or by computer. An explanation of COSAS from the WHO Coverage Survey Module is in Annex 4.

Preliminary survey results will be available within a few days of completing the field work. **Senior staff involved in the field work and staff administratively and technically responsible for EPI in the surveyed health service areas will be brought together for a problem-solving de-briefing based on the survey findings.** Issues of policy formulation and implementation, health services organization, and delivery strategies will be discussed at a workshop and recommendations prepared. To supplement the information from the surveys at a later date, local health facility surveys involving reviews of records and interviews of clinic attendees and health workers could be used, if funding sources are identified.

A provisional timeline and an illustrative budget for local costs appear in Annexes 5 and 6, respectively.

VI. FOLLOW-UP ACTIONS

Follow-up Actions Prior to Arrival of REACH Consultants	Who?	By:
- Inform USAID whether buy-in must be modified due to hiring of second consultant	REACH	November 20
- Finalize funding of local costs	ICC	December 1
- Agree to exact dates of survey	SESPAS & ICC	December 1
- Decide in which geographic areas to conduct up to four local surveys (in addition to one national survey) and obtain maps	SESPAS (and ICC)	December 5
- Request computer-generated list of cumulative populations by locality for entire population and for each of four local areas to by surveyed	USAID and Nelson Ramirez and SESPAS	December 20
- Identify and select supervisors, enumerators and counterpart investigators	SESPAS	January 10
- Provide REACH with dates of past rounds of campaigns and antigens included from 1988 to present	USAID	January 10
- Identify availability of computers and printers locally.	USAID	January 10

ANNEX 1

Contacts

Dr. Angel Luis Alvarez	EPI Director, SESPAS
Dr. Brigido Garcia Sanchez	National Director of Health, SESPAS
Dr. Lee Hougen	Chief, Health and Population, USAID
Dra. Josefina Martinez	EPI Technical Officer, PAHO
Mr. Michael McCabe	Project Officer, UNICEF
Dra. Sara Menendez Abraham	Project Officer, UNICEF
Dr. Jean Marc Olive	EPI Medical Officer, PAHO
Lic. Mañuel Ortega	Population Officer, USAID
Lic. Nelson Ramirez	Consultant, Development Associates
Dr. Johnny Rivas	MCH Director, SESPAS
Dra. Mirta Roses	Representative, PAHO
Mr. Tim Truitt	Child Survival Coordinator, USAID

ANNEX 2

Scope of Work of REACH Survey Specialists

The two survey specialists will spend five weeks in the Dominican Republic for the purpose of assisting in the preparation, implementation and analysis of the surveys. In coordination with SESPAS, PAHO, UNICEF and USAID, specific activities in the DR will include participating in:

1. Reviewing the population-based data assembled and selecting clusters;

2. Designing the questionnaires;

3. Training the supervisors in the coverage survey process and selection of the clusters;

4. Training the selected individuals to conduct the survey;

5. Providing technical input to the implementation of the survey;

6. Training the data entry clerks in COSAS;

7. Entering and verifying data;

8. Assessing results of each survey including:

   A. coverage documented by card and history;
   B. per cent of infants born protected against tetanus;
   C. missed opportunities for immunization;
   D. age distribution at time of immunization for each antigen and dose;
   E. effect of national vaccination days and routine facility-based systems on coverage;
   F. reasons for incomplete immunization;
   G. validity of routinely reported data.

9. Prepare preliminary analysis and present findings (with recommendations for future programming) to a workshop of senior staff engaged in the survey and officers responsible for EPI in the surveyed areas.

10. De-brief SESPAS, USAID and donors.

One of the survey specialists (the team leader) will be briefed in Washington before and will de-brief in Washington after the surveys.

ANNEX 3a

Sample Standard Questionnaire

Cluster Form
Infant Immunization

(1) Cluster Number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____	(5) NAME									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

ANNEX 3b

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									
(6) 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									
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									

ANNEX 3c

Cluster Form
Tetanus Toxoid Immunization for Women

(1) Cluster number: _____
(2) Date: _____
(3) Area: _____
(4) Range of birth dates:
From: _____
Until: _____

											TOTAL	
(5) Mother's name											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

ANNEX 4

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:

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

*Source: Coverage Survey WHO Mid-Level Managers Training. Geneva. 1988.

ANNEX 5

Provisional Timeline

Action Needed	Who?	By:
- Determine funding source for local costs	ICC	December 1
- Agree to exact dates of surveys	ICC	December 1
- Decide in which geographical areas to conduct four local surveys	ICC	December 5
- Request computer-generated list of cumulative populations by locality for entire country, and for four local survey areas	USAID (Ramirez) and SESPAS	December 20
- Select four supervisors, two overall counterpart investigators, and 17 enumerators (each enumerator will be joined by a local community representative)	SESPAS	January 10
- Briefing of REACH team leader in Washington (PAHO invited)	REACH A.I.D.	January 28
- Travel to DR of team leader and second external consultant	REACH	January 29
- Briefing by SESPAS, USAID, PAHO and UNICEF	Team	January 30
- Meet with N. Ramirez on issues of sampling and survey fieldwork pertinent to DR	Team	January 30
- Select clusters and prepare simple maps	Team	January 31
- Arrange logistics for training and surveys - vehicles - notify staff - secure local funds - arrange drop-off and pick-up points - arrange accommodations	Team	Jan 31-Feb 1
- Develop data collection forms	Team	February 1-2
- Test, finalize and print forms	Team	February 4
- Prepare materials and schedules for training and surveys	Team	February 5
- Train in class and field	Teams	February 6-8
- Conduct surveys	Teams	February 9-21

Action Needed	Who?	By:
- Train data entry staff and enter data on COSAS	REACH	February 21
- Analyze data and prepare draft findings	SESPAS, REACH	Feb. 22, 25
- Conduct workshop to discuss results	SESPAS, REACH	February 26
- Prepare draft report	SESPAS, REACH	February 27
- Debrief ICC	SESPAS, REACH	February 28
- Debrief in Washington	REACH PAHO A.I.D.	March 1
- Finalize report	REACH	March 4-6

PN-ABI-574

REACH

RESOURCES FOR CHILD HEALTH

Negotiating and Planning for Vaccination Coverage Surveys in the Dominican Republic

Santo Domingo

9-12 October 1990

JSI John Snow, Inc., 1616 N. Fort Myer Drive, Suite 1100, Arlington, Virginia 22209 USA
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Robert Steinglass
Senior Technical Officer

The Resources for Child Health (REACH) Project
1100 Wilson Blvd., Ninth Floor
Arlington, VA 22209

A.I.D. Contract No.: DPE 5982-Z-00-9034-00

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LIST OF ACRONYMS

BCG	Bacillus Calmette-Guerin vaccine
COSAS	Coverage Survey Analysis System
DPT	Diphtheria-Pertussis-Tetanus vaccine
DR	Dominican Republic
EPI	Expanded Program on Immunization
ICC	Inter-Agency Coordinating Committee
LAC	Latin American and Caribbean
MCH	Maternal and child health
OPV	Oral Polio Vaccine
PAHO	Pan American Health Organization
REACH	Resources for Child Health
SESPAS	Secretariat of Public Health and Social Assistance
TT	Tetanus toxoid vaccine
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

I. EXECUTIVE SUMMARY

The Latin American and Caribbean (LAC) Bureau of A.I.D. supports child survival activities throughout the region, including in the Dominican Republic (DR). LAC has expressed its concern that unsatisfactory information systems in the region still impede reliable assessments of immunization coverage. Specifically, LAC presently considers that "poor immunization reporting systems and limited use of coverage surveys continue to hamper management and monitoring of progress."

USAID/Santo Domingo and the LAC Bureau contacted REACH several times during the spring of 1990 to discuss a need felt by the government of the Dominican Republic and donors alike for technical assistance in conducting vaccination coverage surveys in the Dominican Republic. REACH received a buy-in from USAID/Santo Domingo to provide the requisite technical assistance owing to the project's experience in conducting such surveys in many countries. The scope of work of the writer during a three-day visit was to meet with USAID/Santo Domingo and other members of the Inter-Agency Coordinating Committee to formulate plans for a series of vaccination coverage surveys.

Community-based vaccination coverage surveys have been found by WHO to be useful tools to assess coverage when routinely reported data are incomplete or poor in quality. Community surveys have the advantage of providing reasonably precise estimates of coverage at low cost and can be useful when questions exist about numerators and denominators in routine reporting systems. Surveys can provide a wealth of data on particular management questions and generate an immunization profile (e.g., average age by antigen and dose, average intervals between doses, missed opportunities, etc.).

The need to improve routine reporting and disease surveillance systems to measure impact is accepted by the Dominican Secretariat of Public Health and Social Assistance (SESPAS) and the donors. While stressing the long-term goal of strengthening the routine reporting system, SESPAS and the donors have expressed doubts about the reliability of the estimates of coverage generated by the routine system. Local SESPAS, PAHO, UNICEF and USAID staff in Santo Domingo unanimously stated a desire to know the national level of coverage.

A 1988 UNICEF assessment of the Expanded Program on Immunization (EPI) in the DR recommended that house-to-house vaccination during campaigns must be "accompanied by the reinforcement of the regular fixed-center vaccination system." This approach has been endorsed by the Inter-Agency Coordinating Committee (ICC). It is now planned that within the coming two years, the Dominican Republic EPI will no longer exclusively rely on national vaccination campaigns. In preparing for this transition, SESPAS and the donors would like to assess current coverage levels.

Up to five vaccination coverage surveys will be conducted by national staff with external technical assistance from USAID/Santo Domingo through the Resources for Child Health (REACH) project. The principle purpose of the surveys is to determine the proportion of individuals in the target population

that have been immunized, but other information will also be provided. An additional purpose is to transfer the research skills needed to conduct future coverage surveys, if required. The surveys are planned for February 1991.

Other donors will collaborate, as well. Local costs will be covered by funds identified by the ICC in their 1991 action plan. It is hoped that local PAHO and UNICEF technical staff will participate in executing the surveys. REACH will provide two survey specialists, one of whom was proposed by PAHO in Washington.

One of the surveys will be national. Up to four surveys will be local in health service areas where doubts about coverage based on routine reports exist or where management questions need answers. The decision as to where to conduct the local surveys will be made by SESPAS. The cluster sampling technique described in WHO's "Coverage Survey" module from the Training for Mid-Level Managers Course (WHO/EPI/MLM/COV/88), revised in 1988, will be followed.

Preliminary survey results will be available within a few days of completing the field work. Senior staff involved in the field work and staff responsible administratively and technically for EPI in the surveyed health service areas will be brought together for a problem-solving de-briefing based on the survey findings. Issues of policy formulation and implementation, health services organization, and delivery strategies will be discussed at this workshop and recommendations prepared.

A list of follow-up actions which must be completed in December and January prior to the arrival of the REACH consultants appears in Section VII of this report.

II. BACKGROUND

Since the early 1980s, house to house vaccination campaigns have been carried out three times a year in the Dominican Republic (DR). Initially, only polio vaccine was administered. After 1985, DPT, measles and finally tetanus toxoid for women was added. Campaigns account for virtually all vaccinations given by the public sector.

