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Country Report Series

Costa Rica

**Diagnosis of the
Measles Vaccination System
in Costa Rica**

AN HIID/PRICOR PROJECT

**DIAGNOSIS OF THE MEASLES VACCINATION SUBSYSTEM
OF THE COSTA RICAN PRIMARY HEALTH CARE SYSTEM:**

**UNDERSTANDING LOW VACCINATION COVERAGE
AND LOW QUALITY SERVICE DELIVERY**

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PREFACE ¹

This is the second report of the HIID/PRICOR Operations Research series. The first report demonstrated the use of Lot Quality Assurance Sampling (LQAS) for screening health facilities to identify those which were performing substandard Primary Health Care service delivery. This one presents the follow-up activities needed after the screening is completed to identify the underlying causes of service delivery problems. LQAS principles are used once again in the diagnosis stage.

¹ Very special recognition is given to Dr. Carlos Valerín (Director General of Health), Dr. Hugo Villegas (National Representative for PAHO), Dr. James Heiby (S&T Health of A.I.D.) with out whose close participation and continued intellectual input, this research would not have been possible. We also express out thanks to Lori Diprete of HIID for her helpful suggestions and to the nurses, supervisors, and health assistants, without whose help and advise this work would have been more difficult than it was to carry out.. The work upon which this presentation is based was performed under a subagreement with the Center for Human Services under its Cooperative Agreement No. DPE-5920-00-A-5056-00 with the U.S. Agency for International Development.

PREFACE

Over the past decade, national and international commitment to extending basic health services to underserved urban and rural populations in developing countries has led to major investment in primary health care (PHC) and child survival program strategies. However, these programs continue to face persistent problems with underutilization of services, lack of knowledge and acceptance of home-based interventions, and at times, inadequate quality of services provided. Typically, program managers lack specific information about how service delivery activities and support functions such as supervision, are routinely carried out.

While surveys and evaluations have tended to focus on measuring program inputs (such as training and supplies), outputs (such as number of services delivered) and impacts (such as changes in morbidity rates), relatively little attention has been devoted to analyzing the performance of the activities that produce a given outcome. Yet, opportunities to improve the effectiveness of PHC and child survival programs at the operational level clearly depend on strengthening these service delivery and support processes.

Responding to the need for better information on the process of service delivery, the Agency for International Development has launched, through the Primary Health Care Operations Research Project (PRICOR) Project, a major international effort to document and analyze the activities of PHC programs in developing countries. PRICOR was established in 1981 under a cooperative agreement with the AID Office of Health to help developing countries improve their PHC and child survival programs through practical, decision-oriented management studies and operations research. In its second phase, a major PRICOR objective is to develop new and innovative ways of identifying and diagnosing discrete problems in the process of service delivery that will lead to measurable improvements in program performance.

PRICOR staff now are refining and applying a systems analysis approach that allows program managers to accurately describe how key components of the PHC program actually operate and to identify the specific weak points and bottlenecks that impede effective delivery of PHC services at the peripheral level. The systems analysis relies on direct observations, key informant interviews, limited surveys, and other rapid assessment methods to provide decisionmakers with a comprehensive picture of program strengths and failures. By shifting the focus from input and outcome measures to process indicators, systems analysis provides concrete data that lead to tangible improvements, through immediate corrective action or short, problem-solving studies.

The PRICOR Country Report series presents the efforts of PRICOR staff and investigators from collaborating institutions to apply in some dozen countries practical methodologies for observing and measuring how PHC service delivery activities are being carried out. This volume presents PRICOR country study activities conducted in Costa Rica by the Harvard Institute for International Development. The study first applied Lot Quality Acceptance Sampling to identify substandard service delivery performance in health posts. A systems analysis was then carried out to identify the underlying causes of the service delivery problems.

Following the LQAS which found that national coverage for measles was very low, a systems analysis of the measles vaccination service delivery and support activities was carried out. Essential service delivery and support activities to be examined were identified using the PRICOR Thesaurus as a reference guide. LQAS principles were applied to decide the number of children served by a particular health post that needed to be studied to determine whether the health assistant was performing adequately, as well as the number of health posts to study to determine whether or not a service delivery or support activity was being performed adequately at the regional level. This innovative use of the LQAS methodology in systems analysis demonstrates a valuable method by which PHC problems can be identified.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY		iv
I. RATIONALE AND OBJECTIVES OF THE ANALYSIS		1
II. PROCEDURES		2
1. Constructing a Model of the Measles Vaccination System		2
a) Subsystems and Subsubsystems or Components.		4
2. Sample Size		5
a) Sample Size within a Health Area		6
b) Sample Size between Health Areas		8
3. Selecting Health Areas to Study		10
4. Four Questionnaires		10
5. Observation Checklists		12
6. Pretesting of the Questionnaires and Observation Checklists		12
7. Data Collection		13
8. Identification of Substandard Coverage by Subsystems		15
III. RESULTS		16
1. Subsystem 1: Cold Chain (HA Refrigerator)		16
2. Subsystem 2: Cold Chain (Thermos)		18
3. Subsystem 3: Documentation		19
4. Subsystem 4: Education		20
5. Subsystem 5: Information System (Appropriate Use)		21
6. Subsystem 6: Information System (Updating the System)		21

7.	Subsystem 7: Basic Knowledge	23
8.	Subsystem 8: Logistics (Permanent Materials at the HA)	24
9.	Subsystem 9: Logistics (Supplies)	25
10.	Subsystem 10: Service Delivery	26
11.	Subsystem 11: Vaccination	27
12.	Subsystem 12: Quality of Service Delivery -- Preparatory Activities	27
13.	Subsystem 13: Quality of Service Delivery: Applications	29
14.	Subsystem 14: Quality of Service Delivery (Elimination of Syringes)	29
15.	Subsystem 15: Supervision	30
16.	Summary	31
IV.	SUPPLY DISTRIBUTION AT THE REGIONAL LEVEL	32
1.	Regional Administrators	32
a)	Regional procedures to requisition measles vaccine and syringes.	32
b)	People responsible for distributing requests to the Health Centers in 1987	33
c)	Need for syringes and measles vaccines	34
d)	Quantity of syringes and measles vaccine distributed in each area.	34
e)	10 dose vials of measles vaccine	34
V.	SUPPLY DISTRIBUTION AT THE CENTRAL LEVEL	35
1.	Executive Administrative Assistant of the Regional Division Primary Health Care Program (National Administrator)	35
2.	Director of the Immunization Program	35

VI. COMPARISON OF THE QUANTITIES OF VACCINES PLANNED, REQUESTED, APPLIED AND RECEIVED ACCORDING TO THE REGION DURING 1987.	36
1. Health Regions	36
2. Health Centers	39
3. Health Posts	40
VII. CONCLUSION	41
VIII. APPENDIX	44

EXECUTIVE SUMMARY

The results of the LQAS study presented to the Ministry of Health in November 1987 had detected substandard coverage of measles vaccination in 58 out of 60 randomly selected Primary Health Care Areas in Costa Rica. On a national level, only 44% of the children under three had been vaccinated against measles according to Ministry norms. The analysis presented in this current report explains this low coverage proportion. It also examines the quality a vaccinations that were delivered to children.

Diagnosis of the Measles Vaccination System began by modelling it at local, regional, and national levels. Fifteen subsystems were identified.

Four questionnaires were developed to interview health assistants, the head nurse, the rural supervisor, and mothers of vaccinated children. Two observation checklists were also used. The first one observed the health assistant at work in households. The second one was used to observe equipment and supplies in health posts.

LQAS principles were once again applied to determine the number of children in a specific Health Area (HA) that needed to be studied in order to determine whether the Health Assistant was performing adequately. In each HA six independent observations were made of the Assistant vaccinating children.

LQAS principles also identified the number of HAs to study to determine whether or not a subsystem failed to operate adequately on a national level. Eighteen HAs were studied in the six regions of Costa Rica.

The analysis indicated three major problem categories in the measles vaccine system:

1. insufficient maintenance of transport for community health workers, and insufficient availability of fuel,
2. insufficient supply of measles vaccines and syringes to HAs, and
3. inappropriate packaging of vaccine in 10 dose vials that resulted in substantial wastage of vaccines, and
4. inadequate supervision of health assistants in the performance of their vaccination activities and in the maintenance of the health post.

The first two categories of problems were directly linked to the low measles vaccination coverage presented during November

1987. However, inadequate supervision was also related to this problem. Had the supervision system been working properly, the former two categories of problems would have been detected and potentially resolved prior to this study.

Additional analyses revealed that vaccinations that did take place were often of low quality. Contributing factors include inadequate knowledge of norms and procedures by health assistants; lack of written references which explain the procedures; and inadequate cold chain maintenance. Supervisors were not always clear about the norms and procedures related to vaccination and the cold chain.

In conclusion, this diagnosis recommends² the following solutions:

1. The supervision system should be redesigned to ameliorate problems associated with a deterioration of knowledge by health assistants and supervisors, and which maintains their performance at a high level.

This system should regularize visits of supervisors to HAs and eliminate organizational impediments that delay visits of supervisors. Supervision instruments should be used to guide supervisors in the regular performance of their work.

This task could begin with the development of a national refresher course for supervisors and assistants. It would be followed by a field component in which new supervision procedures and instruments would be used in the field under the guidance of the Office of Quality Control.

2. The system of syringe and vaccine supply from the Central Office to the Region Level to the Local Level should be redesigned to include a management information system that records supplies: requested, shipped, and received. Ideally, the system should include a running record of inventories.

²Immediately following the November 1987 report informing the Director General of Health about the low vaccination coverage, especially among the 1986 and 1987 cohorts, the recommended vaccination age interval was changed from 6 - 11 months to after the first birthday. Thus, any child missed during the previous rule would be vaccinated under the second rule.

3. Ten vials of vaccine should be replaced by vials with a smaller number of doses. This recommendation has already been implemented at the time of this report.
4. Local financing experiments (or schemes) should be developed for repairing and maintaining the transport (i.e., mopeds) of assistants in the communities rather than sending them to San José. This same experiment should also consider means for provision of adequate fuel for vehicles.

I. RATIONALE AND OBJECTIVES OF THE ANALYSIS

In November 1987 the results of the Lot Quality Assurance Sampling (LQAS) Study, which in Costa Rica is referred to as the "Quality Control in Primary Health Care Areas Project," were presented to the Director General of Health, the resident representative of the Pan American Health Organization (PAHO), Ministry of Health Regional Directors, and other officials of the Ministry of Health working in Health Centers and Health Posts. LQAS was used to classify 60 randomly selected Primary Health Care Areas (HAs) according to whether they delivered basic PHC services to an acceptable proportion of households in each HA ($\geq 80\%$). The analysis indicated that measles vaccination in 58 HAs throughout the six different regions of Costa Rica did not reach the MOH standard of 80% coverage.

These same LQAS data were used to calculate the proportions of children under three years of age vaccinated against measles at national and regional levels of organization. Two different standards were used for these calculations. The first one used Ministry of Health standards of 1987 which stipulate that children must be vaccinated between 6 and 11 months of age. For practical purposes the study permitted a one-month extension of the norm. Hence, a child was adequately vaccinated if he/she was vaccinated prior to 13 months of age. The second norm used in the analysis was PAHO's which requires vaccinations prior to the child's first birthday.

The measles vaccination coverage proportions of children under three years of age at the Regional and National level, using both the Ministry of Health standards and the World Health Organization (PAHO) standards are presented in Table 1.

Because of the substandard levels of measles vaccination coverage, the project team along with the Director General of Health and the Information Commission of the Ministry of Health undertook the present analysis to identify the underlying causes of low coverage and to ameliorate them.

In addition to identifying the primary causes of low coverage, we proposed to study other issues related to the process of measles vaccination at the community level, namely, to assess the quality of vaccination procedures executed by the Rural Assistants of the Primary Health Care Program (CHWs or Assistants). The concept of "quality" is defined in a later section.

TABLE 1: Proportion of children vaccinated against measles in six regions of Costa Rica and at a national level using Ministry of Health and W.H.O. standards.

REGION AND COUNTRY	PERCENTAGE OF COVERAGE	
	Standard of the Ministry of Health ¹	W.H.O. Standard ²
CENTRAL SUR	54%	45%
CENTRAL NORTE	52%	45%
HUETAR NORTE	46%	43%
CHOROTEGA	49%	45%
HUETAR ATLANTICA	45%	36%
BRUNCA	50%	44%
NATION	50%	44%

For these analyses, we developed methodologies and designed questionnaires which, with a few adjustments, could be used later for supervision of primary health care by health workers.

II PROCEDURES

1. Constructing a Model of the Measles Vaccination System

In summary, the project team decided to begin the analysis of low vaccination coverage at the local level since vaccinations are also carried out at that level. The aim was to identify substandard practices which might produce low quality service delivery. The project intended to investigate the Regional and National levels of the system to determine whether the underlying

¹The standard of the Ministry of Health is to vaccinate children between 6 and 11 months. The study used a more lenient criterion to define the upper end of this continuum (i.e., <13 months).

²The standard of PAHO/WHO is to vaccinate children during their first year of life.

causes of low coverage or low quality service delivery was attributable to problems higher up in the health system.