Available official data indicate that since the initiation of the campaigns there has been a significant increase in coverage. As of July, 1990, immunization coverage for infants in the DR, based on routine reports to the World Health Organization (WHO), stood at 41% for BCG, 47% for DPT3, 75% for OPV2 and 46% for measles. Coverage of pregnant women with two or more doses of TT was 24%. (Coverage figures were based by WHO on routine reports from 1987 and 1989.) An historical view of coverage appears below:

Percent of children immunized by 12 months of age and percent of pregnant women immunized against tetanus based on information received from routine reporting systems, Dominican Republic.

	1985	1986	1987	1988	1989
BCG	51	--	--	38	41
DPT3	18	--	80	39	47
Polio	11	--	79	64	75*
Measles	24	--	71	26	46
Tetanus 2+	--	--	25	--	24

* two doses only
Source: WHO data

In a report entitled "Follow-Up Assessment of House-to-House Vaccination in the Dominican Republic, 15-27 May 1988," a UNICEF evaluation team questioned the reliability of these coverage figures. The report stated that the "denominators used to estimate the coverage were unreliable: data from 1983-1986 failed to record vaccination coverage disaggregated by age groups and the coverage information on children under-one was not recorded; data in 1988 was still presented as an average for children of different age groups."

Once routine reports allowed coverage to be recorded by age groups in late 1987, coverage of infants fell drastically in 1988. The above-mentioned report also noted that the campaign information system had improved and allowed for identification of low coverage administrative units. Nevertheless, this writer was informed that only 67% of the expected reports from health service areas had been received at the national level in a recent year.

Coverage with DPT and measles has lagged considerably behind that with polio. This has reinforced the impression that, while good for polio eradication efforts, the campaign approach has not sufficiently stressed the need to fully immunize infants and women. For example, measles vaccination is offered on only one campaign annually.

The 1988 UNICEF assessment recommended that house-to-house vaccination must be "accompanied by the reinforcement of the regular fixed-center vaccination system." This approach has been endorsed by the Inter-Agency Coordinating Committee (ICC). It is now planned that within the coming two years, the Dominican Republic EPI will no longer exclusively rely on national vaccination campaigns. In preparing for this transition, the Dominican Secretariat of Public Health and Social Assistance (SESPAS), USAID and UNICEF would like to assess current immunization coverage levels.

The Latin American and Caribbean (LAC) Bureau of A.I.D. supports child survival activities throughout the region, including in the DR. LAC has expressed its concern that unsatisfactory information systems in the region still impede reliable assessments of immunization coverage. Specifically, LAC presently considers that "poor immunization reporting systems and limited use of coverage surveys continue to hamper management and monitoring of progress."

Community-based vaccination coverage surveys have been found by WHO to be useful tools to assess coverage when routinely reported data are incomplete or poor in quality. These surveys are also increasingly being conducted by the U.S. Centers for Disease Control within the United States because of dissatisfaction with the quality of routine data. Community surveys have the advantage of providing reasonably precise estimates of coverage at low cost and can be useful when questions exist about numerators and denominators in routine reporting systems.

Surveys are particularly useful in places (as in the National District area of Santo Domingo, for example) where a significant proportion of immunizations are performed by the private sector, but are not reflected in SESPAS figures. Surveys also permit an estimation of the percent of infants fully immunized and the percent of babies born protected against neonatal tetanus (by virtue of the tetanus toxoid doses ever received by the mothers prior to delivery).

Finally, surveys can provide a wealth of data on particular management questions and generate an immunization profile (e.g., average age by antigen and dose, average intervals between doses, missed opportunities, proportion of vaccination given at specified points of time, etc.). The validity of survey findings is much improved if dates of birth and immunization can be verified from family-retained documents (e.g., birth certificates and vaccination cards).

In 1980, WHO described the methodology of coverage surveys in a separate module included in the EPI Mid-Level Managers Course. This methodology was revised by WHO in 1988. WHO has supported the training of tens of thousands of health staff in coverage survey techniques. Since then, 3,563 coverage

surveys have been performed up to 1989. (Two percent of these have been conducted in the American Region of WHO, and 6 out of the 2,334 during the past five years. From 1988 to the present, two EPI program reviews out of 77 have been conducted in the Americas.)

In the DR itself, no national vaccination coverage survey using the WHO methodology has ever been conducted, the last comprehensive EPI review was in 1982, and less than 1% of the $14.6 million five-year multi-party EPI budget is devoted to evaluation.

Too many coverage surveys can distract program managers from the need to improve routine reporting and disease surveillance systems to measure impact. However, managers do need to have reliable intermediate indicators of coverage as a basis for disease control. Local SESPAS, PAHO, UNICEF and USAID staff in Santo Domingo all expressed a desire to know the national level of coverage. While stressing the long-term goal of strengthening the routine reporting system, SESPAS and the donors cannot wait for the routine system to generate reliable estimates. Each of the three days that this writer was in the DR, full-page articles appeared in the national newspaper critical of the low level of vaccination coverage, high rate of drop-out and missed opportunities, and exclusive dependance on campaigns to the detriment of strengthening routine delivery systems.

III. PURPOSE OF VISIT

The scope of work of the writer was to:

1. Meet with USAID/Santo Domingo and other members of the Inter-Agency Coordinating Committee to formulate plans and establish dates for vaccination coverage surveys.

2. Make a critical review of the timing of the coverage surveys to determine if the program would benefit from their being held prior to the November National Vaccination Days.

3. Identify the organizations and individuals who would be available to take part in the surveys.

4. Identify the scope of the survey - one nationwide 30 cluster survey versus eight surveys in the seven regions and one national district.

5. Develop the data collection forms and identify the information (maps, population by towns) that will be needed prior to the arrival of the EPI survey specialists.

IV. ACTIVITIES

Discussions were held on 10 October with USAID/Santo Domingo and local PAHO staff prior to an ICC meeting. The meeting was convened on 11 October under the chairmanship of Dr. Brigido Garcia Sanchez, National Director of Health. Representatives from USAID, PAHO, UNICEF, and SESPAS attended. A second meeting with USAID, PAHO and SESPAS staff was convened on 12 October to discuss finer technical and logistical considerations of the coverage surveys. However, this second meeting was practically entirely devoted to repeat discussions as to the need for and purpose of the surveys.

A list of persons contacted is in Annex 1.

V. RESULTS AND CONCLUSIONS

Since 1983, some 23 rounds of national vaccination days have been conducted in the DR. The next one is scheduled for one day only on 11 November 1990 and will offer only polio and DPT vaccines.

A series of five vaccination coverage surveys will be conducted by national staff with external technical assistance provided by the Resources for Child Health (REACH) project. See Annex 2 for the scope of work of the two REACH survey specialists, one of whom was proposed by PAHO in Washington. **The principle purpose of the surveys is to determine the proportion of individuals in the target population that have been immunized, but other information will also be provided.** An additional purpose is to transfer the research skills needed to conduct future coverage surveys, if required. The surveys are planned for February 1991.

Other donors will collaborate, as well. Local costs will be covered by funds identified by the ICC in their 1991 action plan. It is hoped that local PAHO and UNICEF technical staff will participate in executing the surveys.

One of the surveys will be national. Up to four surveys will be local in health service areas where doubts about coverage based on routine reports exist or where management questions need answers. For example, a health service area with a large population and low reported coverage, which therefore contributes to low overall national coverage, may be selected for a survey. An area with reported BCG or OPV/DPT1 coverage of greater than 95% may be selected because the routine reports are suspect. An area reporting coverage in excess of the vaccine doses distributed could be surveyed. Areas of high drop-out between the first and third doses could be selected. Or an area in which vaccinations are offered by an unusual strategy or where health services are organized differently may be surveyed to answer specific management questions. The decision as to where to conduct the local surveys will be made by SESPAS.

The cluster sampling technique described in WHO's "Coverage Survey" module from the Training for Mid-Level Managers Course, revised in 1988 (WHO/EPI/MLM/COV/88), will be followed. Within each of the four health

- The level of confidence is 95%, which means that nineteen out of twenty times the data which result from the survey will be within the stated level of accuracy (i.e., plus or minus 10%).

Sample questionnaires promoted by WHO are attached in Annex 3. The questionnaires are used only for the 210 eligible children 12-23 months old and 210 mothers in each survey. (The "Reasons for Immunization Failure" form is a single, open-ended question.) Forms for manually consolidating and analyzing data are also available in the WHO module, copies of which were presented by the writer to SESPAS and the donors.

With technical assistance from REACH and local PAHO staff, SESPAS will want to carefully review these samples and add or delete questions according to local needs. For example, it is possible that children or mothers have immunization cards documenting administration of some of the doses, but offer a verbal history of having received other undocumented doses. This may occur with vaccination campaigns, since careful record-keeping is sometimes not stressed. Cards may not have been issued or retained for each round of campaign. Therefore, it may be appropriate to include for each vaccine and dose whether the information comes from an immunization card.

A few especially pertinent questions could be asked to inform and guide the transition from campaigns to routine delivery at fixed health facilities. Some examples of questions which could be asked of the 210 individuals in each survey are:

1) How many times in the past 12 months has your child been brought to a SESPAS health facility for whatever reason?

2) How long does it take you to reach the nearest SESPAS health facility?

3) Which health facilities are the usual source of health care for your family (SESPAS, private physician, etc.)

4) Do you believe your child is in need of any more vaccinations?

5) Did your child 12-23 months old receive any vaccinations during the national vaccination campaign on November 11?

6) On what source of information do you rely to learn about the dates of vaccination campaigns?

7) Do you think it is safe for an infant to receive more than one injection on the same visit?

8) If an injection was given on the last campaign on November 11, where in the body did the child receive it? (Since DPT is the only injection given on November 11 and since SESPAS norms state that it should be given in the thigh, this question will permit analysis as to the reliability of mothers' recall by antigen -- DPT and measles -- when no card is present.)

The analysis of survey data will provide an immunization profile and answers to the following typical questions (as well as others determined by the design of the questionnaire such as coverage by sex and TT coverage by maternal age):

-- what proportion of children 12-23 months of age have been vaccinated with each vaccine and dose?

-- what proportion were vaccinated by 12 months of age?

-- what proportion were fully vaccinated by 12 months of age or by the date of the survey?

-- what proportion of infants were born protected against neonatal tetanus by virtue of TT received by their mothers?

-- what proportion of mothers received antenatal care during the last pregnancy?

-- which antigen had the highest (lowest) coverage?

-- what proportion of each vaccine were received during door-to-door vaccination campaigns? by the private sector (private physicians, private voluntary organizations, etc.)?

-- what was the percent coverage according to cards and what was it according to "cards plus history?"

-- what was the drop-out rate between doses?

-- what was the reason for immunization failure?

-- what was the average and median age for each dose?

-- what was the average interval between successive doses?

-- what proportion of vaccinations were given at inappropriate ages or with inappropriate intervals?

-- what would the coverage by 12 months have been, if no missed opportunities to immunize had occurred on the date of any vaccination?

-- what proportion of children (mothers) were ever given cards and what proportion still retain them?

-- what proportion of children (mothers) were fully, partially or never vaccinated?