The first step in the analysis was to construct a model that depicted the various activities comprising the measles vaccination system. The information used to construct this model was obtained from several sources: focus groups consisting of health workers from national and regional levels of organization, interviews of key officials at the Regional and National levels, the experience of the Project team members, a careful review of the manuals and pamphlets in circulation defining the norms and procedures for the administration of the measles vaccination program and the PRICOR Thesaurus⁵.

The different subsystems identified include the following: maintenance of the cold chain (i.e., refrigerators, condition of thermoses, and knowledge of how to maintain the cold chain), technical knowledge regarding the norms and procedures for administration of the measles vaccination system, education of mothers, quality of service, delivery (i.e., hygiene, preparation of the syringe injection technique, and disposal of the syringe), supervision, use and management of information, and availability and distribution of materials and equipment necessary for conducting the measles vaccination program.

Subsequently, we designed six questionnaires to assess each component of the entire measles vaccination system. These were:

- Health Assistant Questionnaire
- Head Nurse of the Health Center Questionnaire
- Rural Supervisor Questionnaire
- Review of the Family Health Records and Questionnaire of the Mother
- Observation Checklist of the Assistant in the process of vaccinating children
- An observation checklist for the Health Post or Health Center.⁶

In summary, the measles vaccination system was divided into 15 categories of essential materials or activities; these categories are referred to as subsystems. Each category or subsystem consists of one or more activities. The individual

⁵ The project team found the Thesaurus to be useful mostly as a reference volume.

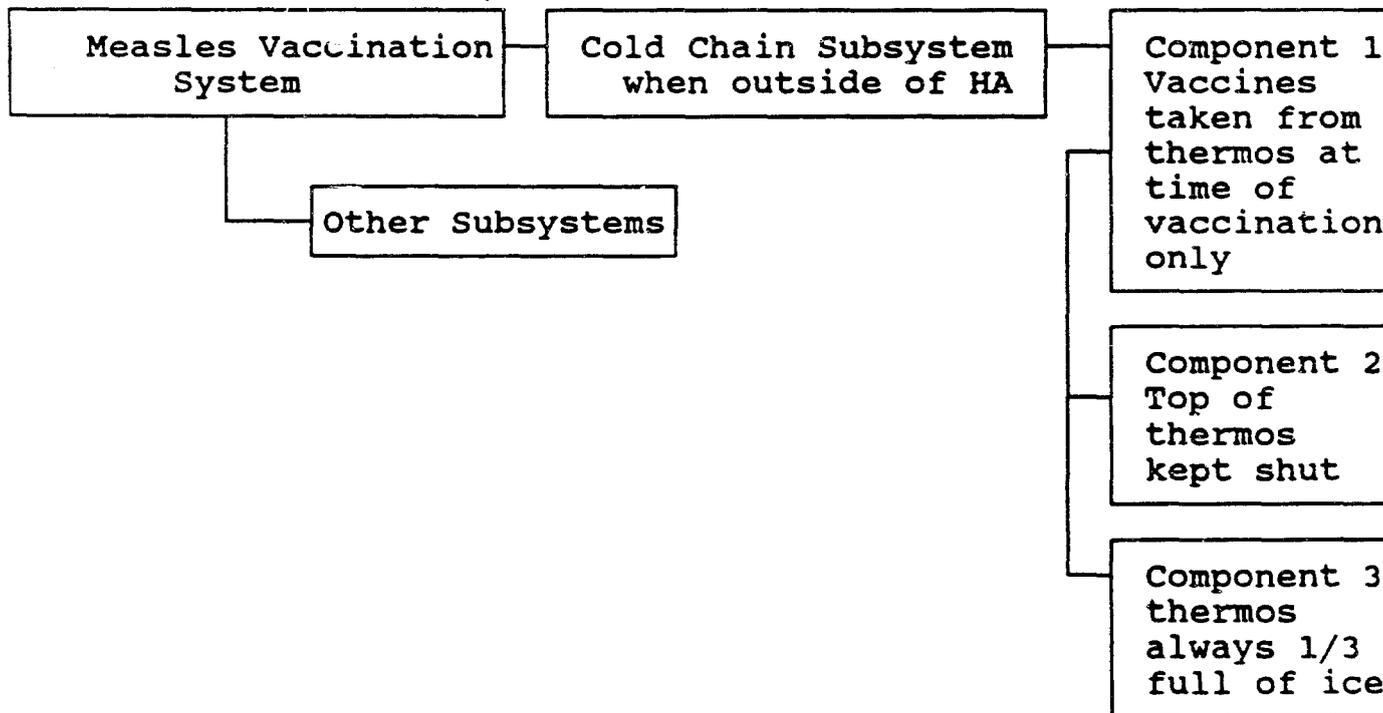
⁶For a list of Health Areas selected for the diagnosis, see Appendix 1.

activities of a subsystem are referred to as subsystems or components.

a. Subsystems and Subsystems

An important characteristic of components is to emphasize that all the components of a given subsystem must operate correctly in order for the subsystem to operate correctly. For example, maintaining a cold chain requires that a set of individual acts be performed correctly and that essential equipment is present and operating effectively (e.g., refrigerator or thermos). If any component is faulty, the cold chain should fail to work. Therefore, all of the components of the subsystems we modeled can be thought of as critical pathways in the system. None of them are expendable. For example, the cold chain subsystem consists of three components after the Assistant leaves the HA and is out in the field or in a family's house. Firstly, the vaccine should be taken from the thermos only at the time when a child is to be vaccinated. Secondly, the top of the thermos should be kept shut with the exceptions of when vaccines or ice are put into it or vaccines are taken out of it. Thirdly, Ministerial norms require that the thermos be kept at least one third filled with ice all the time. If any of these subsystems fail the vaccines could lose their potency.

This portion of the cold chain subsystem is modeled below:



Hence, if one or more of the components is not maintained the process of vaccinating is judged to be faulty. For example,

Table 2 lists a hypothetical set of observations of 6 children for each of the 3 components of the cold chain discussed above.

TABLE 2: Observations of 6 Children to Judge the Adequacy of Three Components of the Cold Chain: 0 = ok, 1 = faulty

Components	Child Observed						Total
	1	2	3	4	5	6	
1	0	0	1	0	0	0	
2	1	0	1	0	1	0	3
3	0	0	0	0	1	1	2
Totals	1	0	2	0	2	1	6

In four of the six vaccinations of children, at least one of the three components was violated. Therefore, the cold chain subsystem failed for four children, albeit for different reasons. Component 2 was violated 3 times; component 3 was violated twice; and component 1 was violated once. Overall, of the 18 opportunities to use the Cold Chain correctly, on 6 occasions errors were made.

These hypothetical results suggest that during 66% of vaccinations, the Cold Chain was broken. Remediation should focus on all three components but with special emphasis on components 2 and 3 since they were the most frequently violated.

The Project Team's diagnosis of the vaccination subsystem included a total of 18 interviews with Nurses, 18 interviews of Rural Supervisors, 18 interviews of Assistants, 108 interviews of Mothers, and 108 observations of the work of the Assistants in the 6 regions.

2. Sample Size

This diagnosis of problems in the measles vaccination system required calculation of two sample sizes. The first sampling issue concerned choosing the number of children to observe an Assistant vaccinate. The conclusions of these observations determined whether or not the Assistant's work is adequate according to Ministerial norms.

The second sampling issue concerned identifying the number of health areas to study nationally. The conclusions reached through these observations determine whether or not the proportion of acceptably functioning Health Areas (HAs) is adequate, and thus, whether a problem is isolated in specific HAs or distributed throughout the nation.

Lot Quality Assurance Sampling principles were applied to both sampling issues. LQAS was used since the project team and the Director General agreed that sample sizes should be small enough to ensure rapid assessment of the measles vaccination system at a low cost.

The universe from which all samples were taken consisted of HAs which had already been classified as exhibiting below standard performance during the first phase of the study. However, since 58 of 60 HAs sampled were classified as having inadequate measles vaccination coverage, we assume that the universe is representative of all Costa Rican HAs.

As discussed earlier, two categories of variables are being studied simultaneously. The first one examines the underlying causes for the low proportion of children covered with measles vaccinations. The second one examines whether appropriate procedures were used by CHWs when vaccinating children. Hence, the first category concerns the quantity of measles vaccinations given and the second one concerns the quality of the vaccinations.

The following discussion of sample size is pertinent to both investigations. However, no further distinction will be made between these two categories of variables until the analysis section.

a. Sample Size within a Health Area

Each Assistant selected was judged on the basis of his/her own performance. We assumed that any Assistant had to perform his/her activities correctly 95% of the time in order to be classified as an adequately functioning Assistant. Performance worse than that would indicate that at least 5 in 100 children were being vaccinated incorrectly, and thus, that the problem was frequent rather than accidental.

The sampling design required 6 independent observations of children being vaccinated at home by the Assistant. The rule of using the six children was initially selected since the team believed, on the basis of past experience, that all six observations and the 5 other instruments could be completed in 1 day. During the course of performing the sampling we discovered another reason for using a small sample size, namely, at any

point in time few children require a vaccination. Observing a larger number of children being vaccinated would not have been possible.

In addition to these logistical issues, a sample of 6 also makes statistical sense within an LQAS framework.

Of the six children observed, an Assistant was permitted to fail no more than once in their service delivery. Although a subsystem may be comprised of many components (or subsystems), adequate performance of all of them is necessary, otherwise the subsystem is undermined.

If the subsystem failed during the vaccinating of a second child regardless of the component, the assistant was classified as exhibiting substandard performance for that subsystem.

The logic for this judgement is as follows:

The purpose is to identify subsystems that continuously fail, and to avoid wasting time and resources on those that function adequately. With the above rule, subsystems that function 95% or more of the time will correctly be identified 97% of the time. Any subsystem that functions at a level lower than 95% will have an increasingly higher probability of being classified as a dysfunctional subsystem. The lower the quality of the subsystem, the greater the probability it will be classified correctly as dysfunctional. For example, referring to Table 3, an HA that performs correctly the tasks in a subsystem 75% of the time has a 47% chance of being classified as dysfunctional whereas an HA that performs these tasks correctly 60% of the time has a 77% chance of being classified as substandard. The worse the performance the higher the likelihood that the subsystem will be classified as substandard.

The premise of this method is to identify the worst performing subsystem. The rule of 6:1 (i.e., in a sample of 6 permit 1 or fewer defective observations) could be changed to become more lenient (e.g., 6:2 or 6:3) or more strict (6:0). Strict or more lenient rules are chosen when a current decision rule identifies too many or too few subsystems as defective. By making the rule more lenient, only those subsystems that are the worst will tend to surface. Conversely, a stricter rule will cause most defective subsystems to become apparent.

TABLE 3: Probabilities for classifying a health area as acceptable or substandard when a sample of six unrelated children are used to measure the quality of an assistant's work: One defect permitted

Quality of Subsystem	Probability to Classify an HA as Acceptable	Probability to Classify an HA as Substandard
.95	.97	.03
.90	.89	.11
.85	.78	.22
.80	.66	.34
.75	.53	.47
.70	.42	.58
.65	.32	.68
.60	.23	.77
.55	.16	.84
.50	.11	.89
.45	.07	.93
.40	.04	.96
.35	.02	.98
.30	.01	.99
.25	.005	.99
.20	.002	.99
.15	.02	1.00
.10	.0	1.00
.05	.0	1.00

In summary, within an HA an Assistant was observed in the process of vaccinating 6 unrelated children. Any subsystem that is performed incorrectly in more than one of the six observations is considered defective. This LQAS rule has a high likelihood of identifying subsystems that are performed in a substandard manner.

b. Sample Size between Health Areas

Once defects within HAs have been identified, the question remains whether or not the subsystem failure is evident throughout the national primary health care program or merely

isolated in specific HAs. LQAS principles were again used to address this question.

In order to investigate the feasibility of using rapid assessment techniques for the diagnosis of defective subsystems, 3 HAs were randomly selected in each of the 6 health regions for a national total of 18 HAs. The selection process is discussed in more detail in the next section.

The criterion used to identify a defective subsystem is that it must operate adequately in at least 80% of the HAs.

As indicated in Table 4, LQAS theory indicates that an adequately performing subsystem will be classified correctly 87% of the time. Adequacy is defined as 5 or fewer of the 18 sampled HAs exhibiting substandard service delivery.

HAs with lower performance have an increasingly greater likelihood of being classified as substandard (See Table 4). For example, subsystems that performed adequately 60% of the time will be classified as substandard 79 times out of 100. Subsystems that performed adequately 50% of the time have a .95 probability of being classified as substandard. Therefore, HAs with the worst performance have the greatest likelihood of being identified.

TABLE 4: Probabilities for classifying a subsystem as acceptable or substandard when a sample of 18 unrelated children are used to measure the quality of an assistant's work: Five defects permitted

Quality of Subsystem	Probability to Correctly Classify a Subsystem as Acceptable	Probability to Correctly Classify a Subsystem as Unacceptable
.95	1.00	.0
.90	.99	.01
.85	.96	.04
.80	.87	.13
.75	.72	.28
.70	.53	.47
.65	.36	.64
.60	.21	.79
.55	.11	.89
.50	.05	.95
.45	.02	.98
.40	.01	.99
.35	.001	.99

.30	.0	1.00
.25	.0	1.00
.20	.0	1.00
.15	.0	1.00
.10	.0	1.00
.05	.0	1.00

3. Selecting Health Areas to Study

Studies were carried out only in Health Areas (HAs) already identified by LQAS as having low measles vaccination coverage. Three HAs were inspected in each of the six regions for a total of 18 HAs.