Special methodological issues, some of which are particularly relevant to the situation in the DR, need to be addressed with the technical assistance of the REACH consultants in the period of intensive planning immediately prior to the survey and in the training of the surveyors.

- A birth dose of OPV is recommended in the DR in addition to the three doses recommended at age two, three, and four months. The coverage survey normally counts only OPV1, OPV2 and OPV3 but can be modified to count the dose at birth as well. (COSAS allows the birth dose to be entered.)

- A decision is needed as to whether or not to exclude from questioning those children and mothers who have not been resident for some pre-determined period in the cluster.

- A decision is needed on how many times to return to the same home, when the mother is absent at the first visit but neighbors report that small children reside there.

- A decision is needed as to the type of persons acceptable to interview (e.g., mothers only, fathers, other guardians).

- The method most appropriate for the DR of randomly selecting the first home in rural and urban clusters needs to be determined.

- Methods to assist the mother in recalling whether TT was ever given will be needed.

- Step-by-step guidelines on how to conduct the field work need to be prepared as a memory aid for the supervisors and surveyors. An example of one prepared by PAHO for use in Bolivia in 1987 will be sent to USAID/Santo Domingo.

There was insufficient time for this writer to discuss the finer details of the survey. A period of intensive planning will need to precede the survey. At least two national staff should be assigned for 30 days as counterparts to the two external advisors in order to facilitate the planning, training and execution of the surveys.

The number of teams needed to conduct a coverage survey and the number of days needed to conduct it will vary depending on the availability of personnel and transport and the time required to travel to the clusters. **Some logistical considerations and provisional solutions for SESPAS and the external technical consultants follow:**

- SESPAS and ICC members need to decide whether the survey should be done by persons who are not involved in immunization, or whether "promoter supervisors" and others with EPI involvement may be used.

- Each survey team should consist of two members, including one health worker (or student nurse, e.g.) trained in the survey technique as an "enumerator" and one "community representative" known to the

local population. Each health worker member of the team must be available full-time for 17 days.

- Plan that one team can complete approximately one cluster per day. In urban areas, one team can complete two clusters per day. Decide the number of teams and the duration of the survey based on resources and needs. For example, 15 teams can complete one 30-cluster survey in 2 days.

- A total of three days is budgeted for each of the four local surveys, which includes two days of field work and one day to travel to the next survey site and to arrange logistics locally. SESPAS will need to decide if field work will continue without interruption over the weekends.

- Four days are budgeted for the national survey. In practice, SESPAS may decide to cover some of the clusters selected for the national survey which are nearby or on the way to the local survey areas. In principle, however, leaving the national clusters to the end will be better, since the enumerators will by then be more experienced.

- To closely control the quality of the survey, a ratio of one field supervisor to four teams should be honored. The four supervisors should have full-time access to a vehicle, so that they can be mobile and supervise the field teams.

- Supervisors should endeavor to oversee two of their four teams daily. They should alternate such that each of their four teams is supervised every second day. Supervisors should be selected with the knowledge that they are to be engaged full-time for 18 days.

- On the assumption that vehicles will not need to carry community representatives, that each vehicle can carry a minimum of six persons (driver, supervisor and four enumerators), and that clusters are not distant from one another, then a ratio of one vehicle per four teams is required. The budget assumes that vehicles can be made available for full-time field use by SESPAS for <u>each</u> survey. A minimum of four vehicles will be needed for two weeks. Additional vehicles will be needed for the national survey because of the greater distances between clusters.

- Enumerators will either find their way to the cluster site by public transport (in urban areas or in larger nearby rural clusters well-served by public transport), or the supervisor's vehicle can deposit some or all of the enumerators at the start of the day.

- Although 15 teams could complete a 30 cluster survey in two days of field work it will be useful to train two additional health workers ("enumerators") in case substitution becomes necessary.

- The seventeen enumerators and four supervisors need to be thoroughly trained in a two-day "theoretical" course, followed by a third day of field practice in nearby localities which are not scheduled for a local survey. Discussion of field problems will also take place on the third day.

- This same cadre of trained supervisors and enumerators will conduct each survey. The quality of the field work is a function of good training, close field supervision, and adequate logistic support. Because only 210 respondents will be questioned in each survey, it is essential that proper survey methods are followed at all times.

- Meticulous planning is required so that the community representative knows where and when to join the enumerator in the cluster. The enumerator should similarly know the name and location of the community representative.

- Arrange travel to each cluster so that teams can begin work when respondents are most likely to be present.

- Two computer-literate SESPAS staff will be trained to enter the data with the guidance of the REACH consultants. REACH will provide a computer, printer and software.

With the guidance of REACH consultants, data will be entered, analyzed and displayed on COSAS (Coverage Survey Analysis System) software, which was designed by WHO with REACH input. The utility of COSAS for analysis depends on the use and retention of vaccination cards, on which dates of birth and vaccination are recorded. Without cards, many of the elegant analyses to give an immunization profile cannot be done -- either manually or by computer. An explanation of COSAS from the WHO Coverage Survey Module is in Annex 4.

Preliminary survey results will be available within a few days of completing the field work. **Senior staff involved in the field work and staff administratively and technically responsible for EPI in the surveyed health service areas will be brought together for a problem-solving de-briefing based on the survey findings.** Issues of policy formulation and implementation, health services organization, and delivery strategies will be discussed at a workshop and recommendations prepared. To supplement the information from the surveys at a later date, local health facility surveys involving reviews of records and interviews of clinic attendees and health workers could be used, if funding sources are identified.

A provisional timeline and an illustrative budget for local costs appear in Annexes 5 and 6, respectively.

VI. FOLLOW-UP ACTIONS

Follow-up Actions Prior to Arrival of REACH Consultants	Who?	By:
- Inform USAID whether buy-in must be modified due to hiring of second consultant	REACH	November 20
- Finalize funding of local costs	ICC	December 1
- Agree to exact dates of survey	SESPAS & ICC	December 1
- Decide in which geographic areas to conduct up to four local surveys (in addition to one national survey) and obtain maps	SESPAS (and ICC)	December 5
- Request computer-generated list of cumulative populations by locality for entire population and for each of four local areas to by surveyed	USAID and Nelson Ramirez and SESPAS	December 20
- Identify and select supervisors, enumerators and counterpart investigators	SESPAS	January 10
- Provide REACH with dates of past rounds of campaigns and antigens included from 1988 to present	USAID	January 10
- Identify availability of computers and printers locally.	USAID	January 10

ANNEX 1

Contacts

Dr. Angel Luis Alvarez	EPI Director, SESPAS
Dr. Brigido Garcia Sanchez	National Director of Health, SESPAS
Dr. Lee Hougen	Chief, Health and Population, USAID
Dra. Josefina Martinez	EPI Technical Officer, PAHO
Mr. Michael McCabe	Project Officer, UNICEF
Dra. Sara Menendez Abraham	Project Officer, UNICEF
Dr. Jean Marc Olive	EPI Medical Officer, PAHO
Lic. Mañuel Ortega	Population Officer, USAID
Lic. Nelson Ramirez	Consultant, Development Associates
Dr. Johnny Rivas	MCH Director, SESPAS
Dra. Mirta Roses	Representative, PAHO
Mr. Tim Truitt	Child Survival Coordinator, USAID

ANNEX 2

Scope of Work of REACH Survey Specialists

The two survey specialists will spend five weeks in the Dominican Republic for the purpose of assisting in the preparation, implementation and analysis of the surveys. In coordination with SESPAS, PAHO, UNICEF and USAID, specific activities in the DR will include participating in:

1. Reviewing the population-based data assembled and selecting clusters;

2. Designing the questionnaires;

3. Training the supervisors in the coverage survey process and selection of the clusters;

4. Training the selected individuals to conduct the survey;

5. Providing technical input to the implementation of the survey;

6. Training the data entry clerks in COSAS;

7. Entering and verifying data;

8. Assessing results of each survey including:

   A. coverage documented by card and history;
   B. per cent of infants born protected against tetanus;
   C. missed opportunities for immunization;
   D. age distribution at time of immunization for each antigen and dose;
   E. effect of national vaccination days and routine facility-based systems on coverage;
   F. reasons for incomplete immunization;
   G. validity of routinely reported data.

9. Prepare preliminary analysis and present findings (with recommendations for future programming) to a workshop of senior staff engaged in the survey and officers responsible for EPI in the surveyed areas.

10. De-brief SESPAS, USAID and donors.

One of the survey specialists (the team leader) will be briefed in Washington before and will de-brief in Washington after the surveys.

ANNEX 3a

Sample Standard Questionnaire

Cluster Form
Infant Immunization

(1) Cluster Number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____	(5) NAME									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

ANNEX 3b

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									
(6) 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									
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									

ANNEX 3c

Cluster Form
Tetanus Toxoid Immunization for Women

(1) Cluster number: _____
(2) Date: _____
(3) Area: _____
(4) Range of birth dates:
From: _____
Until: _____

											TOTAL	
(5) Mother's name											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

ANNEX 4

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:

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

*Source: Coverage Survey WHO Mid-Level Managers Training. Geneva. 1988.

ANNEX 5

Provisional Timeline

Action Needed	Who?	By:
- Determine funding source for local costs	ICC	December 1
- Agree to exact dates of surveys	ICC	December 1
- Decide in which geographical areas to conduct four local surveys	ICC	December 5
- Request computer-generated list of cumulative populations by locality for entire country, and for four local survey areas	USAID (Ramirez) and SESPAS	December 20
- Select four supervisors, two overall counterpart investigators, and 17 enumerators (each enumerator will be joined by a local community representative)	SESPAS	January 10
- Briefing of REACH team leader in Washington (PAHO invited)	REACH A.I.D.	January 28
- Travel to DR of team leader and second external consultant	REACH	January 29
- Briefing by SESPAS, USAID, PAHO and UNICEF	Team	January 30
- Meet with N. Ramirez on issues of sampling and survey fieldwork pertinent to DR	Team	January 30
- Select clusters and prepare simple maps	Team	January 31
- Arrange logistics for training and surveys - vehicles - notify staff - secure local funds - arrange drop-off and pick-up points - arrange accommodations	Team	Jan 31-Feb 1
- Develop data collection forms	Team	February 1-2
- Test, finalize and print forms	Team	February 4
- Prepare materials and schedules for training and surveys	Team	February 5
- Train in class and field	Teams	February 6-8
- Conduct surveys	Teams	February 9-21

Action Needed	Who?	By:
- Train data entry staff and enter data on COSAS	REACH	February 21
- Analyze data and prepare draft findings	SESPAS, REACH	Feb. 22, 25
- Conduct workshop to discuss results	SESPAS, REACH	February 26
- Prepare draft report	SESPAS, REACH	February 27
- Debrief ICC	SESPAS, REACH	February 28
- Debrief in Washington	REACH PAHO A.I.D.	March 1
- Finalize report	REACH	March 4-6

PN-ABI-574

REACH

RESOURCES FOR CHILD HEALTH

Negotiating and Planning for Vaccination Coverage Surveys in the Dominican Republic

Santo Domingo

9-12 October 1990

JSI John Snow, Inc., 1616 N. Fort Myer Drive, Suite 1100, Arlington, Virginia 22209 USA
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Robert Steinglass
Senior Technical Officer

The Resources for Child Health (REACH) Project
1100 Wilson Blvd., Ninth Floor
Arlington, VA 22209

A.I.D. Contract No.: DPE 5982-Z-00-9034-00

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LIST OF ACRONYMS

BCG	Bacillus Calmette-Guerin vaccine
COSAS	Coverage Survey Analysis System
DPT	Diphtheria-Pertussis-Tetanus vaccine
DR	Dominican Republic
EPI	Expanded Program on Immunization
ICC	Inter-Agency Coordinating Committee
LAC	Latin American and Caribbean
MCH	Maternal and child health
OPV	Oral Polio Vaccine
PAHO	Pan American Health Organization
REACH	Resources for Child Health
SESPAS	Secretariat of Public Health and Social Assistance
TT	Tetanus toxoid vaccine
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

I. EXECUTIVE SUMMARY

The Latin American and Caribbean (LAC) Bureau of A.I.D. supports child survival activities throughout the region, including in the Dominican Republic (DR). LAC has expressed its concern that unsatisfactory information systems in the region still impede reliable assessments of immunization coverage. Specifically, LAC presently considers that "poor immunization reporting systems and limited use of coverage surveys continue to hamper management and monitoring of progress."

USAID/Santo Domingo and the LAC Bureau contacted REACH several times during the spring of 1990 to discuss a need felt by the government of the Dominican Republic and donors alike for technical assistance in conducting vaccination coverage surveys in the Dominican Republic. REACH received a buy-in from USAID/Santo Domingo to provide the requisite technical assistance owing to the project's experience in conducting such surveys in many countries. The scope of work of the writer during a three-day visit was to meet with USAID/Santo Domingo and other members of the Inter-Agency Coordinating Committee to formulate plans for a series of vaccination coverage surveys.

Community-based vaccination coverage surveys have been found by WHO to be useful tools to assess coverage when routinely reported data are incomplete or poor in quality. Community surveys have the advantage of providing reasonably precise estimates of coverage at low cost and can be useful when questions exist about numerators and denominators in routine reporting systems. Surveys can provide a wealth of data on particular management questions and generate an immunization profile (e.g., average age by antigen and dose, average intervals between doses, missed opportunities, etc.).

The need to improve routine reporting and disease surveillance systems to measure impact is accepted by the Dominican Secretariat of Public Health and Social Assistance (SESPAS) and the donors. While stressing the long-term goal of strengthening the routine reporting system, SESPAS and the donors have expressed doubts about the reliability of the estimates of coverage generated by the routine system. Local SESPAS, PAHO, UNICEF and USAID staff in Santo Domingo unanimously stated a desire to know the national level of coverage.

A 1988 UNICEF assessment of the Expanded Program on Immunization (EPI) in the DR recommended that house-to-house vaccination during campaigns must be "accompanied by the reinforcement of the regular fixed-center vaccination system." This approach has been endorsed by the Inter-Agency Coordinating Committee (ICC). It is now planned that within the coming two years, the Dominican Republic EPI will no longer exclusively rely on national vaccination campaigns. In preparing for this transition, SESPAS and the donors would like to assess current coverage levels.

Up to five vaccination coverage surveys will be conducted by national staff with external technical assistance from USAID/Santo Domingo through the Resources for Child Health (REACH) project. The principle purpose of the surveys is to determine the proportion of individuals in the target population

that have been immunized, but other information will also be provided. An additional purpose is to transfer the research skills needed to conduct future coverage surveys, if required. The surveys are planned for February 1991.

Other donors will collaborate, as well. Local costs will be covered by funds identified by the ICC in their 1991 action plan. It is hoped that local PAHO and UNICEF technical staff will participate in executing the surveys. REACH will provide two survey specialists, one of whom was proposed by PAHO in Washington.

One of the surveys will be national. Up to four surveys will be local in health service areas where doubts about coverage based on routine reports exist or where management questions need answers. The decision as to where to conduct the local surveys will be made by SESPAS. The cluster sampling technique described in WHO's "Coverage Survey" module from the Training for Mid-Level Managers Course (WHO/EPI/MLM/COV/88), revised in 1988, will be followed.

Preliminary survey results will be available within a few days of completing the field work. Senior staff involved in the field work and staff responsible administratively and technically for EPI in the surveyed health service areas will be brought together for a problem-solving de-briefing based on the survey findings. Issues of policy formulation and implementation, health services organization, and delivery strategies will be discussed at this workshop and recommendations prepared.

A list of follow-up actions which must be completed in December and January prior to the arrival of the REACH consultants appears in Section VII of this report.

II. BACKGROUND

Since the early 1980s, house to house vaccination campaigns have been carried out three times a year in the Dominican Republic (DR). Initially, only polio vaccine was administered. After 1985, DPT, measles and finally tetanus toxoid for women was added. Campaigns account for virtually all vaccinations given by the public sector.

Available official data indicate that since the initiation of the campaigns there has been a significant increase in coverage. As of July, 1990, immunization coverage for infants in the DR, based on routine reports to the World Health Organization (WHO), stood at 41% for BCG, 47% for DPT3, 75% for OPV2 and 46% for measles. Coverage of pregnant women with two or more doses of TT was 24%. (Coverage figures were based by WHO on routine reports from 1987 and 1989.) An historical view of coverage appears below:

Percent of children immunized by 12 months of age and percent of pregnant women immunized against tetanus based on information received from routine reporting systems, Dominican Republic.

	1985	1986	1987	1988	1989
BCG	51	--	--	38	41
DPT3	18	--	80	39	47
Polio	11	--	79	64	75*
Measles	24	--	71	26	46
Tetanus 2+	--	--	25	--	24

* two doses only
Source: WHO data

In a report entitled "Follow-Up Assessment of House-to-House Vaccination in the Dominican Republic, 15-27 May 1988," a UNICEF evaluation team questioned the reliability of these coverage figures. The report stated that the "denominators used to estimate the coverage were unreliable: data from 1983-1986 failed to record vaccination coverage disaggregated by age groups and the coverage information on children under-one was not recorded; data in 1988 was still presented as an average for children of different age groups."

Once routine reports allowed coverage to be recorded by age groups in late 1987, coverage of infants fell drastically in 1988. The above-mentioned report also noted that the campaign information system had improved and allowed for identification of low coverage administrative units. Nevertheless, this writer was informed that only 67% of the expected reports from health service areas had been received at the national level in a recent year.

Coverage with DPT and measles has lagged considerably behind that with polio. This has reinforced the impression that, while good for polio eradication efforts, the campaign approach has not sufficiently stressed the need to fully immunize infants and women. For example, measles vaccination is offered on only one campaign annually.

The 1988 UNICEF assessment recommended that house-to-house vaccination must be "accompanied by the reinforcement of the regular fixed-center vaccination system." This approach has been endorsed by the Inter-Agency Coordinating Committee (ICC). It is now planned that within the coming two years, the Dominican Republic EPI will no longer exclusively rely on national vaccination campaigns. In preparing for this transition, the Dominican Secretariat of Public Health and Social Assistance (SESPAS), USAID and UNICEF would like to assess current immunization coverage levels.

The Latin American and Caribbean (LAC) Bureau of A.I.D. supports child survival activities throughout the region, including in the DR. LAC has expressed its concern that unsatisfactory information systems in the region still impede reliable assessments of immunization coverage. Specifically, LAC presently considers that "poor immunization reporting systems and limited use of coverage surveys continue to hamper management and monitoring of progress."

Community-based vaccination coverage surveys have been found by WHO to be useful tools to assess coverage when routinely reported data are incomplete or poor in quality. These surveys are also increasingly being conducted by the U.S. Centers for Disease Control within the United States because of dissatisfaction with the quality of routine data. Community surveys have the advantage of providing reasonably precise estimates of coverage at low cost and can be useful when questions exist about numerators and denominators in routine reporting systems.

Surveys are particularly useful in places (as in the National District area of Santo Domingo, for example) where a significant proportion of immunizations are performed by the private sector, but are not reflected in SESPAS figures. Surveys also permit an estimation of the percent of infants fully immunized and the percent of babies born protected against neonatal tetanus (by virtue of the tetanus toxoid doses ever received by the mothers prior to delivery).

Finally, surveys can provide a wealth of data on particular management questions and generate an immunization profile (e.g., average age by antigen and dose, average intervals between doses, missed opportunities, proportion of vaccination given at specified points of time, etc.). The validity of survey findings is much improved if dates of birth and immunization can be verified from family-retained documents (e.g., birth certificates and vaccination cards).

In 1980, WHO described the methodology of coverage surveys in a separate module included in the EPI Mid-Level Managers Course. This methodology was revised by WHO in 1988. WHO has supported the training of tens of thousands of health staff in coverage survey techniques. Since then, 3,563 coverage

surveys have been performed up to 1989. (Two percent of these have been conducted in the American Region of WHO, and 6 out of the 2,334 during the past five years. From 1988 to the present, two EPI program reviews out of 77 have been conducted in the Americas.)

In the DR itself, no national vaccination coverage survey using the WHO methodology has ever been conducted, the last comprehensive EPI review was in 1982, and less than 1% of the $14.6 million five-year multi-party EPI budget is devoted to evaluation.

Too many coverage surveys can distract program managers from the need to improve routine reporting and disease surveillance systems to measure impact. However, managers do need to have reliable intermediate indicators of coverage as a basis for disease control. Local SESPAS, PAHO, UNICEF and USAID staff in Santo Domingo all expressed a desire to know the national level of coverage. While stressing the long-term goal of strengthening the routine reporting system, SESPAS and the donors cannot wait for the routine system to generate reliable estimates. Each of the three days that this writer was in the DR, full-page articles appeared in the national newspaper critical of the low level of vaccination coverage, high rate of drop-out and missed opportunities, and exclusive dependance on campaigns to the detriment of strengthening routine delivery systems.

III. PURPOSE OF VISIT

The scope of work of the writer was to:

1. Meet with USAID/Santo Domingo and other members of the Inter-Agency Coordinating Committee to formulate plans and establish dates for vaccination coverage surveys.

2. Make a critical review of the timing of the coverage surveys to determine if the program would benefit from their being held prior to the November National Vaccination Days.

3. Identify the organizations and individuals who would be available to take part in the surveys.

4. Identify the scope of the survey - one nationwide 30 cluster survey versus eight surveys in the seven regions and one national district.

5. Develop the data collection forms and identify the information (maps, population by towns) that will be needed prior to the arrival of the EPI survey specialists.

IV. ACTIVITIES

Discussions were held on 10 October with USAID/Santo Domingo and local PAHO staff prior to an ICC meeting. The meeting was convened on 11 October under the chairmanship of Dr. Brigido Garcia Sanchez, National Director of Health. Representatives from USAID, PAHO, UNICEF, and SESPAS attended. A second meeting with USAID, PAHO and SESPAS staff was convened on 12 October to discuss finer technical and logistical considerations of the coverage surveys. However, this second meeting was practically entirely devoted to repeat discussions as to the need for and purpose of the surveys.

A list of persons contacted is in Annex 1.

V. RESULTS AND CONCLUSIONS

Since 1983, some 23 rounds of national vaccination days have been conducted in the DR. The next one is scheduled for one day only on 11 November 1990 and will offer only polio and DPT vaccines.