To begin the selection, the project team requested that the Regional Directors identify two substandard HAs that were a priority for him or her to study. The project team selected one of the two for the study. In all instances the one selected exhibited the lowest measles vaccination coverage. Two additional HAs in each region were selected randomly. After identifying the three areas to be studied, we presented them to the Director General of Health for his concurrence. He approved of the HAs selected and offered the project whatever help was necessary to conduct the study.

The project staff then formally notified the Regional Directors and gave them tentative dates when the diagnosis would occur in each of the regions and the names of the selected HAs. We also informed the Regional Directors of the methodology used to select the areas to be studied. Our goal was to obtain the Directors' support, as well as to ask them to officially notify personnel in each of the local areas selected of our dates of arrival. These personnel included: Health Assistants, Rural Supervisors, and Head Nurses of Health Centers. The project staff also notified these individuals because the interview instruments used in this study required responses from them.

4. Four Questionnaires

The four questionnaires developed for each HA included an interview of: the health assistant, the head nurse, the rural supervisor, and mothers of vaccinated children. These instruments had the following goals:

- a) **Health Assistant:** this questionnaire determined the adequacy of the knowledge of an Assistant regarding: norms and procedures established for vaccinating children against measles, the efficiency of the supply system, and the physical conditions of materials required to comply with the vaccination program, and the adequacy of the supervision received by the Assistant.
- b) **The Head Nurse:** The Head Nurse is responsible for technical supervision in each HA. Technical supervision consists of ensuring that the primary health care services are delivered with the appropriate techniques, and that the HA equipment is maintained correctly. The purpose of the study was to assess her grasp of basic knowledge and procedures for providing technical supervision to Health Assistants. The questionnaire also solicited the Head Nurse's opinions regarding the logistical subsystem, and the conditioning of equipment used by the selected Assistant. Lastly, it asked what deficiencies the Head Nurse perceived, which she believed hindered the Assistant in performing his jobs.
- c) **The Rural Supervisor:** The Rural Supervisor is primarily responsible for administrative supervision of assistants. This activity involves ensuring that supplies in each HA are adequate and that the Assistant is recording various information about the measles vaccination subsystem in the health information system.

This interview evaluated the Supervisor's knowledge of norms and procedures for maintaining the cold chain, and administrating vaccinations. In addition, it asked for him to appraise the logistical subsystem for measles vaccine and related material, and the condition of equipment and materials used by the selected Assistant to perform his tasks.

- d) **Mothers of vaccinated children:** In each HA, we interviewed six mothers of children under three years of age who had been vaccinated against measles during the previous 12 months. The interview's objective was to find out if a mother knew her child had been vaccinated against measles, if the mother had a vaccination card for her child, and whether the child had been vaccinated at home or in another health facility (e.g., another HA, Health Center, hospital.) We also wanted to find out if the mother was aware of the number of measles vaccinations her child is supposed to receive. This information would indicate the retention by mothers of educational messages provided by the Assistant.

5. Observation Checklists

Two observation Checklists were also designed.

- a) An "Observation Checklist of the Health Assistant's Work" was used in each area to observe the Assistant in the act of vaccinating children in six homes with children who were at the correct age to receive a measles vaccination or a measles rubella vaccination. DPT vaccinations were observed if no children in the area currently needed a measles or measles-rubella vaccination, or if the vaccine was not available.

The main objective of using this Checklist was to observe whether the work of the Assistant conformed to MOH norms in terms of techniques and procedures.

- b) An Observation Checklist for the Health Post or Health Center was used to compile data on the availability and condition of equipment and material needed by the Assistant of each area to carry out the measles vaccination program. Observations of the cold chain used by Assistants were performed.

6. Pretesting of the Questionnaires and Observation Checklists

The drafts of questionnaires and observation checklists were given to National MOH officials for comments, suggestions, and approval. All instruments were tested in three Primary Health Care Areas (two rural and one urban) to determine whether:

- a) the questions could be presented orally by interviewers in a comfortable clear matter,
- b) the questions were understood by those interviewed,
- c) additional multiple choice answers or observations should be added to the forms,
- d) existing questions or observations should be eliminated,
- e) the pre-coded variables facilitated using the questionnaire or checklist,
- f) the questions or observations were in a logical order, and
- g) unanticipated problems with the questionnaire needed correction.

Any questionnaire or checklist that was modified after the pretest was tested again in one HA. The pretested instruments

were presented a second time to National Health Officials for their comments and approval.

7. Data Collection

In the 18 HAS studied, the project team performed the following tests:

- a) The project team presented a description of the project's broad purposes to the Assistant responsible for the area. The Assistant was told that his/her area was randomly selected and that the present study was complementary to the work begun in 1987 by the Ministry of Health and the Harvard Institute for International Development (through PRICOR support) which had identified low coverage activities within the Primary Health Care Program of Costa Rica.
- b) The Health Assistant was asked the number of localities (i.e., a unit division of land in rural areas) or manzanas (i.e., a unit division of land in urban areas) for which he/she is responsible. Next, a locality or manzana was randomly selected as a starting point. Six families in which children under three years of age needed the measles or measles rubella vaccination were identified from the health records. These families were selected as the sites to observe the quality of PHC service delivery of the Health Assistant. In the instances in which we could not identify at least six children needing a measles vaccination, another locality or manzana was randomly selected and the same procedure already outlined was followed to identify the remaining children. If, for some reason, we were unable to identify at least six children in the entire area who needed a measles or measles-rubella vaccination, or if the Assistant did not have any measles or measles rubella vaccine, we identified children who needed a DPT vaccination.

We anticipated that some Assistants might not have syringes available so we brought syringes with us to ensure that the observations of the assistants could take place. It was not possible to transport vaccine, given the special care it required.

After visiting the first two health areas, we decided to select four additional families in addition to the six required. This change was made after finding that in many cases the child had already been vaccinated in the Health Center, in the Social Security clinic, in a private establishment, or in a Health Post by another Assistant. Two Assistants worked in some Health Posts

and at times mothers had already taken their children to the HA to be vaccinated at the same time the Assistant responsible for their family had scheduled a visit to their house. In such cases, the other Assistant would vaccinate the child and fail to notify the responsible Assistant that a vaccination had been given. At times we found that the Assistant had failed to enter into the family health record that a vaccination had previously been given. At other times, upon our arrival at the home of the selected family we found that the particular child in question was either not at home, or the family had moved away.

In addition to selecting the Family Health Records to observe the work of the Assistant, we concurrently selected other Family Health Records to identify six mothers to interview. The records selected were those which indicated a child under three years of age had been vaccinated against measles or measles rubella within the previous year.

- c) One project team member was responsible for the entire process of selecting family records, while, at the same time, the other team member interviewed the Assistant. Almost always, the nurse who was a member of the team performed this interview since it is normal for nurses to perform supervisory activity. Therefore, our measurement activities were not an unusual disruption to the Assistant.
- d) After selecting the Family Health Records for the analysis, and after completing the interview of the Assistant, the Family Health Records were given to the Assistant by the interviewer to prepare the household visits. The Assistant was asked to prepare himself/herself only to vaccinate children under three years of age, and perform no other PHC services. Only in emergencies was the Assistant permitted to conduct other health-related activities not pertaining to vaccination.
- e) While the Assistant made preparations for the household visits, one member of the project team began filling out the observation checklist entitled "Observation of the Health Post/Health Center" and the other one began entering certain information from the record to the "Review of Family Register and Interview of the Mother" form. The information entered on the latter form consisted of the date upon which a child under three years of age had been vaccinated against measles during the past year. This information was written down in order to compare it to the date which appeared on the child's vaccination card.
- f) After the Assistant had prepared his/her vaccination equipment, the members of the project team reviewed the preparations for each selected family record to ensure that they were in accordance with the established norms. If, on

the basis of these observations, established norms were violated, the Assistant was asked to explain the violation. If the justifications were valid (e.g., no vaccine was prepared for family "X" since they no longer resided in the area), the family was eliminated and another one was selected and given to the Assistant. The reason it was substituted was to ensure that we had a sufficient number of observations to perform the analysis (i.e., six).

- g) The objectives of these home visits was to permit one member of the project team to observe the assistant vaccinating children. It was left up to the discretion of the Assistant to decide the order to visit the homes. Simultaneously, another team member visited the mothers of children who had been vaccinated in the previous year in order to perform an interview that tested their retention of key health education principles.
- h) The project team did not discuss any preliminary results obtained in each of the areas with local health workers because of the possibility that information would be diffused to Assistants in other health areas and affect their behavior. We also suspected that local officials might alter their normal behavior. These reactions would prevent the team from having an unbiased view of Health Assistants. Also, given that the objective of the project was to improve the quality of health care delivery, we decided against releasing preliminary information, since an unstructured and partial reporting of results would not lead to the needed improvements in the Primary Health Care Programs.

During this stage of data collection, the team had access to one vehicle and one chauffeur of the Minister of Health. Most often, the vehicle was used by the member of the health team who needed it the most. Need was determined as a function of logistical considerations for each team member: the length of travel required for each visit, availability of buses, and road conditions.

8. Identification of Substandard Coverage by Subsystems

All multiple choice response options of the questionnaire were precoded. Certain response options were also precoded with an asterisk to indicate an answer that deviated from national norms. Hence, the team could count the number of observations or answers in each area with asterisks to indicate substandard performance. Computer processing was not essential.

Immediately after completing work in each area, the team filled out the "Preliminary Analysis" form. This form listed

each subsystem of the measles vaccination system. A subsystem was marked with a 1 if more than one substandard practice was observed; or a 0 if one or fewer substandard practices were identified.

After completing data collection in the three areas of each region, we proceeded to compile the observations for that region on another form, similar to the one described above. This form enabled us to consolidate the data by region, thus indicating problematic subsystems at that level of organization.

The above procedures enable us to envisage existing problems in each HA and region, and in the nation as a whole.

III. RESULTS

All of the following results were produced by first determining whether each of 18 HAs studied exhibited substandard or acceptable performance for a particular subsystem, and then assessing whether a sufficient number of HAs were substandard to indicate a national problem. As discussed in the previous section, an HA failed when more than one of six observations indicated incorrect performance of a component. A component failed nationally when more than 5 HAs failed. A subsystem was judged to be substandard if any one of its components failed to operate adequately.

1. Subsystem 1: Cold Chain (HA Refrigerator)

Three of the eleven components that comprise this subsystem were performed inadequately (see Table 5):

- Vaccine vials tended to be arranged too close together to permit an unobstructed flow of cool air.
- Ice packets and bottles of water had not been placed in refrigerators to conserve the cool temperature in the event of a power outage.
- Vaccine vials had not been placed in trays nor placed in the center of the refrigerator. Thus, they tended to be scattered in the refrigerator rather than placed in the optimal location to preserve the appropriate temperature.

TABLE 5: Subsystem 1 of the Measles Vaccination System

<u>Cold Chain: Refrigerator</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. in good physical condition	3	No
2. ice packets present	4	No
3. protected from the sun	1	No
4. located 15 cm from the wall	3	No
5. refrigerator shelves are horizontal	2	No
6. vaccine vials have a space of 2.5 cm or more between them	14	Yes
7. refrigerator is used for vaccines only	4	No
8. ice packets and bottles of water have been placed in the refrigerator to conserve the cold temperature in case of emergency	8	Yes
9. a thermometer is located in the center of the refrigerator.	5	No
10. the interior refrigerator temperature was recorded both in the morning and afternoon	5	No
11. the vaccine vials have been in trays in the center of the refrigerator.	9	Yes

Proportion of Substandard Components: .273

Probably the most important characteristic of this subsystem failure is that all of the inadequate components of this portion of the cold chain are preventative measures to preserve the vaccine in the event of a power shortage. The other characteristic of these components failures is that the hygiene or management of the vaccines within the refrigerator is inadequate.

Nevertheless, we conclude that although these subsystem failures could spoil the vaccine in the event that the refrigerator ceased to work properly, they should not otherwise affect the vaccine. The results suggest inappropriate management of vaccines within the HA cold chain.

Each of these deficiencies should have been detected and corrected through normal supervision. The fact that they were

not suggests that the supervision is not being performed adequately.

2. Subsystem 2: Cold Chain (Thermos)

Three of the eight components of this subsystem failed to be performed adequately (See Table 6):

- CHWs did not fill their thermoses with a sufficient quantity of ice.
- CHWs failed to secure the top of the thermos after withdrawing vaccines from it to vaccinate children.
- CHWs did not replenish the thermos with a sufficient quantity of ice once they were in the field.