A series of five vaccination coverage surveys will be conducted by national staff with external technical assistance provided by the Resources for Child Health (REACH) project. See Annex 2 for the scope of work of the two REACH survey specialists, one of whom was proposed by PAHO in Washington. **The principle purpose of the surveys is to determine the proportion of individuals in the target population that have been immunized, but other information will also be provided.** An additional purpose is to transfer the research skills needed to conduct future coverage surveys, if required. The surveys are planned for February 1991.

Other donors will collaborate, as well. Local costs will be covered by funds identified by the ICC in their 1991 action plan. It is hoped that local PAHO and UNICEF technical staff will participate in executing the surveys.

One of the surveys will be national. Up to four surveys will be local in health service areas where doubts about coverage based on routine reports exist or where management questions need answers. For example, a health service area with a large population and low reported coverage, which therefore contributes to low overall national coverage, may be selected for a survey. An area with reported BCG or OPV/DPT1 coverage of greater than 95% may be selected because the routine reports are suspect. An area reporting coverage in excess of the vaccine doses distributed could be surveyed. Areas of high drop-out between the first and third doses could be selected. Or an area in which vaccinations are offered by an unusual strategy or where health services are organized differently may be surveyed to answer specific management questions. The decision as to where to conduct the local surveys will be made by SESPAS.

The cluster sampling technique described in WHO's "Coverage Survey" module from the Training for Mid-Level Managers Course, revised in 1988 (WHO/EPI/MLM/COV/88), will be followed. Within each of the four health

- The level of confidence is 95%, which means that nineteen out of twenty times the data which result from the survey will be within the stated level of accuracy (i.e., plus or minus 10%).

Sample questionnaires promoted by WHO are attached in Annex 3. The questionnaires are used only for the 210 eligible children 12-23 months old and 210 mothers in each survey. (The "Reasons for Immunization Failure" form is a single, open-ended question.) Forms for manually consolidating and analyzing data are also available in the WHO module, copies of which were presented by the writer to SESPAS and the donors.

With technical assistance from REACH and local PAHO staff, SESPAS will want to carefully review these samples and add or delete questions according to local needs. For example, it is possible that children or mothers have immunization cards documenting administration of some of the doses, but offer a verbal history of having received other undocumented doses. This may occur with vaccination campaigns, since careful record-keeping is sometimes not stressed. Cards may not have been issued or retained for each round of campaign. Therefore, it may be appropriate to include for each vaccine and dose whether the information comes from an immunization card.

A few especially pertinent questions could be asked to inform and guide the transition from campaigns to routine delivery at fixed health facilities. Some examples of questions which could be asked of the 210 individuals in each survey are:

1) How many times in the past 12 months has your child been brought to a SESPAS health facility for whatever reason?

2) How long does it take you to reach the nearest SESPAS health facility?

3) Which health facilities are the usual source of health care for your family (SESPAS, private physician, etc.)

4) Do you believe your child is in need of any more vaccinations?

5) Did your child 12-23 months old receive any vaccinations during the national vaccination campaign on November 11?

6) On what source of information do you rely to learn about the dates of vaccination campaigns?

7) Do you think it is safe for an infant to receive more than one injection on the same visit?

8) If an injection was given on the last campaign on November 11, where in the body did the child receive it? (Since DPT is the only injection given on November 11 and since SESPAS norms state that it should be given in the thigh, this question will permit analysis as to the reliability of mothers' recall by antigen -- DPT and measles -- when no card is present.)

The analysis of survey data will provide an immunization profile and answers to the following typical questions (as well as others determined by the design of the questionnaire such as coverage by sex and TT coverage by maternal age):

-- what proportion of children 12-23 months of age have been vaccinated with each vaccine and dose?

-- what proportion were vaccinated by 12 months of age?

-- what proportion were fully vaccinated by 12 months of age or by the date of the survey?

-- what proportion of infants were born protected against neonatal tetanus by virtue of TT received by their mothers?

-- what proportion of mothers received antenatal care during the last pregnancy?

-- which antigen had the highest (lowest) coverage?

-- what proportion of each vaccine were received during door-to-door vaccination campaigns? by the private sector (private physicians, private voluntary organizations, etc.)?

-- what was the percent coverage according to cards and what was it according to "cards plus history?"

-- what was the drop-out rate between doses?

-- what was the reason for immunization failure?

-- what was the average and median age for each dose?

-- what was the average interval between successive doses?

-- what proportion of vaccinations were given at inappropriate ages or with inappropriate intervals?

-- what would the coverage by 12 months have been, if no missed opportunities to immunize had occurred on the date of any vaccination?

-- what proportion of children (mothers) were ever given cards and what proportion still retain them?

-- what proportion of children (mothers) were fully, partially or never vaccinated?

Special methodological issues, some of which are particularly relevant to the situation in the DR, need to be addressed with the technical assistance of the REACH consultants in the period of intensive planning immediately prior to the survey and in the training of the surveyors.

- A birth dose of OPV is recommended in the DR in addition to the three doses recommended at age two, three, and four months. The coverage survey normally counts only OPV1, OPV2 and OPV3 but can be modified to count the dose at birth as well. (COSAS allows the birth dose to be entered.)

- A decision is needed as to whether or not to exclude from questioning those children and mothers who have not been resident for some pre-determined period in the cluster.

- A decision is needed on how many times to return to the same home, when the mother is absent at the first visit but neighbors report that small children reside there.

- A decision is needed as to the type of persons acceptable to interview (e.g., mothers only, fathers, other guardians).

- The method most appropriate for the DR of randomly selecting the first home in rural and urban clusters needs to be determined.

- Methods to assist the mother in recalling whether TT was ever given will be needed.

- Step-by-step guidelines on how to conduct the field work need to be prepared as a memory aid for the supervisors and surveyors. An example of one prepared by PAHO for use in Bolivia in 1987 will be sent to USAID/Santo Domingo.

There was insufficient time for this writer to discuss the finer details of the survey. A period of intensive planning will need to precede the survey. At least two national staff should be assigned for 30 days as counterparts to the two external advisors in order to facilitate the planning, training and execution of the surveys.

The number of teams needed to conduct a coverage survey and the number of days needed to conduct it will vary depending on the availability of personnel and transport and the time required to travel to the clusters. **Some logistical considerations and provisional solutions for SESPAS and the external technical consultants follow:**

- SESPAS and ICC members need to decide whether the survey should be done by persons who are not involved in immunization, or whether "promoter supervisors" and others with EPI involvement may be used.

- Each survey team should consist of two members, including one health worker (or student nurse, e.g.) trained in the survey technique as an "enumerator" and one "community representative" known to the

local population. Each health worker member of the team must be available full-time for 17 days.

- Plan that one team can complete approximately one cluster per day. In urban areas, one team can complete two clusters per day. Decide the number of teams and the duration of the survey based on resources and needs. For example, 15 teams can complete one 30-cluster survey in 2 days.

- A total of three days is budgeted for each of the four local surveys, which includes two days of field work and one day to travel to the next survey site and to arrange logistics locally. SESPAS will need to decide if field work will continue without interruption over the weekends.

- Four days are budgeted for the national survey. In practice, SESPAS may decide to cover some of the clusters selected for the national survey which are nearby or on the way to the local survey areas. In principle, however, leaving the national clusters to the end will be better, since the enumerators will by then be more experienced.

- To closely control the quality of the survey, a ratio of one field supervisor to four teams should be honored. The four supervisors should have full-time access to a vehicle, so that they can be mobile and supervise the field teams.

- Supervisors should endeavor to oversee two of their four teams daily. They should alternate such that each of their four teams is supervised every second day. Supervisors should be selected with the knowledge that they are to be engaged full-time for 18 days.

- On the assumption that vehicles will not need to carry community representatives, that each vehicle can carry a minimum of six persons (driver, supervisor and four enumerators), and that clusters are not distant from one another, then a ratio of one vehicle per four teams is required. The budget assumes that vehicles can be made available for full-time field use by SESPAS for <u>each</u> survey. A minimum of four vehicles will be needed for two weeks. Additional vehicles will be needed for the national survey because of the greater distances between clusters.

- Enumerators will either find their way to the cluster site by public transport (in urban areas or in larger nearby rural clusters well-served by public transport), or the supervisor's vehicle can deposit some or all of the enumerators at the start of the day.

- Although 15 teams could complete a 30 cluster survey in two days of field work it will be useful to train two additional health workers ("enumerators") in case substitution becomes necessary.

- The seventeen enumerators and four supervisors need to be thoroughly trained in a two-day "theoretical" course, followed by a third day of field practice in nearby localities which are not scheduled for a local survey. Discussion of field problems will also take place on the third day.

- This same cadre of trained supervisors and enumerators will conduct each survey. The quality of the field work is a function of good training, close field supervision, and adequate logistic support. Because only 210 respondents will be questioned in each survey, it is essential that proper survey methods are followed at all times.

- Meticulous planning is required so that the community representative knows where and when to join the enumerator in the cluster. The enumerator should similarly know the name and location of the community representative.

- Arrange travel to each cluster so that teams can begin work when respondents are most likely to be present.

- Two computer-literate SESPAS staff will be trained to enter the data with the guidance of the REACH consultants. REACH will provide a computer, printer and software.

With the guidance of REACH consultants, data will be entered, analyzed and displayed on COSAS (Coverage Survey Analysis System) software, which was designed by WHO with REACH input. The utility of COSAS for analysis depends on the use and retention of vaccination cards, on which dates of birth and vaccination are recorded. Without cards, many of the elegant analyses to give an immunization profile cannot be done -- either manually or by computer. An explanation of COSAS from the WHO Coverage Survey Module is in Annex 4.

Preliminary survey results will be available within a few days of completing the field work. **Senior staff involved in the field work and staff administratively and technically responsible for EPI in the surveyed health service areas will be brought together for a problem-solving de-briefing based on the survey findings.** Issues of policy formulation and implementation, health services organization, and delivery strategies will be discussed at a workshop and recommendations prepared. To supplement the information from the surveys at a later date, local health facility surveys involving reviews of records and interviews of clinic attendees and health workers could be used, if funding sources are identified.

A provisional timeline and an illustrative budget for local costs appear in Annexes 5 and 6, respectively.