TABLE 6: Subsystem 2 of the Measles Vaccination System

<u>Cold Chain: Thermos</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. Supervisor reported that the condition of the thermos was good.	4	No
2. CHW filled the thermos one-third full with ice	6	Yes
3. Supervisor observed that the physical condition of the thermos was good	4	No
4. Vaccines are placed in bags in the thermos that do not contact the ice	4	No
5. CHW withdrew the vaccines directly from the refrigerator and placed them in the thermos	1	No
6. Vaccines vials were taken from the thermos only when being given to a child	2	No
7. CHW always ensured that the thermos' top was tight after removing vaccines	11	Yes
8. CHW maintained the thermos with sufficient ice	7	Yes

Proportions of Substandard Components: .375

The three problems identified in this subsystem are very important since they destroy the vaccine. The substandard components of the subsystem should have been detected and resolved through normal supervision.

3. Subsystem 3: Documentation

This subsystem concerned the availability of information in the HA for a CHW to check measles vaccination norms. Five of the six components of this subsystem were not present. The circulars indicating the following information were not present (See Table 7):

- the age at which children should be vaccinated against measles,
- the time interval between doses
- the vaccination technique (e.g., the portion of the body in which to insert the needle, angle of the needle, and the like),
- contraindications to vaccinate children against measles, and
- procedures for maintaining the cold chain.

TABLE 7: Subsystem 3 of the Measles Vaccination System

<u>Documentation:</u>	Number of Failed HAs	Substandard Component?: Yes or No
Availability of the following circulars:		
1. age of child at measles vaccination	6	Yes
2. number of doses	5	No
3. time interval between doses	8	Yes
4. vaccination technique	9	Yes
5. contraindications to vaccinate	6	Yes
6. cold chain procedures	10	Yes

Proportions of Substandard Components: .833

Although supervision could have detected these inefficiencies, the current supervision system is not planned to check this particular subsystem. If the supervision system is replanned, this subsystem should be included.

4. Subsystem 4: Education

All five components of this particular subsystem exhibited inadequacies as follows in Table 8.

TABLE 8: Subsystem 4 of the Measles Vaccination System

<u>Education:</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. Mothers remembered educational messages (the number of vaccines their child required)	18	Yes
2. CHWs explained to mothers the protective advantages of vaccinating their children	15	Yes
3. CHWs explained to mothers the number of doses their children should receive	14	Yes
4. CHWs explained to mothers the vaccination reactions to their children	15	Yes
5. CHWs questioned mothers to determine whether they had learned the above educational messages	18	Yes

Proportion of Substandard Components: 1.00

Although components 2 through 5 are defective, they should have been detected through normal supervision since one responsibility of the nurse supervisor is to observe the performance of the CHW. Inadequate performance in these components may help explain why component 1 was defective. It is unlikely that mothers would retain information they never possessed!

5. Subsystem 5: Information System (Appropriate Use)

Both components of the measles information system that were investigated in the selected HAS were not used properly by CHWs, as indicated in Table 9.

The implication of these two errors is that CHWs may be directly contributing to the low measles vaccination coverage in Costa Rica by incorrectly identifying children needing to be vaccinated. These problems should have been detected by the technical supervision of head nurses since observation of CHWs at work is included among supervision procedures. Therefore, these results point again to inadequate supervision as a possible explanation of these problems.

TABLE 9: Subsystem 5 of the Measles Vaccination System

<u>Information System: Use</u>	Number of Failed HAS	Substandard Component?: Yes or No
1. CHWs reviewed children's vaccination cards to determine whether they needed a measles vaccination	7	Yes
2. CHW correctly interpreted the information on the vaccination card	9	Yes

Proportion of Substandard Components: 1.00

6. Subsystem 6: Information System (Updating the System)

Of the six components that comprise this subsystem, three were performed inadequately (See Table 10):

- CHWs neglected to report dates on which vaccinations were given to the primary health care program.
- CHWs did not record the vaccination date in the family health record immediately after the vaccination was given.
- CHWs did not record the vaccination date in the vaccination care immediately after the vaccination was given.

Each of these problems in the information system has different implications. The failure to record the vaccinations correctly in the weekly report can lead to an under counting of the vaccinations given on a national level. However, this particular problem does not explain the low measles vaccination coverage detected in the LQAS study. Rather, it indicates a method through which a statistical artifact produced by under reporting leads to an underestimation of national coverage. The low coverage measured by the LQAS project was independent of the national information system.

TABLE 10: Subsystem 6 of the Measles Vaccination System

<u>Information System: Update</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. vaccination dates in the family health records and on personal vaccination cards matched	3	No
2. CHW recorded the vaccination date in the family health record	1	No
3. CHW recorded the vaccination date on the vaccination card	3	No
4. CHW recorded the vaccination date in the weekly report to the primary Health Care Program	10	Yes
5. CHW recorded the vaccination date in the family health record in the household immediately after the vaccination	13	Yes
6. CHW recorded the vaccination date in the vaccination card in the household immediately after the vaccination was given	13	Yes

Proportion of Substandard Components: .50

The second and third components in the information system can lead to similar problems. The Ministry norm is to record the vaccination date in both the family record and the vaccination card immediately after the vaccination is given. The reason is to reduce the chance of the CHW forgetting to enter the information after returning to the HA. Another less likely

reason for this norm is to prevent the CHW from recording the date of a planned vaccination and then either forgetting to vaccinate the child or being unable to do so.

These performance problems (especially the latter two), once again, would have been detected by supervisors in their normal rounds. Thus, we suspect that the supervision system is functioning inadequately.

7. Subsystem 7: Basic Knowledge

Three of the eight subsystems were functioning inappropriately (See Table 11):

- Rural supervisors did not know contraindications to measles vaccination.
- CHWs did not know the ages at which children should be vaccinated against measles.
- CHWs did not know the contraindications to measles vaccinations.

TABLE 11: Subsystem 7 of the Measles Vaccination System

<u>Basic Knowledge</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. Local supervisor knew the number of measles vaccinations a child should receive	0	No
2. Local supervisor knew the age(s) at which children should be vaccinated against measles	4	No
3. Local supervisor knew that contraindications to measles vaccinations existed	3	No
4. Local supervisor knew the signs comprising the contraindications	17	Yes
5. CHW knew the number of measles vaccinations a child should receive	0	No
6. CHW knew the age(s) at which children should be vaccinated against measles	6	Yes
7. CHW knew that contraindications to measles vaccinations existed	5	No

8. CHW knew the signs comprising the contraindications 17 Yes

Proportion of Substandard Components: .273

Although all of these inadequate components further indicate problems with the supervision system, the strongest indicator of this condition is the fact that the supervisor did not know the information (i.e., contraindications to vaccination) that he was supposed to ensure was embraced by CHWs. Supervisors can not supervise adequately unless they are well informed.

The decay of knowledge of the CHWs could lead to either reduced or inflated vaccination coverage. The direction of the error would depend on whether CHWs were vaccinating children too young or too old; and whether they were using too many or too few contraindications to vaccination.

8. Subsystem 8: Logistics (Permanent Materials at the HA)

All of the components of this subsystem functioned inadequately (See Table 12). However, the implications derived from these problems are different. The poor condition of the CHW's medical bag raises concerns about the hygiene and the potential contamination of vaccines and syringes.

The poor condition of vehicles and the insufficient quantity of fuel indicates additional reasons for the low measles vaccination coverage. CHWs are unable to reach all of the families in their catchment areas.

TABLE 12: Subsystem 8 of the Measles Vaccination System

<u>Logistics: Material</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. Observed that the condition of the CHW's medical bag was good	7	Yes
2. Observed condition of transport (e.g., moped) was good	10	Yes
3. Observed sufficient quantity of fuel	7	Yes

Proportion of Substandard Components: 1.00

9. Subsystem 9: Logistics (Supplies)

Nine of the ten components of this subsystem were substandard (See Table 13). However, since several of them are quite similar, we aggregate these findings into three categories:

- Fuel: Local supervisors and nurse supervisors both expressed that HA had an insufficient quantity of fuel on hand to ensure adequate coverage of their community.
- Vaccines: Local supervisors, nurse supervisors, and CHWs reported an insufficient supply of measles vaccines to complete the measles vaccination program in their areas.
- Syringes: Local supervisors, nurse supervisors, and CHWs reported an insufficient supply of syringes to complete the measles vaccination program in their areas.

TABLE 13: Subsystem 9 of the Measles Vaccination System

<u>Logistic: Supplies</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. Local supervisors perceive HAs to have a sufficient quantity of fuel	17	Yes
2. Local supervisors perceive HAs to have sufficient quantity of measles vaccines to complete the planned program	11	Yes
3. Local supervisors perceive HAs to have sufficient a quantity of syringes to complete the measles vaccination program	15	Yes
4. CHWs report they have received enough measles vaccine to complete their vaccination program	14	Yes
5. CHWs report they have received enough syringes to complete their vaccination program	13	Yes
6. CHWs report they receive vaccine vials of one dose rather than of 10 doses	5	No
7. Sufficient vaccination materials observed by project team in HAs	8	Yes

- | | | | |
|-----|---|----|-----|
| 8. | Nurse supervisors perceive HAS to have a sufficient quantity fuel | 16 | Yes |
| 9. | Nurse supervisors perceive HAS to have sufficient quantity of measles vaccine to complete the planned vaccination program | 12 | Yes |
| 10. | Nurse supervisors perceive HAS to have a sufficient quantity of syringes to complete the measles vaccination program | 14 | Yes |

Proportion of Substandard Components: .90

Several different sources of information produce the same result, namely, HAS have an insufficient quantity of syringes and vaccines for the CHWs to carry out the planned vaccination program. Further, they have an insufficient quantity of fuel. This energy problem worsens their performance since they are unable to adequately visit families to vaccinate children with the limited supply of vaccines they actually have.

These three categories of problems are crucial for understanding the low measles vaccination in Costa Rica. However, of these three problems the lack of measles vaccine and the corresponding syringe are the most important problems. Since earlier LQAS analyses indicated that both polio and DPT coverage was adequate, we must assume that CHWs were able to overcome the problem of insufficient fuel, and vaccinate children in need. We therefore assume that CHWs would have been capable of overcoming transportation problems reducing measles vaccination coverage as well. Therefore, the most compelling results of this section are the lack of vaccination supplies found in HAS and reported by supervisors.

10. Subsystem 10: Service Delivery

One of four components was inconsistent with Ministry norms for this subsystem. As presented in Table 14 children tended to be vaccinated through other health facilities rather than through the home outreach program. An objective of the Primary Health Care Program has been to deliver services to individuals in their homes, including vaccinations. Since children are not receiving their measles vaccinations in the home, it raises the question "why not?". Is it that parents have ceased to have confidence in the ability of CHW's to provide vaccinations and therefore are looking to other portions of the health system for care? Or is it that because of insufficient resources CHWs are advising parents to take their children to health facilities to be vaccinated?

Whether these or other alternatives explain the low proportion of children vaccinated against measles in their own households is less important than what this problematic component implies. A large proportion of the children vaccinated against measles were vaccinated outside of the household. One would expect such an adaptation if CHWs were unable to vaccinate children in homes.

TABLE 14: Subsystem 10 of the Measles Vaccination System

<u>Service Delivery</u>	Number of Failed HAs	Substandard Components?: Yes or No
1. Mothers report they have been visited by CHWs	0	No
2. Mothers possessed vaccination cards	0	No
3. Mother's child was vaccinated in the household	17	Yes
4. CHWs correctly identify children who are recorded in that HA who need a measles vaccination	1	No

Proportion of Substandard Components: .25

11. Subsystem 11: Vaccination

The one component of this subsystem functioned adequately. In only 1 of the 18 HAs studied nationally did CHWs not vaccinate children. Therefore, we can be relatively sure that once children have been identified and contacted by the CHW, they are being vaccinated.

12. Subsystem 12: Quality of Service Delivery -- Preparatory Activities

Of the seven components that comprise this subsystem, three were not performed adequately (See Table 15):

- CHWs tended to contaminate the syringe or measles vaccine.

- CHWs tended to contaminate the vaccine while filling the syringe.
- CHWs tended neither to wash their hands nor to repack their material after using it.

TABLE 15: Subsystem 12 of the Measles Vaccination System

<u>Quality of Service Delivery: Preparatory Activities</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. CHW washed his/her hands before vaccinating children	3	No
2. CHWs kept the vaccination materials clean	5	No
3. CHWs did not contaminate either the syringe or measles vaccine	10	Yes
4. CHW filled the syringe without any contamination	14	Yes
5. CHW cleaned the area where the vaccine is to be supplied	3	No
6. CHW cleaned the area where the vaccine is to be applied according to Ministry norms	4	No
7. CHW washed his hands and repacked the material after use.	10	Yes

Proportion of Substandard Components: .429

All of these program implementation problems should be classified as inadequate hygiene behavior of CHWs. Further all of them should have been prevented or corrected through normal supervision. Therefore, these results point toward further problems with the performance of the supervision system as currently existing in the Ministry of Health.

Although these three problematic components do not explain the low proportion of children vaccinated against measles, they do indicate that the quality of many of those given to children were substandard.

Subsystem 13: Quality of Service Delivery: Applications

Two of the three components comprising this subsystem were performed inadequately (See Table 16):

- The needle was introduced into the child incorrectly.
- The vaccine was either not aspirated or not injected slowly in to the child.

As with many of the implementation problems presented in preceding sections, these two problematic components could have either been prevented or corrected with an adequately functioning supervision system. As with subsystem 12, the problems identified here with service delivery do not explain the low proportion the children vaccinated against measles. However, they do suggest that the quality of many of the vaccinations were substandard.