VI. FOLLOW-UP ACTIONS

Follow-up Actions Prior to Arrival of REACH Consultants	Who?	By:
- Inform USAID whether buy-in must be modified due to hiring of second consultant	REACH	November 20
- Finalize funding of local costs	ICC	December 1
- Agree to exact dates of survey	SESPAS & ICC	December 1
- Decide in which geographic areas to conduct up to four local surveys (in addition to one national survey) and obtain maps	SESPAS (and ICC)	December 5
- Request computer-generated list of cumulative populations by locality for entire population and for each of four local areas to by surveyed	USAID and Nelson Ramirez and SESPAS	December 20
- Identify and select supervisors, enumerators and counterpart investigators	SESPAS	January 10
- Provide REACH with dates of past rounds of campaigns and antigens included from 1988 to present	USAID	January 10
- Identify availability of computers and printers locally.	USAID	January 10

ANNEX 1

Contacts

Dr. Angel Luis Alvarez	EPI Director, SESPAS
Dr. Brigido Garcia Sanchez	National Director of Health, SESPAS
Dr. Lee Hougen	Chief, Health and Population, USAID
Dra. Josefina Martinez	EPI Technical Officer, PAHO
Mr. Michael McCabe	Project Officer, UNICEF
Dra. Sara Menendez Abraham	Project Officer, UNICEF
Dr. Jean Marc Olive	EPI Medical Officer, PAHO
Lic. Mañuel Ortega	Population Officer, USAID
Lic. Nelson Ramirez	Consultant, Development Associates
Dr. Johnny Rivas	MCH Director, SESPAS
Dra. Mirta Roses	Representative, PAHO
Mr. Tim Truitt	Child Survival Coordinator, USAID

ANNEX 2

Scope of Work of REACH Survey Specialists

The two survey specialists will spend five weeks in the Dominican Republic for the purpose of assisting in the preparation, implementation and analysis of the surveys. In coordination with SESPAS, PAHO, UNICEF and USAID, specific activities in the DR will include participating in:

1. Reviewing the population-based data assembled and selecting clusters;

2. Designing the questionnaires;

3. Training the supervisors in the coverage survey process and selection of the clusters;

4. Training the selected individuals to conduct the survey;

5. Providing technical input to the implementation of the survey;

6. Training the data entry clerks in COSAS;

7. Entering and verifying data;

8. Assessing results of each survey including:

   A. coverage documented by card and history;
   B. per cent of infants born protected against tetanus;
   C. missed opportunities for immunization;
   D. age distribution at time of immunization for each antigen and dose;
   E. effect of national vaccination days and routine facility-based systems on coverage;
   F. reasons for incomplete immunization;
   G. validity of routinely reported data.

9. Prepare preliminary analysis and present findings (with recommendations for future programming) to a workshop of senior staff engaged in the survey and officers responsible for EPI in the surveyed areas.

10. De-brief SESPAS, USAID and donors.

One of the survey specialists (the team leader) will be briefed in Washington before and will de-brief in Washington after the surveys.

ANNEX 3a

Sample Standard Questionnaire

Cluster Form
Infant Immunization

(1) Cluster Number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____	(5) NAME									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

ANNEX 3b

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									
(6) 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									
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									

ANNEX 3c

Cluster Form
Tetanus Toxoid Immunization for Women

(1) Cluster number: _____
(2) Date: _____
(3) Area: _____
(4) Range of birth dates:
From: _____
Until: _____

											TOTAL	
(5) Mother's name											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

ANNEX 4

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:

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

*Source: Coverage Survey WHO Mid-Level Managers Training. Geneva. 1988.

ANNEX 5

Provisional Timeline

Action Needed	Who?	By:
- Determine funding source for local costs	ICC	December 1
- Agree to exact dates of surveys	ICC	December 1
- Decide in which geographical areas to conduct four local surveys	ICC	December 5
- Request computer-generated list of cumulative populations by locality for entire country, and for four local survey areas	USAID (Ramirez) and SESPAS	December 20
- Select four supervisors, two overall counterpart investigators, and 17 enumerators (each enumerator will be joined by a local community representative)	SESPAS	January 10
- Briefing of REACH team leader in Washington (PAHO invited)	REACH A.I.D.	January 28
- Travel to DR of team leader and second external consultant	REACH	January 29
- Briefing by SESPAS, USAID, PAHO and UNICEF	Team	January 30
- Meet with N. Ramirez on issues of sampling and survey fieldwork pertinent to DR	Team	January 30
- Select clusters and prepare simple maps	Team	January 31
- Arrange logistics for training and surveys - vehicles - notify staff - secure local funds - arrange drop-off and pick-up points - arrange accommodations	Team	Jan 31-Feb 1
- Develop data collection forms	Team	February 1-2
- Test, finalize and print forms	Team	February 4
- Prepare materials and schedules for training and surveys	Team	February 5
- Train in class and field	Teams	February 6-8
- Conduct surveys	Teams	February 9-21

Action Needed	Who?	By:
- Train data entry staff and enter data on COSAS	REACH	February 21
- Analyze data and prepare draft findings	SESPAS, REACH	Feb. 22, 25
- Conduct workshop to discuss results	SESPAS, REACH	February 26
- Prepare draft report	SESPAS, REACH	February 27
- Debrief ICC	SESPAS, REACH	February 28
- Debrief in Washington	REACH PAHO A.I.D.	March 1
- Finalize report	REACH	March 4-6

PN-ABI-574

REACH

RESOURCES FOR CHILD HEALTH

Negotiating and Planning for Vaccination Coverage Surveys in the Dominican Republic

Santo Domingo

9-12 October 1990

JSI John Snow, Inc., 1616 N. Fort Myer Drive, Suite 1100, Arlington, Virginia 22209 USA
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Negotiating and Planning for Vaccination Coverage Surveys in the Dominican Republic

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Robert Steinglass
Senior Technical Officer

The Resources for Child Health (REACH) Project
1100 Wilson Blvd., Ninth Floor
Arlington, VA 22209

A.I.D. Contract No.: DPE 5982-Z-00-9034-00

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LIST OF ACRONYMS

BCG	Bacillus Calmette-Guerin vaccine
COSAS	Coverage Survey Analysis System
DPT	Diphtheria-Pertussis-Tetanus vaccine
DR	Dominican Republic
EPI	Expanded Program on Immunization
ICC	Inter-Agency Coordinating Committee
LAC	Latin American and Caribbean
MCH	Maternal and child health
OPV	Oral Polio Vaccine
PAHO	Pan American Health Organization
REACH	Resources for Child Health
SESPAS	Secretariat of Public Health and Social Assistance
TT	Tetanus toxoid vaccine
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

I. EXECUTIVE SUMMARY

The Latin American and Caribbean (LAC) Bureau of A.I.D. supports child survival activities throughout the region, including in the Dominican Republic (DR). LAC has expressed its concern that unsatisfactory information systems in the region still impede reliable assessments of immunization coverage. Specifically, LAC presently considers that "poor immunization reporting systems and limited use of coverage surveys continue to hamper management and monitoring of progress."

USAID/Santo Domingo and the LAC Bureau contacted REACH several times during the spring of 1990 to discuss a need felt by the government of the Dominican Republic and donors alike for technical assistance in conducting vaccination coverage surveys in the Dominican Republic. REACH received a buy-in from USAID/Santo Domingo to provide the requisite technical assistance owing to the project's experience in conducting such surveys in many countries. The scope of work of the writer during a three-day visit was to meet with USAID/Santo Domingo and other members of the Inter-Agency Coordinating Committee to formulate plans for a series of vaccination coverage surveys.

Community-based vaccination coverage surveys have been found by WHO to be useful tools to assess coverage when routinely reported data are incomplete or poor in quality. Community surveys have the advantage of providing reasonably precise estimates of coverage at low cost and can be useful when questions exist about numerators and denominators in routine reporting systems. Surveys can provide a wealth of data on particular management questions and generate an immunization profile (e.g., average age by antigen and dose, average intervals between doses, missed opportunities, etc.).

The need to improve routine reporting and disease surveillance systems to measure impact is accepted by the Dominican Secretariat of Public Health and Social Assistance (SESPAS) and the donors. While stressing the long-term goal of strengthening the routine reporting system, SESPAS and the donors have expressed doubts about the reliability of the estimates of coverage generated by the routine system. Local SESPAS, PAHO, UNICEF and USAID staff in Santo Domingo unanimously stated a desire to know the national level of coverage.

A 1988 UNICEF assessment of the Expanded Program on Immunization (EPI) in the DR recommended that house-to-house vaccination during campaigns must be "accompanied by the reinforcement of the regular fixed-center vaccination system." This approach has been endorsed by the Inter-Agency Coordinating Committee (ICC). It is now planned that within the coming two years, the Dominican Republic EPI will no longer exclusively rely on national vaccination campaigns. In preparing for this transition, SESPAS and the donors would like to assess current coverage levels.

Up to five vaccination coverage surveys will be conducted by national staff with external technical assistance from USAID/Santo Domingo through the Resources for Child Health (REACH) project. The principle purpose of the surveys is to determine the proportion of individuals in the target population

that have been immunized, but other information will also be provided. An additional purpose is to transfer the research skills needed to conduct future coverage surveys, if required. The surveys are planned for February 1991.

Other donors will collaborate, as well. Local costs will be covered by funds identified by the ICC in their 1991 action plan. It is hoped that local PAHO and UNICEF technical staff will participate in executing the surveys. REACH will provide two survey specialists, one of whom was proposed by PAHO in Washington.

One of the surveys will be national. Up to four surveys will be local in health service areas where doubts about coverage based on routine reports exist or where management questions need answers. The decision as to where to conduct the local surveys will be made by SESPAS. The cluster sampling technique described in WHO's "Coverage Survey" module from the Training for Mid-Level Managers Course (WHO/EPI/MLM/COV/88), revised in 1988, will be followed.

Preliminary survey results will be available within a few days of completing the field work. Senior staff involved in the field work and staff responsible administratively and technically for EPI in the surveyed health service areas will be brought together for a problem-solving de-briefing based on the survey findings. Issues of policy formulation and implementation, health services organization, and delivery strategies will be discussed at this workshop and recommendations prepared.

A list of follow-up actions which must be completed in December and January prior to the arrival of the REACH consultants appears in Section VII of this report.

II. BACKGROUND

Since the early 1980s, house to house vaccination campaigns have been carried out three times a year in the Dominican Republic (DR). Initially, only polio vaccine was administered. After 1985, DPT, measles and finally tetanus toxoid for women was added. Campaigns account for virtually all vaccinations given by the public sector.

Available official data indicate that since the initiation of the campaigns there has been a significant increase in coverage. As of July, 1990, immunization coverage for infants in the DR, based on routine reports to the World Health Organization (WHO), stood at 41% for BCG, 47% for DPT3, 75% for OPV2 and 46% for measles. Coverage of pregnant women with two or more doses of TT was 24%. (Coverage figures were based by WHO on routine reports from 1987 and 1989.) An historical view of coverage appears below:

Percent of children immunized by 12 months of age and percent of pregnant women immunized against tetanus based on information received from routine reporting systems, Dominican Republic.

	1985	1986	1987	1988	1989
BCG	51	--	--	38	41
DPT3	18	--	80	39	47
Polio	11	--	79	64	75*
Measles	24	--	71	26	46
Tetanus 2+	--	--	25	--	24

* two doses only
Source: WHO data

In a report entitled "Follow-Up Assessment of House-to-House Vaccination in the Dominican Republic, 15-27 May 1988," a UNICEF evaluation team questioned the reliability of these coverage figures. The report stated that the "denominators used to estimate the coverage were unreliable: data from 1983-1986 failed to record vaccination coverage disaggregated by age groups and the coverage information on children under-one was not recorded; data in 1988 was still presented as an average for children of different age groups."

Once routine reports allowed coverage to be recorded by age groups in late 1987, coverage of infants fell drastically in 1988. The above-mentioned report also noted that the campaign information system had improved and allowed for identification of low coverage administrative units. Nevertheless, this writer was informed that only 67% of the expected reports from health service areas had been received at the national level in a recent year.