TABLE 16: Subsystem 13 of the Measles Vaccination System

<u>Quality of Service Delivery: Application</u>	Number of Failed HAs	Substandard Component?: Yes or No
1. Introduced the needle at a 45° angle into the deltoid muscle	14	Yes
2. Aspirated and injected the liquid slowly	11	Yes
3. Applied pressure and withdrew the needle	3	No

Proportion of Substandard Components: .66

14. Subsystem 14: Quality of Service Delivery (Elimination of Syringes)

This subsystem consists of one component. Although there are no formal norms formulated by the Ministry of Health with regard to syringe disposal, member of the Ministry do have strong opinions as to what is correct or incorrect behavior vis a vis syringe disposal. In all instances CHWs are discouraged from discarding the syringe in the household where the child was vaccinated. The main reason is that regardless of whether the syringe is placed in the garbage, burnt, or buried, it is

possible for anyone to be injured by accidental contact with the needle.

Data analysis indicated that this procedure was violated by CHWs. Supervisors should be able to maintain the desired syringe disposal procedure were they notified formally that it was their role to do so.

15. Subsystem 15: Supervision

Eight of the nine components that comprise this subsystem were performed inadequately (See Table 17). The results can be reduced to the following major problems:

- Neither nurse supervisors nor local administrative supervisors coordinated their scheduled supervisory visits. Since nurse supervisors rely on local supervisors for transportation to HAs, we conclude that nurse supervisors' visits to HAs were infrequent.
- Neither the nurse supervisor nor the local administrative supervisor maintained up to date records of their supervisory visits to HAs. Thus, it was not possible from their own written record to appraise the frequency of their supervision of CHWs.
- The dates on which nurse and local supervisors were supposed to supervise did not coincide with the dates they actually did supervise. In most cases, no dates of supervision were recorded. These recorded data indicate that very infrequent supervision was occurring.

TABLE 17: Subsystem 15 of the Measles Vaccination System

<u>Supervision</u>	Number of Failed HAs	Substandard Component? Yes or No
1. The administrative supervisor (AS) programmed his supervision visits to Health Areas in coordination with the nurse supervisor.	8	Yes
2. The AS retained the 1987 supervision records.	17	Yes
3. The AS retained the 1988	16	Yes

supervision records.		
4.	The dates of the Assistant's supervision records and reports coincide:	
	Visit 1	17 Yes
	Visit 2	17 Yes
	Visit 3	17 Yes
	Visit 4	17 Yes
	Visit 5	17 Yes
	Visit 6	17 Yes
5.	The CHW maintained supervision records for 1988.	3 No
6.	The nurse supervisor (NS) programmed her supervision visits to Health Areas in coordination with the AS	11 Yes
7.	The NS retained the 1987 supervision records	14 Yes
8.	The NS retained the 1988 supervision records	18 Yes
9.	The dates of the NS's supervision records and reports coincide:	
	Visit 1	17 Yes
	Visit 2	18 Yes
	Visit 3	18 Yes
	Visit 4	18 Yes
	Visit 5	18 Yes
	Visit 6	18 Yes

Proportion of Substandard Components: .889

These results clarify why so many of problematic subsystems were reported in the preceding sections. Most of them could have been either prevented or corrected had an adequate supervision system been functioning. There are no data which suggest that supervision is occurring as planned by the Primary Health Care problem. We conclude that one major step to be taken to improve both measles vaccination coverage and the quality of that coverage is to ameliorate problems in the supervision system.

16. Summary

These analyses, in synthesis, indicate three major problem areas in the measles vaccination system:

1. inadequate performance of supervision
2. insufficient maintenance of transport for community health workers
3. insufficient supply of measles vaccines and syringes to HAS.

Improving the measles vaccination system in Costa Rica will require addressing each of these problems separately.

The next section explores the problem of inadequate vaccination and syringe supply to HAS in more depth.

IV. SUPPLY DISTRIBUTION AT THE REGIONAL LEVEL

1. Regional Administrators

a) Regional procedures to requisition measles vaccine and syringes.

During 1987, only 2 regions used the standard Ministry procedures to request materials from the National level. Of the four remaining regions, three used the quantities requested by Health Centers as a basis for their requests; and one region, Huetar Norte, did not make any requests at all, since another region, Central Norte, had assigned Huetar Norte a quota of its vaccine and syringes.

The Central Sur zone has its own particular procedure for requesting materials. Health Centers send their requests to the Regional Administrator who then forwards it immediately to the National level, where they are recorded. The materials, once organized are sent back to the Region, and from there to the corresponding Health Center. For this reason, according to the Administrator of this region, he has no control over the quantity of vaccine or syringes requested by the Health Centers. In addition, he has no control over the quantity distributed by the Central level. The office of the regional Administrator is merely a conduit between the Health Centers and the Central level.

During 1988, with the exception of the Central Sur and Chorotega, requests for materials were made using a predetermined quantity of vaccines and syringes programmed for Health Centers. Central Sur and Chorotega continue using the same criteria used the year before, that is, based on demand of the Health Centers.

During 1988 in four regions (all regions but Chorotega and Central Sur) the Health Centers made requests to the Central level for supplies.

Regional requests are made with forms which differ slightly from region to region. In all regions they are signed by the Director or the Regional Administrator. The form is then authorized at the Central Level by the Director of the Immunization Program who is the official in charge of authorizing the distribution of supplies.

Usually the Regional Administrator, Supervisor, Distributor of Goods or a driver from the particular region that initiates the requisition brings it to the warehouse of the Immunization Program to receive the supplies. The form is signed by the person who delivers the request and by the person who fills the order and by the person who receives the supplies; one copy of the form is filed in the storeroom and another copy is filed in the region receiving the supplies.

The Huetar Atlántica region could not provide a copy of the requests for 1987, "because during the change of regional headquarters the forms were lost." Huetar Norte retained forms for only the latter part of 1987 since for the first four months of the year this region was administratively under the jurisdiction of Central Norte. Therefore, the information was incomplete.

b) People responsible for distributing requests to the Health Centers in 1987

Each region has a particular system to dispatch requests for syringes and vaccines to the Health Centers:

Central Norte: This region has a mail distributor who goes to all the health centers on a monthly basis and an office worker in charge of the regional storeroom who is the person responsible for the distribution.

Central Sur: Health centers usually dispatch their requests when a local level official has to travel to the central level. When this is not possible they inform the Regional Administrator that they would like him to make a request to the Central level for vaccines and syringes for them.

Brunca: The distribution of vaccines and syringes to the health centers is performed by a driver assigned to the Regional level. Sometimes supplies are sent with an official visiting a Health Center.

Choroteqa: This region delivers the supplies with any driver of the Ministry of Health who needs to stop or pass near a particular health center.

Huetar Norte: The Rural Supervisor brings the supplies requested to his/her own health center.

Huetar Atlántica: The administrator of the regional storeroom dispatches supplies requests to the Health Centers.

c) Need for syringes and measles vaccines

The Regional Administrators reported a shortage of syringes and measles vaccines due to the fact that there was a shortage of supplies at the central level. Only the administrators of Brunca and Central Sur did not report a shortage of vaccines during 1987. The other administrators commented that the Central level did not always ship the quantity of vaccines and syringes requested.

d) Quantity of syringes and measles vaccine distributed in each area.

None of the Regional Administrators had data about the quantity of syringes and measles vaccines distributed to each Health Area. For this reason, they cannot guarantee that these areas received the supplies they require.

e) 10 dose vials of measles vaccine

Although during our interviews of administrators, we did not ask questions about the functionality or non-functionality of 10 doses vials of measles in the Primary Health Care Areas, 4 of the interviewees affirmed that the quantity of doses required was more than the quantity planned. This results from the fact that vials must be disposed after they have been opened for 8 hours. Since most 10 dose vials are not completely used, the remaining doses are discarded. To observe this norm the Assistants have the following options: 1) refer children to the Health Centers to be vaccinated rather than use 10 dose vials; 2) bring the vials to the rural areas and use the doses needed as planned even though only one or two doses will be used.

According to the administrators both options present problems:

1. If CHWs refer children to the Health Center many mothers will not follow this advice because the children who attend the Health Center are usually those who live nearby. This result leads to a lower coverage rate. If five children need to be vaccinated, the assistant has to dispose of the remaining 5 doses in the vial. Similarly, if twelve children need to be vaccinated, 2 vials would have to be opened, consequently, 8 doses have to be discarded. However, the assistant could open only one vial and turn away two children.
2. If the 10 doses vial is taken to the rural area and only the required doses are used that day, a loss of vaccine would result, and consequently, an insufficient

quantity of vaccine would remain for children who are planned to be vaccinated.

V. SUPPLY DISTRIBUTION AT THE CENTRAL LEVEL

1. Executive Administrative Assistant of the Regional Division Primary Health Care Program (National Administrator)

Based on the interview with the Administrator of the Regional Division of the Primary Health Care Program, we confirmed that the syringes distributed at the local and regional levels were used for another type of vaccination other than measles or measles rubella vaccinations (e.g., DPT.) Since the Immunization Program is officially responsible for the distribution of syringes, we discussed this report with the authorities of the Immunization Programs.

2. Director of the Immunization Program

During our interview, the Director of the Immunization Program reported the following:

- a) The projected number of births per year is used to anticipate the national requests for measles vaccines. The amount of the measles-rubella parotiditis vaccine requested was based on 100% of one-year-old children plus a 30% increase to take into account loss of vaccines.
- b) He sends 2 cc or 3 cc syringes with needles #22 of 1 1/2 inch to apply a simple doses of measles and measles rubella vaccines.
- c) He reported no administrative problem to supply syringes and vaccines on requests by the Regions.

We then posed the following questions to investigate: did the administrators request the appropriate quantities of vaccines to comply with the plan of the regional program? Or was the quantity of vaccine supplied less than what was requested?

With the authorization of the Director of the Immunization Program we proceeded to analyze carefully the file containing copies of the distribution of vaccines in 1987 which were available in the storeroom of the Program. Content analysis indicated that the regions did not receive the quantity of

vaccines requested (See Table 18). The following figure describes the situation:

TABLE 18: Quantity of measles, measles-rubella parotiditis vaccines and syringes requested and received by each region. (*)

REGION	SIMPLE MEASLES		RUBELLA MEASLES		SYRINGES	
	REQUESTED	RECEIVED	REQUESTED	RECEIVED	REQUESTED	RECEIVED
CENTRAL SUR	48,384	36,740	52,713	28,028	88,717	61,838
HUETAR NORTE	5,054	3,950	5,159	3,821	14,072	11,046
CHOROTEGA	31,000	25,000	28,060	12,500	68,500	42,000
HUETAR ATLANTICA	29,920	14,920	32,050	13,050	57,470	39,970
BRUNCA	2,500	800	17,600	10,500	18,500	10,400
CENTRAL NORTE	36,990	28,700	28,664	22,060	65,254	51,600

* This information was provided by the National Immunization Program and obtained from the Ministry of Health Immunization Program. "File-Copy of the Distribution of Supplies," 1987.

Additional information about region Central Sur is presented in Table 19 since the Health Center requested syringes and measles vaccines directly from the Central level.

VI COMPARISON OF THE QUANTITIES OF VACCINES PLANNED, REQUESTED, RECEIVED AND APPLIED ACCORDING TO THE REGION DURING 1987.

1. Health Regions

If we compare the quantities of doses requested and received in each region with the number of doses planned and applied in each region, we observe substantial discrepancies (see Table 19).

TABLE 19: QUANTITIES OF VACCINES PLANNED, REQUESTED, RECEIVED AND APPLIED ACCORDING TO REGIONS.

REGION	MEASLES VACCINE				MEASLES RUBELLA PAROTIDITIS			
	PLANNED	REQUESTED	RECEIVED	APPLIED	PLANNED	REQUESTED	RECEIVED	APPLIED
CENTRAL SUR	26,501	48,383	36,740	19,714	27,054	52,713	28,028	24,658
HUETAR NORTE	2,856	5,054	3,950	2,526	3,778	5,159	3,821	3,632
CHOROTEGA	6,320	31,000	25,000	7,844	6,826	28,000	12,500	9,717
HUETAR ATLANTICA	3,758	29,920	14,920	6,975	3,283	32,050	13,050	9,896
BRUNCA	2,608	2,500	800	3,543	2,927	17,600	10,500	7,701
CENTRAL NORTE	16,485	36,990	28,700	16,995	18,993	28,664	22,060	19,310

Ministry of Health-Immunization Program, from the file: copies of "Distribution of supplies," 1987.

Ministry of Health, Commission on Information, Control of Activities Planned, January to December 1987

Table 19 indicates that the regions requisition more vaccines than they or the Ministry originally planned. For example, the Central Norte requested 2.24 times more measles vaccines than planned. Huetar Atlántica requested 7.96 times more measles vaccines than planned.

An explanation of this observation could be that regional administrators are taking into account the possible loss of vaccines.

Another discrepancy is apparent when comparing the quantity of measles vaccines received by regional offices and actually

used by them. For example: Central Sur received 36,740 doses and applied 19,714. Chorotega received 25,000 and applied 7,844.

This pattern persists on the Health Center level. Table 20 presents data for Central Sur since, as reported in the preceding section, Health Centers requisition their own supplies.