Coverage with DPT and measles has lagged considerably behind that with polio. This has reinforced the impression that, while good for polio eradication efforts, the campaign approach has not sufficiently stressed the need to fully immunize infants and women. For example, measles vaccination is offered on only one campaign annually.

The 1988 UNICEF assessment recommended that house-to-house vaccination must be "accompanied by the reinforcement of the regular fixed-center vaccination system." This approach has been endorsed by the Inter-Agency Coordinating Committee (ICC). It is now planned that within the coming two years, the Dominican Republic EPI will no longer exclusively rely on national vaccination campaigns. In preparing for this transition, the Dominican Secretariat of Public Health and Social Assistance (SESPAS), USAID and UNICEF would like to assess current immunization coverage levels.

The Latin American and Caribbean (LAC) Bureau of A.I.D. supports child survival activities throughout the region, including in the DR. LAC has expressed its concern that unsatisfactory information systems in the region still impede reliable assessments of immunization coverage. Specifically, LAC presently considers that "poor immunization reporting systems and limited use of coverage surveys continue to hamper management and monitoring of progress."

Community-based vaccination coverage surveys have been found by WHO to be useful tools to assess coverage when routinely reported data are incomplete or poor in quality. These surveys are also increasingly being conducted by the U.S. Centers for Disease Control within the United States because of dissatisfaction with the quality of routine data. Community surveys have the advantage of providing reasonably precise estimates of coverage at low cost and can be useful when questions exist about numerators and denominators in routine reporting systems.

Surveys are particularly useful in places (as in the National District area of Santo Domingo, for example) where a significant proportion of immunizations are performed by the private sector, but are not reflected in SESPAS figures. Surveys also permit an estimation of the percent of infants fully immunized and the percent of babies born protected against neonatal tetanus (by virtue of the tetanus toxoid doses ever received by the mothers prior to delivery).

Finally, surveys can provide a wealth of data on particular management questions and generate an immunization profile (e.g., average age by antigen and dose, average intervals between doses, missed opportunities, proportion of vaccination given at specified points of time, etc.). The validity of survey findings is much improved if dates of birth and immunization can be verified from family-retained documents (e.g., birth certificates and vaccination cards).

In 1980, WHO described the methodology of coverage surveys in a separate module included in the EPI Mid-Level Managers Course. This methodology was revised by WHO in 1988. WHO has supported the training of tens of thousands of health staff in coverage survey techniques. Since then, 3,563 coverage

surveys have been performed up to 1989. (Two percent of these have been conducted in the American Region of WHO, and 6 out of the 2,334 during the past five years. From 1988 to the present, two EPI program reviews out of 77 have been conducted in the Americas.)

In the DR itself, no national vaccination coverage survey using the WHO methodology has ever been conducted, the last comprehensive EPI review was in 1982, and less than 1% of the $14.6 million five-year multi-party EPI budget is devoted to evaluation.

Too many coverage surveys can distract program managers from the need to improve routine reporting and disease surveillance systems to measure impact. However, managers do need to have reliable intermediate indicators of coverage as a basis for disease control. Local SESPAS, PAHO, UNICEF and USAID staff in Santo Domingo all expressed a desire to know the national level of coverage. While stressing the long-term goal of strengthening the routine reporting system, SESPAS and the donors cannot wait for the routine system to generate reliable estimates. Each of the three days that this writer was in the DR, full-page articles appeared in the national newspaper critical of the low level of vaccination coverage, high rate of drop-out and missed opportunities, and exclusive dependance on campaigns to the detriment of strengthening routine delivery systems.

III. PURPOSE OF VISIT

The scope of work of the writer was to:

1. Meet with USAID/Santo Domingo and other members of the Inter-Agency Coordinating Committee to formulate plans and establish dates for vaccination coverage surveys.

2. Make a critical review of the timing of the coverage surveys to determine if the program would benefit from their being held prior to the November National Vaccination Days.

3. Identify the organizations and individuals who would be available to take part in the surveys.

4. Identify the scope of the survey - one nationwide 30 cluster survey versus eight surveys in the seven regions and one national district.

5. Develop the data collection forms and identify the information (maps, population by towns) that will be needed prior to the arrival of the EPI survey specialists.

IV. ACTIVITIES

Discussions were held on 10 October with USAID/Santo Domingo and local PAHO staff prior to an ICC meeting. The meeting was convened on 11 October under the chairmanship of Dr. Brigido Garcia Sanchez, National Director of Health. Representatives from USAID, PAHO, UNICEF, and SESPAS attended. A second meeting with USAID, PAHO and SESPAS staff was convened on 12 October to discuss finer technical and logistical considerations of the coverage surveys. However, this second meeting was practically entirely devoted to repeat discussions as to the need for and purpose of the surveys.

A list of persons contacted is in Annex 1.

V. RESULTS AND CONCLUSIONS

Since 1983, some 23 rounds of national vaccination days have been conducted in the DR. The next one is scheduled for one day only on 11 November 1990 and will offer only polio and DPT vaccines.

A series of five vaccination coverage surveys will be conducted by national staff with external technical assistance provided by the Resources for Child Health (REACH) project. See Annex 2 for the scope of work of the two REACH survey specialists, one of whom was proposed by PAHO in Washington. **The principle purpose of the surveys is to determine the proportion of individuals in the target population that have been immunized, but other information will also be provided.** An additional purpose is to transfer the research skills needed to conduct future coverage surveys, if required. The surveys are planned for February 1991.

Other donors will collaborate, as well. Local costs will be covered by funds identified by the ICC in their 1991 action plan. It is hoped that local PAHO and UNICEF technical staff will participate in executing the surveys.

One of the surveys will be national. Up to four surveys will be local in health service areas where doubts about coverage based on routine reports exist or where management questions need answers. For example, a health service area with a large population and low reported coverage, which therefore contributes to low overall national coverage, may be selected for a survey. An area with reported BCG or OPV/DPT1 coverage of greater than 95% may be selected because the routine reports are suspect. An area reporting coverage in excess of the vaccine doses distributed could be surveyed. Areas of high drop-out between the first and third doses could be selected. Or an area in which vaccinations are offered by an unusual strategy or where health services are organized differently may be surveyed to answer specific management questions. The decision as to where to conduct the local surveys will be made by SESPAS.

The cluster sampling technique described in WHO's "Coverage Survey" module from the Training for Mid-Level Managers Course, revised in 1988 (WHO/EPI/MLM/COV/88), will be followed. Within each of the four health

service areas to be surveyed and for the nation as a whole, a cumulative population list based on 1981 census data will need to be prepared before February 1991 listing each locality. (In other words, five cumulative population lists will be needed.) From each list, 30 clusters will be selected by the standard "probability proportionate to size sampling." Selection of clusters will take place at the start of the REACH consultant's visit.

A fixed sampling interval is defined for each survey "universe." After a random number start, clusters are selected by successively adding the sampling interval until 30 clusters are obtained. If a large locality within the universe is selected more than once, "probability proportionate to size" sampling will be used to select clusters from the sub-areas within the locality.

Mr. Nelson Ramirez, a statistician and demographic consultant with Development Associates under contract with USAID/Santo Domingo, will be requested by USAID to arrange for the preparation of computer print outs of each locality's individual and cumulative populations for the nation as a whole and for each of the four local survey areas. No geographical or administrative areas should be excluded from the national sample. His guidance will also be solicited by the REACH survey specialists on "probability proportionate to size" sampling within urban areas, as well as his suggestions regarding the most appropriate means in the DR to select the first house randomly within a cluster. From the first house, the surveyors proceed to the nearest front door of neighboring houses.

Within each of the 30 clusters which constitute a single survey, the immunization status of seven children 12-23 months of age and seven mothers of children 0-11 months of age will be evaluated. Each survey therefore consists of 210 (7 x 30) children 12-23 months old and 210 mothers of infants. This cluster sampling technique allows conclusions to be drawn on the population surveyed as a whole. It does not permit comparisons among different clusters or subsections within the total population surveyed.

The total population in each health service area for the local coverage surveys should exceed 15,000 to be absolutely sure that the required number of mothers and children can be found.

Each survey with 30 clusters will meet the following standards of reliability:

- 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%. (The slight increase in precision which would result from increasing either the number of clusters or the number of individuals surveyed per cluster is not worth the extra cost and effort which would be required.)

- The level of confidence is 95%, which means that nineteen out of twenty times the data which result from the survey will be within the stated level of accuracy (i.e., plus or minus 10%).

Sample questionnaires promoted by WHO are attached in Annex 3. The questionnaires are used only for the 210 eligible children 12-23 months old and 210 mothers in each survey. (The "Reasons for Immunization Failure" form is a single, open-ended question.) Forms for manually consolidating and analyzing data are also available in the WHO module, copies of which were presented by the writer to SESPAS and the donors.

With technical assistance from REACH and local PAHO staff, SESPAS will want to carefully review these samples and add or delete questions according to local needs. For example, it is possible that children or mothers have immunization cards documenting administration of some of the doses, but offer a verbal history of having received other undocumented doses. This may occur with vaccination campaigns, since careful record-keeping is sometimes not stressed. Cards may not have been issued or retained for each round of campaign. Therefore, it may be appropriate to include for each vaccine and dose whether the information comes from an immunization card.

A few especially pertinent questions could be asked to inform and guide the transition from campaigns to routine delivery at fixed health facilities. Some examples of questions which could be asked of the 210 individuals in each survey are:

1) How many times in the past 12 months has your child been brought to a SESPAS health facility for whatever reason?

2) How long does it take you to reach the nearest SESPAS health facility?

3) Which health facilities are the usual source of health care for your family (SESPAS, private physician, etc.)

4) Do you believe your child is in need of any more vaccinations?

5) Did your child 12-23 months old receive any vaccinations during the national vaccination campaign on November 11?

6) On what source of information do you rely to learn about the dates of vaccination campaigns?

7) Do you think it is safe for an infant to receive more than one injection on the same visit?

8) If an injection was given on the last campaign on November 11, where in the body did the child receive it? (Since DPT is the only injection given on November 11 and since SESPAS norms state that it should be given in the thigh, this question will permit analysis as to the reliability of mothers' recall by antigen -- DPT and measles -- when no card is present.)

The analysis of survey data will provide an immunization profile and answers to the following typical questions (as well as others determined by the design of the questionnaire such as coverage by sex and TT coverage by maternal age):

-- what proportion of children 12-23 months of age have been vaccinated with each vaccine and dose?

-- what proportion were vaccinated by 12 months of age?

-- what proportion were fully vaccinated by 12 months of age or by the date of the survey?

-- what proportion of infants were born protected against neonatal tetanus by virtue of TT received by their mothers?

-- what proportion of mothers received antenatal care during the last pregnancy?

-- which antigen had the highest (lowest) coverage?

-- what proportion of each vaccine were received during door-to-door vaccination campaigns? by the private sector (private physicians, private voluntary organizations, etc.)?

-- what was the percent coverage according to cards and what was it according to "cards plus history?"

-- what was the drop-out rate between doses?

-- what was the reason for immunization failure?

-- what was the average and median age for each dose?

-- what was the average interval between successive doses?

-- what proportion of vaccinations were given at inappropriate ages or with inappropriate intervals?