TABLE 20: QUANTITY OF MEASLES, MEASLES-RUBELLA PAROTIDITIS VACCINES AND SYRINGES REQUESTED AND RECEIVED BY HEALTH CENTERS IN CENTRAL SUR

HEALTH CENTERS	SIMPLE MEASLES		MEASLES RUBELLA		SYRINGES	
	REQUESTED	RECEIVED	REQUESTED	RECEIVED	REQUESTED	RECEIVED
PAVAS	2,550	2,150	3,050	1,250	4,700	3,500
SANTA ANA	919	953	1,118	518	1,373	1,153
TARRAZU	1,700	1,200	1,200	700	2,900	1,700
PURISCAL	1,250	850	1,800	1,250	2,600	1,800
OROSI	590	400	390	250	980	650
DESAMPARADOS	2,830	2,550	3,600	2,800	6,530	5,450
CRISTO REY	2,900	2,250	2,200	1,250	4,800	3,500
MONTES DE OCA	2,900	1,700	2,750	1,000	2,750	2,400
CARTAGO	5,210	4,450	7,830	3,000	12,940	7,190
CURRIDABAT	2,040	1,270	1,175	625	3,065	2,045
TEJAR	1,800	900	1,800	900	3,700	1,700
OREAMUNO	1,150	750	750	250	1,100	1,000
PASO ANCHO	1,604	1,315	900	620	2,664	1,855
DOTA	200	NA	50	NA	250	NA
CACHI	420	320	40	0	200	920
QUEPOS	400	400	350	200	750	600
HATILLO	3,550	2,450	4,100	1,700	6,900	4,050
TURRIALBA	4,000	2,525	4,350	2,450	5,350	4,575
ACOSTA	1,555	1,275	1,050	715	2,420	1,980
TRES RIOS	1,825	1,720	2,520	1,200	3,965	2,520
CIUDAD COLON	660	660	510	350	1,000	970
ALAJUELITA	1,110	1,110	1,450	1,050	2,360	1,960
ASERRI	1,700	1,340	1,980	1,200	3,380	2,330
ESCAZU	1,140	1,000	1,650	750	3,150	2,350
PARRITA	1,120	890	2,090	1,600	2,250	1,530
PARAISO	1,930	1,430	2,560	1,500	3,440	2,880

N.A. = Information not available

Source: Ministry of Health, Immunization Program

"File: Copy of the Distribution of Supplies" 1987.

The only exception to the above pattern is Brunca on which case the quantity of measles vaccines requested is less than the quantity used. The region received 800 doses and applied 3,543. The Chief Supervisor of the region explained that this discrepancy was due to the fact that Panamá donated approximately 6,000 doses last year to them, because of the scarcity of supplies at the Central level.

The pattern of vaccine demand and use observed for measles does not extend to the demand and use of measles rubella vaccines. In most regions the vaccines received were used to vaccinate children. Overall, 48% of the measles doses received by Health Regions were never used; as contrasted with 17% of the measles rubella doses received, were never used. This difference in pattern between measles and measles rubella doses may be due to the fact that the former incurred substantial wastage since 10 dose vials were not completely used. The latter avoided this problem since it only existed in one dose vials.

2. Health Centers

Although each of the Regional Administrators provided valuable information about the procedures and their limitations used by the regions and Health Centers to requisition syringes and vaccines, we decided to study these procedures and their limitations.

This small study was performed by inspecting one Health Post per region of the three originally selected for the diagnosis. The following results were obtained.

- a) Similar to what happens in the regions, Health Centers also requisition syringes and vaccines based either on their own monthly plan of activities, or on the demands of the Health Posts and the quantity of patients who recently visited Health Centers for vaccination
- b) Each Health Center is responsible for reporting its own requisition for syringes and vaccines. However, the individual who prepared the requisition may differ from time to time. In some instances, this official is the head nurse of the Health Center, in other cases this person is the supervisor, in the case of the Perez de Zeledón Health Center, a Health Assistant located in the Health Center is responsible for the requisition and distribution of vaccines.
- c) In most cases, a Health Center's requisition must be authorized by the medical director and/or the head nurse of the Health Center. In the regions, requisitions are authorized by the director or the

regional administrator. In Central Norte the regional nurse authorizes requisitions.

- d) No standard requisition forms exist for Health Centers; memos tend to be used for this function.
- e) In some Health Centers and in certain Regional Offices, there is no running inventory of vaccines and syringes. Consequently, existing supplies have to be counted each time a requisition is prepared.
- f) A record of vaccines and syringes requisitioned and received in 1987 is not available in some Health Centers (Alajuela, Guapiles and Quesada City: three of the six Health Centers analyzed). For those Health Centers that maintained records it was clear they did not receive the quantity of syringes or vaccines requested.
- g) The Health Post, Health Center and regional level agree that there are no constraints to the quantity of supplies requested, the problem is that the central level does not distribute the quantities of vaccines and syringes requested by the regions. Consequently, local levels are affected due to the resulting resource scarcity.
- h) At the local level, the people responsible for the delivery of the syringes and vaccines are: the Rural Supervisor (Central Norte, Huetar Norte and Chorotega Regions) the Rural Supervisor or the nurse in charge of the urban areas (Huetar Atlántica), the Assistants during their monthly meeting with the Rural Supervisor at Health Centers, in some cases the Rural Supervisors (Brunca), and the nurse (Central Sur).

3. Health Posts

Some Health Posts assistants solicit syringes and measles vaccines based on a plan while others base their request on the actual demand by the communities they serve.

Some Health Post assistants distribute requisitions to the Rural Supervisor at the sector meeting who in turn transfer the request to the head nurse of the Health Center or to the medical director for his/her authorization. Other Health Posts do not use any document to requisition supplies. In some instances, (e.g., Turrialba) the head nurse in charge of the Program of Health makes a verbal request to the head nurse of the Health Center who forwards the request.

After visiting six areas we concluded that there is no manual or circular that explains why an inventory of syringes and vaccines is necessary. Nevertheless, some Assistants and Supervisors develop them through their own initiative.

Ultimately, several health posts exist in which the Assistant is not aware of the quantities of vaccines and syringes received or used because records are not available.

Hence, at most levels of organization (i.e., region, Health Center or Health Post) insufficient information is available for health workers to assess their own supply system and to anticipate shortages.

VII. CONCLUSION

The present diagnosis demonstrates that low measles vaccination coverage is due to the inadequate supervision and logistical support by the Central level for all subordinate levels of organization (i.e., Region, Health Center, Health Post). Problems of logistical support include an insufficient quantity of vaccine, syringes, transport maintenance and fuel.

Other factors associated with low coverage include: Some assistants do not know the Ministry rules and procedures to apply the vaccine. Hence, children who should have been vaccinated were identified by assistants as not needing a vaccination. Many do not have access to written specifications explaining Ministry rules and procedures.

Technical failures were also identified in the quality of the vaccinations: the cold chain was not properly maintained (e.g., thermos were not closed properly), vaccinations were prepared and applied improperly, and the use of 10 dose vials led to the unnecessary wastage of vaccine. These problems raise questions about the quality of services provided and suggest that the health system should expect lower impact of such services on health indicators. These results suggest that vaccinations may not be producing immunities in target populations.

Some supervisors are also not clear about the norms and procedures established for vaccinating children and for conserving the cold chain. Therefore, they are unsuitable for maintaining the performance standards of the Health Assistants since they as supervisors do not always know them.

The supervision of Health Assistants and of Health Posts by nurses and rural supervisors is not occurring effectively. Head

nurses of the Health Centers do not coordinate their supervision activities with rural supervisors on a regular basis and hence, do not use the available transportation to take them to Health Posts to perform their tasks. Consequently supervisory visits to Health Posts are less frequent than they should be.

These results raise several questions:

Do the other responsibilities or tasks of the nurse and local supervisor impede their supervision of assistants?

Are assistants notified of their deficiencies during the process of supervision? Is it possible that corrective measures are lacking because assistants are neither informed about their poor performance, nor instructed how to improve service delivery?

Is the process of supervision unclear to supervisors? Is effective supervision actually being carried out when supervisors visit the assistant? Is adequate observation of the Assistant's work being performed during household visits?

Are Regional supervisors carrying out supervision? Is it possible that regional supervisors have eliminated continuing education from the professional lives of local personnel? Are regional supervisors failing to provide stimuli to the Local Level, with the consequence that the latter lack interest in the activities?

In summary, the analysis indicated three major problem categories in the measles vaccine system:

1. insufficient maintenance of transport for community health workers, and insufficient availability of fuel,
2. insufficient supply of measles vaccines and syringes to HAs, and
3. inappropriate packaging of vaccine in 10 dose vials that resulted in substantial wastage of vaccines, and
4. inadequate supervision of health assistants in the performance of their vaccination activities and in the maintenance of the health post.

In conclusion, this diagnosis recommends the following solutions:

1. The supervision system should be redesigned to ameliorate problems associated with a deterioration of

knowledge by health assistants and supervisors, and which maintains their performance at a high level.

This system should regularize visits of supervisors to HAs and eliminate organizational impediments that delay visits of supervisors. Supervision instruments should be used to guide supervisors in the regular performance of their work.

This task could begin with the development of a national refresher course for supervisors and assistants. It would be followed by a field component in which new supervision procedures and instruments would be used in the field under the guidance of the Office of Quality Control.

2. The system of syringe and vaccine supply from the Central Office to the Region Level to the Local Level should be redesigned to include a management information system that records supplies: requested, shipped, and received. Ideally, the system should include a running record of inventories.
3. Ten vials of vaccine should be replaced by vials with a smaller number of doses. This recommendation has already been implemented at the time of this report.
4. Local financing experiments (or schemes) should be developed for repairing and maintaining the transport (i.e., mopeds) of assistants in the communities rather than sending them to San José. This same experiment should also consider means for provision of adequate fuel for vehicles.

APPENDIX 1

Health Areas selected for the
Diagnostic of inadequate
vaccination coverage against
measles by Regions

AREA	REGION
Turrialba(*)	Central Sur
Pacayas(**)	Central Sur
Cachi(**)	Central Sur
Turrúcares(**)	Central Norte
Sabanilla(**)	Central Norte
Heredia(*)	Central Norte
La Bomba(**)	Huetar Atlántica
Parismina(**)	Huetar Atlántica
Palmitas(**)	Huetar Atlántica
Santa Cruz(*)	Chorotega
Puntarenas(*)	Chorotega
Aguas Claras(**)	Chorotega
Coope Vega(**)	Huetar Norte
San Joaquín(**)	Huetar Norte
Santa Rosa (**)	Huetar Norte
Platanillo(**)	Brunca
Sierpe(**)	Brunca
Agua Buena(**)	Brunca

(*) Area Urbana

(**) Area Rural administrative used between the regional and central levels for the distribution of syringes and measles vaccine to identify the criteria used to make national requests.

**INSTRUMENTO OBSERVACION DE LAS ACTIVIDADES DE VACUNACION CONTRA
SARAMPION RUBEOLA PAROTIDITIS QUE REALIZA EL ASISTENTE O AUXILIAR A NIVEL DE HOGARES**

Versión I de Noviembre de 1988

1. No. 5^o ---
1 2 3 4

Ministerio de Salud
Dirección General de Salud
Harvard Institute for International Development
(por un subacuerdo con PRICOR)
Proyecto Control de Calidad de Atención Primaria

INTRODUCCION

La Dirección General de Salud y la Universidad de Harvard están desarrollando un proceso tendiente a fortalecer la calidad en la prestación de los servicios de salud integral y como parte importante del Proyecto Control de Calidad de Atención Primaria, se ha elaborado el instrumento: Observación de las actividades de vacunación contra sarampión que realiza el Asistente o Auxiliar de Enfermería a nivel de hogares.

Este instrumento no solo permite conocer la calidad del servicio de vacunación que brinda a la población el Asistente o Auxiliar de Enfermería de Atención Primaria, sino que también permite detectar las necesidades de capacitación de éstos Funcionarios.

INSTRUCCIONES GENERALES.

La Enfermera del Centro de Salud y el Supervisor de Campo del Area Programática serán responsables de seleccionar las Fichas Familiares donde hayan niños menores de tres años, que de acuerdo a la norma, requieran la vacuna contra Sarampión Rubeola Parotiditis.

Para tal efecto, dichos Funcionarios deberán seguir los siguientes procedimientos:

- a) Considerar el número de localidades o manzanas de cada área de Atención Primaria y aleatoriamente seleccionar una de ellas.
- b) De acuerdo a la localidad o manzana seleccionada y respetando el orden en que aparecen las Fichas Familiares en el archivo, seleccionar tres de ellas en donde hayan niños menores de tres años que requieran la vacuna contra Sarampión (un niño por vivienda).
- c) Proporcionarle al Asistente las Fichas Familiares seleccionadas, para que éste proceda a programar las visitas con las instrucciones de que únicamente debe programar la actividad de vacunación y que solamente en casos muy especiales, realizará otras atenciones en el hogar.
- d) El funcionario que realice la Supervisión en el hogar, anotará las observaciones, de acuerdo a los componentes del Instrumento.
- e) Finalizadas las tres visitas correspondientes a cada área, el funcionario que supervisa, hará un análisis de lo observado y orientará al Asistente en todos aquellos aspectos que lo ameriten.
- f) En el espacio Fallas Encontradas y Educación Impartida (última hoja) el funcionario supervisor describirá las fallas encontradas y la educación impartida así como otras observaciones que considere. Al final de esto, hay otro espacio para que firme el supervisor y el supervisado.
- g) En el cuaderno de Supervisión, debe especificarse claramente, tanto los aspectos positivos como negativos encontrados, así como las medidas correctivas tomadas.
- h) El funcionario que realiza la supervisión debe enviar los instrumentos de cada una de las áreas a su cargo, al Supervisor o Enfermera Regional, quienes serán responsables de hacerlo llegar a la oficina de Control de Calidad (nivel central).

INSTRUCTIVO PARA EL LLENADO DEL INSTRUMENTO.

1. Los componentes del Instrumento deben llenarse con letra clara y no dejar ninguno de ellos en blanco.
2. En el punto 5 (funcionario que supervisa) debe aparecer nombre y apellidos del funcionario, no la firma .
3. En lo que se refiere a los componentes de observación del Instrumento, deberá encerrarse en un círculo la alternativa 1, en todos los casos en que el Asistente realice la acción correctamente y la alternativa 2 en los casos en que lo realice incorrectamente. Cuando ésto último sucede, se debe describir sintéticamente la acción realizada por el Asistente.
4. Para el caso de la observación #28 deberá encerrarse en un círculo el lugar en donde el Asistente descarta la jeringa.
5. En la observación #32 y 33 deberá encerrar en un círculo la alternativa correspondiente al registro de la vacuna.

ANOTE:	2. Región -----	
LOCALIDAD: -----	Centro de Salud -----	5
CASA NUMERO: -----	4. Puesto/Area de Salud -----	6
	Asistente/Auxiliar -----	
	5. Funcionario que supervisa -----	7
	Cargo -----	
	6. Fecha de la observación	
	día mes	8 9 10 11
	7. Anote la hora en que llega al hogar	
	hr : min	-----

CALIDAD DEL SERVICIO: IDENTIFICACION DEL USUARIO

8. Identifica en documentos y personalmente al niño que corresponde vacunar?

1. Si. _____
*2. No. (Especifique) _____ 16

SISTEMA DE INFORMACION: USO

9. Revisa el carnet de vacunas antes de vacunar al niño?

1. Si _____
*2. No. _____ 17

10. Interpreta a la madre el carnet de vacunas del niño?

1. Si _____
*2. No. _____ 18

CALIDAD DEL SERVICIO: PREPARACION.

11. Se lava las manos antes de preparar y aplicar la vacuna?

1. Si _____
*2. No. _____ 19

12. Prepara el área de trabajo (el campo) de acuerdo a la técnica correcta?

1. Si _____
*2. No. _____ 20

13. Brinda seguridad y comodidad al niño para vacunarle?

1. Si _____
*2. No. _____ 21

14. Localiza el área donde aplicará la vacuna, según normas?

1. Si _____
*2. No. _____ 22

15. Revisa las condiciones de higiene del sitio donde aplicará la vacuna, según norma establecida?

1. Si _____
*2. No. _____ 23

16. Está sucia el área donde aplicará la vacuna?

1. Si _____
*2. No. (Pase a observación No. 19) _____ 24

17. Limpia con agua y jabón el área donde aplicará la vacuna?

1. Si

*2. No. _____

25

18. En caso de limpiar el área, se lava nuevamente las manos?

1. Si

*2. No. _____

26

CADENA DE FRIO: TERMO

19. Saca del termo la vacuna e inmediatamente la usa?

1. Si

*2. No. _____

27

20. Deja el termo tapado al momento de usar la vacuna?

1. Si

*2. No. _____

28

CALIDAD DEL SERVICIO: PREPARACION.

21. Manipula la ampolla o frasco de la vacuna sin contaminar?

1. Si

*2. No. _____

29

22. Carga la jeringa sin contaminar?

1. Si

*2. No. _____

30

CALIDAD DEL SERVICIO: APLICACION

23. Introduce la aguja en el plano que corresponde en región subcutánea?

1. Si (correcto para sarampión)

*2. No. _____

31

24. Sin introducir el líquido, aspira con la jeringa para comprobar que no ha punzado un vaso sanguíneo?

1. Si

*2. No. _____

32

25. Introduce lentamente el líquido al aplicar la vacuna?

1. Si

*2. No. _____

33

26. Hace presión con algodón seco, en el área donde aplicó la vacuna y extrae la aguja?

- 1. Si
- *2. No. _____

34

CALIDAD DE SERVICIO: ELIMINACION DE JERINGAS.

27. Retira la jeringa con la aguja y le coloca el protector de forma que éste quede fijo?

- 1. Si
- *2. No. _____

35

29. Donde descarta la jeringa?

- 1. Basurero de la casa visitada
- 2. Basurero del Puesto/Centro de Salud
- 3. Letrina de la casa visitada
- 4. Quemadas en la casa visitada
- 5. Quemadas en el Puesto/Centro de Salud
- 6. Enterradas en el Puesto/Centro de Salud
- 7. Otro _____

36

CALIDAD DEL SERVICIO: POST APLICACION

29. Se lava las manos antes de recoger el material utilizado?

- 1. Si
- *2. No. _____

37

30. Manipula el material y equipo utilizado según técnica?

- 1. Si
- *2. No. _____

38

SISTEMA DE INFORMACION: ACTUALIZACION.

31. Registra en el informe sesanal la vacuna aplicada?

- 1. Si
- *2. No. _____

39

32. Registra en la ficha familiar la vacuna aplicada?

- *1. Antes de vacunar al niño
- 2. En el hogar después de vacunarlo
- *3. En el establecimiento, después de realizadas las visitas
- *4. No la registra.

40

33. Registra en el carnet de vacunas la vacuna aplicada?

- *1. Antes de vacunar al niño
- 2. En el hogar después de vacunarlo
- *3. En el establecimiento, después de realizadas las visitas
- *4. No la registra. Porqué _____

41

EDUCACION A LA MADRE DEL NIÑO:

34. Explica a la madre la importancia de vacunar al niño?

- 1. Si
- *2. No. _____

42

35. Explica a la madre el número de dosis de la vacuna contra sarampión que debe aplicarse al niño

- 1. Si
- *2. No. _____

43

36. Explica a la madre las reacciones post vacuna: fiebre, brote leve similar al de sarampión?

- 1. Si
- *2. No. _____

44

37. Explica a la madre la conducta a seguir en caso de alguna reacción post vacuna?

- 1. Si
- *2. No. _____

45

38. Interroga a la madre sobre la educación impartida para determinar lo captado por ella?

SI EL ASISTENTE NO INTERROGA A LA MADRE SOBRE ALGUNO DE LOS CUATRO ASPECTOS QUE CONSIDERO EN LA EDUCACION QUE LE BRINDO; LA ALTERNATIVA A MARCAR CON "X" ES LA NUMERO 2

- 1. Si
- *2. No. _____

46

ANOTE LA HORA A ESTE MOMENTO

47 48 49 50

FALLAS ECONTRADAS Y EDUCACION IMPARTIDA:

FIRMA SUPERVISOR _____

FIRMA SUPERVISADO _____

ENTREVISTA A ENFERMERAS JEFES DE CENTROS DE SALUD

Versión: 11 de febrero de 1989

1. No. Identificación 6
1 2 3

Ministerio de Salud
Dirección General de Salud
Harvard Institute for International Development
(un subacuerdo de PRICOR)
Proyecto Control de Calidad de Atención Primaria

INSTRUCTIVO

La entrevista se aplicará a las enfermeras jefes de aquellos Centros de Salud a los que estén adscritas las seleccionadas para el estudio, ya que ellas son responsables de la supervisión técnica de los asistentes que laboran en esas áreas.

Con esta entrevista se pretende constatar el grado de coordinación existente entre ésta y el supervisor de campo, así como valorar, el conocimiento de éstas, sobre recursos disponibles por el asistente para cumplir con la programación. Además, se pretende conocer el criterio de estas en relación con los problemas que afrontan ellas y los asistentes para realizar el trabajo que les corresponde, de acuerdo a su función.

Esta entrevista será realizada en forma individual, por uno de los miembros del equipo del proyecto, una vez finalizado el trabajo a nivel de campo (observación del trabajo del asistente en los hogares y entrevista a los padres de niños vacunados contra sarampión).

2. Región -----
4

Centro de Salud -----

3. Puesto/Área Número -----
5

4. Entrevistador -----
6

5. Fecha de la Entrevista: -----
día mes 7 8 9 10

6. Anote la hora al iniciar la observación. -----
hr : min 11 12 13 14

SION

¿Le ha mostrado usted en coordinación con el supervisor del campo, las visitas de supervisión a las áreas de atención Primaria?

15

Si
No
Porque no _____

¿Le ha mostrado la programación del año 1987?

16

Si (Pase a pregunta 10)
No mostró (lo extravió)
No mostró (la programación no está escrita)
Fue descartada
Otro _____

¿Le ha mostrado la programación elaborada para el año 1988.

17

Si
No mostró (la extravió) (Pase a pregunta 16)
No mostró (la programación no está escrita) (Pase a pregunta 16)
Otro _____

EN EL SIGUIENTE CUADRO LAS FECHAS PROGRAMADAS PARA EL AÑO 1987, COMPARELAS A LAS AREAS DONDE SE ESTA REALIZANDO EL PRESENTE DIAGNOSTICO.

de Programación : Coincide la fecha del con la fecha en el cuaderno.
Vea Entrevista del Asistente
Mes Año : Coincide=1 * No Coincide=2 No Aplica=3

de Programación	Coincide la fecha del con la fecha en el cuaderno.	
Mes Año	Vea Entrevista del Asistente	
	Coincide=1 * No Coincide=2 No Aplica=3	
----- -----	-----	----- 18
----- -----	-----	----- 19
----- -----	-----	----- 20
----- -----	-----	----- 21
----- -----	-----	----- 22
----- -----	-----	----- 23

SOM LAS CONDICIONES DEL EQUIPO QUE UTILIZA EL ASISTENTE DEL AREA _____
 EN EL CUADRO ADJUSTO UN 1 SI LA CONDICION ES BUENA, UN 2 SI ES MALA Y 3 SI EL ASISTENTE NOTIEN EL
 CORRESPONDIENTE).

	CONDICION			OBSERVACIONES
	BUENO=1	MALO=2	NO TIENE=3 NO NECESARIO	
ADENA DE FRIO REFRIGERADORA				24
ADENA DE FRIO ERMO				25
TICAS:MATERIALES: LETIN				26
TICAS:MATERIALES: DIO TRANSPORTE				27

ICAS: SUMINISTRA

considera Ud. que el asistente del Area de _____ dispone del combustible
 suficiente para desplazarse a las diferentes localidades del Area?
 Si _____
 No Porque _____ 28
 No Sabe _____
 No es necesario _____

considera Ud. que el asistente del Area de _____ dispone de la cantidad suficiente
 de vacunas simples contra sarampión para que cumpla con la programación.
 Si (pase a pregunta 22) _____
 No _____
 Algunas veces 29

¿qué cree usted que se debe esa situación?
 Nivel central no dispone de vacunas _____
 Nivel regional no dispone de vacunas 30
 Centro de Salud no dispone de vacunas _____
 Esa Area está muy lejos y no dispone de medio de transporte para llevar las vacunas _____
 La cantidad de vacunas que le dan no es suficiente para cubrir las necesidades de todas las areas a su
 cargo. _____
 Otro. _____
 No sabe _____

considera Ud. que el asistente del Area de _____ dispone de la cantidad suficiente
 de vacunas simples contra sarampión.
 Si (pase a pregunta 24) _____
 No 31
 Algunas veces _____

¿Le cree usted que se debe esa situación?

- Nivel central no dispone de jeringas
- Nivel regional no dispone de jeringas
- Centro de Salud no dispone de jeringas
- Esa Area está muy lejos y no dispone de medio de transporte para llevar las jeringas
- La cantidad de jeringas que le dan no es suficiente para cubrir las necesidades de todas las areas a su cargo.
- Otro. _____
- No sabe

INDICACIONES: (Marque con una X la respuesta)

¿Son las actividades específicas más importantes que Ud. considera al realizar la supervisión del _____ al realizar la supervisión del trabajo del asistente que

INDICACIONES

¿Actualmente cuáles son los principales problemas que interfieren en la realización de su trabajo?

¿Cree Usted que el apoyo que le brinda el nivel superior es el adecuado?

Si _____
No Porqué _____

Indicaciones: _____

ENTREVISTA AL ASISTENTE/AUXILIAR DE SALUD

Versión de 11 de febrero 1988

1. No. Identificación 2 1 2 3

rio de Salud
on General de Salud
Institute for International Development
subacuerdo de PRICOR)
o Control de Calidad de Atención Primaria

INSTRUCTIVO

entrevista que se realizará al asistente de las Areas seleccionadas, pretende valorar los conocimientos de sobre normas y procedimientos establecidos para la aplicación de la vacuna simple contra sarampión, además aspectos relacionados con la supervisión y el suministro del equipo y material, que el funcionario necesita cumplimiento de la programación.

aspectos considerados en este instrumento son aquellos que no podrian ser valorados a través de la ción (ver instrumento de observación). La entrevista será realizada en un lugar privado del establecimiento o Centro según corresponda) por un miembro del equipo del proyecto, después de que se ha observado el del asistente en el hogar.