-- what would the coverage by 12 months have been, if no missed opportunities to immunize had occurred on the date of any vaccination?

-- what proportion of children (mothers) were ever given cards and what proportion still retain them?

-- what proportion of children (mothers) were fully, partially or never vaccinated?

Special methodological issues, some of which are particularly relevant to the situation in the DR, need to be addressed with the technical assistance of the REACH consultants in the period of intensive planning immediately prior to the survey and in the training of the surveyors.

- A birth dose of OPV is recommended in the DR in addition to the three doses recommended at age two, three, and four months. The coverage survey normally counts only OPV1, OPV2 and OPV3 but can be modified to count the dose at birth as well. (COSAS allows the birth dose to be entered.)

- A decision is needed as to whether or not to exclude from questioning those children and mothers who have not been resident for some pre-determined period in the cluster.

- A decision is needed on how many times to return to the same home, when the mother is absent at the first visit but neighbors report that small children reside there.

- A decision is needed as to the type of persons acceptable to interview (e.g., mothers only, fathers, other guardians).

- The method most appropriate for the DR of randomly selecting the first home in rural and urban clusters needs to be determined.

- Methods to assist the mother in recalling whether TT was ever given will be needed.

- Step-by-step guidelines on how to conduct the field work need to be prepared as a memory aid for the supervisors and surveyors. An example of one prepared by PAHO for use in Bolivia in 1987 will be sent to USAID/Santo Domingo.

There was insufficient time for this writer to discuss the finer details of the survey. A period of intensive planning will need to precede the survey. At least two national staff should be assigned for 30 days as counterparts to the two external advisors in order to facilitate the planning, training and execution of the surveys.

The number of teams needed to conduct a coverage survey and the number of days needed to conduct it will vary depending on the availability of personnel and transport and the time required to travel to the clusters. **Some logistical considerations and provisional solutions for SESPAS and the external technical consultants follow:**

- SESPAS and ICC members need to decide whether the survey should be done by persons who are <u>not</u> involved in immunization, or whether "promoter supervisors" and others with EPI involvement may be used.

- Each survey team should consist of two members, including one health worker (or student nurse, e.g.) trained in the survey technique as an "enumerator" and one "community representative" known to the

local population. Each health worker member of the team must be available full-time for 17 days.

- Plan that one team can complete approximately one cluster per day. In urban areas, one team can complete two clusters per day. Decide the number of teams and the duration of the survey based on resources and needs. For example, 15 teams can complete one 30-cluster survey in 2 days.

- A total of three days is budgeted for each of the four local surveys, which includes two days of field work and one day to travel to the next survey site and to arrange logistics locally. SESPAS will need to decide if field work will continue without interruption over the weekends.

- Four days are budgeted for the national survey. In practice, SESPAS may decide to cover some of the clusters selected for the national survey which are nearby or on the way to the local survey areas. In principle, however, leaving the national clusters to the end will be better, since the enumerators will by then be more experienced.

- To closely control the quality of the survey, a ratio of one field supervisor to four teams should be honored. The four supervisors should have full-time access to a vehicle, so that they can be mobile and supervise the field teams.

- Supervisors should endeavor to oversee two of their four teams daily. They should alternate such that each of their four teams is supervised every second day. Supervisors should be selected with the knowledge that they are to be engaged full-time for 18 days.

- On the assumption that vehicles will not need to carry community representatives, that each vehicle can carry a minimum of six persons (driver, supervisor and four enumerators), and that clusters are not distant from one another, then a ratio of one vehicle per four teams is required. The budget assumes that vehicles can be made available for full-time field use by SESPAS for <u>each</u> survey. A minimum of four vehicles will be needed for two weeks. Additional vehicles will be needed for the national survey because of the greater distances between clusters.

- Enumerators will either find their way to the cluster site by public transport (in urban areas or in larger nearby rural clusters well-served by public transport), or the supervisor's vehicle can deposit some or all of the enumerators at the start of the day.

- Although 15 teams could complete a 30 cluster survey in two days of field work it will be useful to train two additional health workers ("enumerators") in case substitution becomes necessary.

- The seventeen enumerators and four supervisors need to be thoroughly trained in a two-day "theoretical" course, followed by a third day of field practice in nearby localities which are not scheduled for a local survey. Discussion of field problems will also take place on the third day.

- This same cadre of trained supervisors and enumerators will conduct each survey. The quality of the field work is a function of good training, close field supervision, and adequate logistic support. Because only 210 respondents will be questioned in each survey, it is essential that proper survey methods are followed at all times.

- Meticulous planning is required so that the community representative knows where and when to join the enumerator in the cluster. The enumerator should similarly know the name and location of the community representative.

- Arrange travel to each cluster so that teams can begin work when respondents are most likely to be present.

- Two computer-literate SESPAS staff will be trained to enter the data with the guidance of the REACH consultants. REACH will provide a computer, printer and software.

With the guidance of REACH consultants, data will be entered, analyzed and displayed on COSAS (Coverage Survey Analysis System) software, which was designed by WHO with REACH input. The utility of COSAS for analysis depends on the use and retention of vaccination cards, on which dates of birth and vaccination are recorded. Without cards, many of the elegant analyses to give an immunization profile cannot be done -- either manually or by computer. An explanation of COSAS from the WHO Coverage Survey Module is in Annex 4.

Preliminary survey results will be available within a few days of completing the field work. **Senior staff involved in the field work and staff administratively and technically responsible for EPI in the surveyed health service areas will be brought together for a problem-solving de-briefing based on the survey findings.** Issues of policy formulation and implementation, health services organization, and delivery strategies will be discussed at a workshop and recommendations prepared. To supplement the information from the surveys at a later date, local health facility surveys involving reviews of records and interviews of clinic attendees and health workers could be used, if funding sources are identified.

A provisional timeline and an illustrative budget for local costs appear in Annexes 5 and 6, respectively.

VI. FOLLOW-UP ACTIONS

Follow-up Actions Prior to Arrival of REACH Consultants	Who?	By:
- Inform USAID whether buy-in must be modified due to hiring of second consultant	REACH	November 20
- Finalize funding of local costs	ICC	December 1
- Agree to exact dates of survey	SESPAS & ICC	December 1
- Decide in which geographic areas to conduct up to four local surveys (in addition to one national survey) and obtain maps	SESPAS (and ICC)	December 5
- Request computer-generated list of cumulative populations by locality for entire population and for each of four local areas to by surveyed	USAID and Nelson Ramirez and SESPAS	December 20
- Identify and select supervisors, enumerators and counterpart investigators	SESPAS	January 10
- Provide REACH with dates of past rounds of campaigns and antigens included from 1988 to present	USAID	January 10
- Identify availability of computers and printers locally.	USAID	January 10

ANNEX 1

Contacts

Dr. Angel Luis Alvarez	EPI Director, SESPAS
Dr. Brigido Garcia Sanchez	National Director of Health, SESPAS
Dr. Lee Hougen	Chief, Health and Population, USAID
Dra. Josefina Martinez	EPI Technical Officer, PAHO
Mr. Michael McCabe	Project Officer, UNICEF
Dra. Sara Menendez Abraham	Project Officer, UNICEF
Dr. Jean Marc Olive	EPI Medical Officer, PAHO
Lic. Mañuel Ortega	Population Officer, USAID
Lic. Nelson Ramirez	Consultant, Development Associates
Dr. Johnny Rivas	MCH Director, SESPAS
Dra. Mirta Roses	Representative, PAHO
Mr. Tim Truitt	Child Survival Coordinator, USAID

ANNEX 2

Scope of Work of REACH Survey Specialists

The two survey specialists will spend five weeks in the Dominican Republic for the purpose of assisting in the preparation, implementation and analysis of the surveys. In coordination with SESPAS, PAHO, UNICEF and USAID, specific activities in the DR will include participating in:

1. Reviewing the population-based data assembled and selecting clusters;

2. Designing the questionnaires;

3. Training the supervisors in the coverage survey process and selection of the clusters;

4. Training the selected individuals to conduct the survey;

5. Providing technical input to the implementation of the survey;

6. Training the data entry clerks in COSAS;

7. Entering and verifying data;

8. Assessing results of each survey including:

   A. coverage documented by card and history;
   B. per cent of infants born protected against tetanus;
   C. missed opportunities for immunization;
   D. age distribution at time of immunization for each antigen and dose;
   E. effect of national vaccination days and routine facility-based systems on coverage;
   F. reasons for incomplete immunization;
   G. validity of routinely reported data.

9. Prepare preliminary analysis and present findings (with recommendations for future programming) to a workshop of senior staff engaged in the survey and officers responsible for EPI in the surveyed areas.

10. De-brief SESPAS, USAID and donors.

One of the survey specialists (the team leader) will be briefed in Washington before and will de-brief in Washington after the surveys.

ANNEX 3a

Sample Standard Questionnaire

Cluster Form
Infant Immunization

(1) Cluster Number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____	(5) NAME									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

ANNEX 3b

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									
(6)	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									
	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									

ANNEX 3c

Cluster Form
Tetanus Toxoid Immunization for Women

(1) Cluster number: _____
(2) Date: _____
(3) Area: _____
(4) Range of birth dates:
From: _____
Until: _____

											TOTAL	
		(5) Mother's name									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

ANNEX 4

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:

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

*Source: Coverage Survey WHO Mid-Level Managers Training. Geneva. 1988.

ANNEX 5

Provisional Timeline

Action Needed	Who?	By:
- Determine funding source for local costs	ICC	December 1
- Agree to exact dates of surveys	ICC	December 1
- Decide in which geographical areas to conduct four local surveys	ICC	December 5
- Request computer-generated list of cumulative populations by locality for entire country, and for four local survey areas	USAID (Ramirez) and SESPAS	December 20
- Select four supervisors, two overall counterpart investigators, and 17 enumerators (each enumerator will be joined by a local community representative)	SESPAS	January 10
- Briefing of REACH team leader in Washington (PAHO invited)	REACH A.I.D.	January 28
- Travel to DR of team leader and second external consultant	REACH	January 29
- Briefing by SESPAS, USAID, PAHO and UNICEF	Team	January 30
- Meet with N. Ramirez on issues of sampling and survey fieldwork pertinent to DR	Team	January 30
- Select clusters and prepare simple maps	Team	January 31
- Arrange logistics for training and surveys - vehicles - notify staff - secure local funds - arrange drop-off and pick-up points - arrange accommodations	Team	Jan 31-Feb 1
- Develop data collection forms	Team	February 1-2
- Test, finalize and print forms	Team	February 4
- Prepare materials and schedules for training and surveys	Team	February 5
- Train in class and field	Teams	February 6-8
- Conduct surveys	Teams	February 9-21

Action Needed	Who?	By:
- Train data entry staff and enter data on COSAS	REACH	February 21
- Analyze data and prepare draft findings	SESPAS, REACH	Feb. 22, 25
- Conduct workshop to discuss results	SESPAS, REACH	February 26
- Prepare draft report	SESPAS, REACH	February 27
- Debrief ICC	SESPAS, REACH	February 28
- Debrief in Washington	REACH PAHO A.I.D.	March 1
- Finalize report	REACH	March 4-6