2. Región	-----	4
3. Centro de Salud	-----	
4. Puesto/Area de Salud	-----	5 6
5. Asistente/Auxiliar	-----	
6. Entrevistador	-----	7
7. Fecha de la Entrevista	-----	8 9 10 11
día mes		

8. Anote la hora en que inició la entrevista

-----	-----	-----	-----
12	13	14	15

BIENTO: BASICO

¿Cuántas vacunas simple contra sarampión se debe aplicar a cada niño?

- 1. 1 dosis (correcto)
 - * 2. 2 o mas dosis (incorrecto)
 - * 3. No sabe
-
- 16

¿A qué edad o edades se debe aplicar la vacuna simple contra sarampión?

- 1. Entre 6 y 11 meses (correcto)
 - * 2. Otra Respuesta (especifique) -----
 - * 3. No Sabe
-
- 17

¿Existen contraindicaciones para aplicar la vacuna simple contra sarampión?

- 1. Si
 - * 2. No
 - * 3. No Sabe
-
- 18

¿Les son esas contraindicaciones?

- *1. Fiebre menor de 38.5 grados, tos, apretasón de pecho, rinitis, irritabilidad y alergias (contraindicaciones leves)
- *2. Tratamiento con esteroides, cáncer, leucemia, procesos febriles agudos, alergias severas al huevo, plumas y otros derivados del pollo (contra indicaciones severas)
- *3. Menciona contraindicaciones leves y severas
- *4. No Sabe

19

¿CIENTOS: CADENA DEL FRIO

¿La temperatura debe tener la refrigeradora para conservar adecuadamente la vacuna simple contra sarampión?

- 1. De 4 a 8 grados centigrados (correcto)
- * 2. Otro _____
- * 3. No es responsable directo del cuidado de la temperatura del refrigerador (area urbana)
- * 4. No Sabe

20

¿Hace usted diariamente para conservar la cadena de frio del refrigerador de acuerdo a la norma?

- * 1. Verificar y anotar la temperatura
- * 2. Comprobar que la puerta del refrigerador esté debidamente cerrada
- * 3. Mantener bolsas de hielo y botellas con agua dentro del refrigerador
- * 4. No es responsable directo del cuidado de la temperatura del refrigerador (area urbana)
- * 5. Respuestas 1 y 2 solamente
- * 6. Respuestas 1 y 3 solamente
- * 7. Respuestas 2 y 3 solamente
- * 8. Respuestas 1, 2 y 3
- * 0. Otros _____

21

¿Si usted se le descompone el refrigerador y tiene que dejar las vacunas simple contra sarampión durante 24 fuera de ella, que hace con esas vacunas?

- * 1. Ponerlas inmediatamente en refrigeración
- * 2. Enviar al laboratorio de cadena de frio para valorar potencia
- * 3. Usarlas lo antes posible
- * 4. Descartarlas por no poder reconstituirlas (correcto)
- * 5. Otra _____
- * 6. No Sabe

22

o mantiene la cadena de frío en aquellos lugares donde dadas las características del área, Ud. no puede
 r al establecimiento en el mismo día, no hay refrigeradora en los hogares y existen niños que requieren la
 simple contra sarampión?

- 1. Usa paquetes de hielo seco
- * 2. Llena de hielo el termo en el establecimiento
- * 3. No lleva vacunas
- * 4. Otro _____

23

DOCUMENTACION

Muestreme los documentos en los que aparecen las normas en las que Ud. se basa para aplicar
 las vacunas simples contra sarampión (anote en el siguiente cuadro la norma que aparece en el
 manual o circular y registre la fecha que esta se emitió)

No tiene el documento = 1 1\1 1\ 1 1

NORMA	MANUAL						CIRCULAR						INFORMACION USADA COINCIDE CON LOS NORMAS VIGENTES Si=1, * No=2 No TIENE LOS DOCUMENTOS=3
	Fecha						Fecha						
	DIA	MES	ANO	DIA	MES	ANO	DIA	MES	ANO	DIA	MES	ANO	
17. Edad para aplicar vacunas simple contra sarampión	24	25	26	27	28	29	30	31	32	33	34	35	36
18. Número de dosis que se debe aplicar a cada niño	37	38	39	40	41	42	43	44	45	46	47	48	49
19. Frecuencia con que se debe aplicar la vacuna simple contra sarampión	50	51	52	53	54	55	56	57	58	59	60	61	62
20. Vía de aplicación	63	64	65	66	67	68	69	70	71	72	73	74	75
21. Contraindicaciones	76	77	78	79	80	81	82	83	84	85	86	87	88
22. Cadena de Frío	89	90	91	92	93	94	95	96	97	98	99	100	101

CA: SUMINISTRA

cantidad de vacunas simples contra sarampión que usted normalmente recibe, es suficiente para cumplir con la programación?

Si (pase a la pregunta 25)

No (Porque -----)

Algunas veces (Porque -----)

102

¿que cree usted que se debe esta situación?

Supervisor no se preocupa

Supervisor distribuye las vacunas sin tomar en cuenta la programación

Nivel regional no dispone de vacunas

Centro de Salud no tiene vacunas

Otras -----

No Sabe

103

cantidad de jeringas que usted normalmente recibe, es suficiente para cumplir con la programación?

Si (pase a pregunta 27)

No (Porque -----)

Algunas veces (Porque -----)

104

¿que cree usted que se debe esta situación?

Supervisor no se preocupa

Supervisor distribuye las jeringas sin considerar programación

Nivel regional no dispone de jeringas

Otras -----

No Sabe

105

¿cuántos frascos de vacunas simples contra sarampión que Ud. generalmente recibe para cumplir con la programación, dosis individuales o de 10 dosis?

Frascos de dosis individuales

Frascos de 10 dosis

Ambos

No sabe

106

condiciones está el equipo que usted dispone para aplicar la vacuna simple contra sarampión?

CONDICION

CONDICION	Observaciones	
!Bueno=1 *!Malo=2 *!No Tiene=3 !No Necesario!		
A DE FRIO rigeradora		107
A DE FRIO no		108
CA:MATERIALES etln		109
CA:MATERIALES io nsporte		110

CA: MATERIALES
pone Ud. del combustible suficiente para realizan las visitas correspondientes a cada localidad, de acuerdo a programación?

Si
No
No es necesario

111

CONDICION

¿Le gustaría mostrarme el cuaderno de supervisión?

Si mostró
No mostró (la perdió)
No mostró (nunca le han dado el cuaderno)

112

REGISTRE EN EL SIGUIENTE CUADRO LAS ULTIMAS 6 FECHAS EN QUE EL ASISTENTE HA RECIBIDO SUPERVISION, ESPECIFIQUE EL CARGO DE LA PERSONA QUE REALIZO LA SUPERVISION Y LAS OBSERVACIONES BRINDADAS POR ESTE.

Fecha de Supervision						Cargo del funcionario que realizo supervision Enfermera=1 Supervisor=2	Observaciones del funcionario que supervisó
Día	Mes	Año					

33.

113	114	115	116	117	118	119
-----	-----	-----	-----	-----	-----	-----

34.

120	121	122	123	124	125	126
-----	-----	-----	-----	-----	-----	-----

35.

127	128	129	130	131	132	133
-----	-----	-----	-----	-----	-----	-----

36.

134	135	136	137	138	139	140
-----	-----	-----	-----	-----	-----	-----

37.

141	142	143	144	145	146	147
-----	-----	-----	-----	-----	-----	-----

38.

148	149	150	151	152	153	154
-----	-----	-----	-----	-----	-----	-----

39. ANOTE LA HORA A ESTE MOMENTO

hr : min

155	156	:	157	158
-----	-----	---	-----	-----

Observaciones: _____

REVISIÓN DE FORMULARIOS Y ENTREVISTA A LA MADRE

Versión: 11 de febrero de 1988

1. No. Identificación $\frac{3}{1 \quad 2 \quad 3}$

Centro de Salud
Unidad General de Salud
Institute for International Development
(subcuerpo de PRICOR)
Centro de Control de Calidad de Atención Primaria

INSTRUCTIVO

Con el fin de conocer la consistencia de la información registrada en los formularios: ficha familiar, y carnet de vacunas, utilizados por el asistente, para reportar el trabajo realizado, se elaboró el instrumento: "Carnet de vacunas contra sarampión registradas en ficha familiar y carnet de vacunas."

Para seleccionar las fichas de las familias donde hay niños menos de 3 años se escogerá aleatoriamente una finca (áreas rurales) o manzana (áreas urbanas) y en ella se procede a revisar ficha por ficha en el orden establecido en el archivo para determinar cuáles de esos niños recibieron la vacuna simple contra sarampión o vacuna triple contra sarampión, rubeola, en el mes de octubre 1987. Se seleccionó este mes como punto de partida, considerando el mes reciente del año pasado en que el personal trabajó sin interrupciones tales como, vacaciones, viajes, o de Balances, y programación entre otras. Si se da el caso de que durante dicho mes, no se vacunaron al menos 6 niños, se buscan los restantes en los meses siguientes (en el orden correspondiente hasta llegar al mes en que se está recolectando los datos); y si aún así, no se logra completar los 6 niños, se buscan en los meses de septiembre, agosto, etc., hasta completarlos.

Con esas fichas, se procede a:

1. Anotar en el instrumento mencionado la fecha en que se aplicó la vacuna, de acuerdo a la ficha familiar.

2. Visitar los hogares a que corresponden las fichas y entrevistar a la madre o responsable del niño (seleccionado), con el fin de revisar el carnet y registrar en el instrumento mencionado, la fecha en que se aplicó la vacuna. Además se pretende conocer si el niño fue vacunado en el hogar o en algún establecimiento de salud.

2. Región	-----	4
3. Centro de Salud	-----	
4. Puesto/Área de Salud	-----	5
5. Asistente/Auxiliar	-----	
6. Entrevistador	-----	6
7. Fecha de la Entrevista		
día mes		$\frac{\quad}{7 \quad 8 \quad 9 \quad 10}$

E INFORMACION: ACTUALIZACION

FECHA DE VACUNA SIMPLE CONTRA SARAMPION
REGISTRADA EN FICHA FAMILIAR Y CARNET DE VACUNAS,

** SELECCIONAR DOS MAS FICHAS (8 EN TOTAL) EN EL EVENTO
UN MADRE NO ESTE EN CASA ***

Casa	Fecha Registrada	Coincide
Número: Nombre del Niño	Ficha Familiar	Toda la Info
	Carnet	Si=1, * No=2
		No Aplica = 3
		Carnet Perdido = 4
día \ mes \ año	día \ mes \ año	

11

ENTREVISTA A LA MADRE

NTACION: BUENOS DIAS/TARDES/NOCHES:

OS HACIENDO UN ESTUDIO PARA EL MINISTERIO DE SALUD. PODRÍA CONCERDERNOS UNOS MINUTOS Y DARNOS
OS DATOS? TODA LA INFORMACION QUE UD. NOS DE ES CONFIDENCIAL Y SU PARTICIPACION ES VOLUNTARIA.
. LO DESEA PUEDE NEGARSE A CONTESTAR CUALQUIERA DE LAS PREGUNTAS.

IA COMENZAR LA ENTREVISTA?

ltado del contacto con la madre:

12

ntrevistada
esente (Vuelva dos veces: anote la hora en que puede volver _____:_____)
chazo
ro _____

CON UNA X LA RESPUESTA:

ON DE SERVICIOS: VISITAS Y CARNETS

13

ida Ud. visitada por el asistente?

o Sabe

la mostrarme el carnet de vacunas de N.N. _____?

JE CON UNA "X" LA RESPUESTA Y ANOTE EN ESTE INSTRUMENTO Y EN INSTRUMENTO 3 LA FECHA DE VACUNA SIMPLE
RA SARAMPION, LA FECHA QUE APARECE EN EL MISMO COMO DIA EN QUE SE APLICO LA VACUNA AL NINO.

14

ostró carnet
o mostró carnet (nunca ha tenido)
o mostró carnet (perdió)

fue vacunado contra sarampión en el hogar o en algún establecimiento de salud?

✓

Hogar
Centro 3. Centro de Salud

15

Hospital
Seguro Social
Consultorio Privada

Otra _____
No Sabe

NOTAS:

¿Cuántas vacunas contra sarampión se le debe aplicar a su niño.

ESCRIBA EN EL ESPACIO LA RESPUESTA O MARQUE CON "X" EL 8 CORRESPONDIENTE A "No Sabe") _____

16

(PUESTAS DE MAS QUE 2 SON EQUIVOCADO)

* No Sabe = 8

NOTAS: _____

INSTRUMENTO DE OBSERVACION DEL SISTEMA DE CADENA DE FRIO, NORMAS DE
APLICACION DE LA VACUNA Y DISPONIBILIDAD DE MATERIAL Y EQUIPO

Versión: 1 de Noviembre de 1988

I. No. 4
1 2 3

Ministerio de Salud
Dirección General de Salud
Harvard Institute for International Development
(por un subacuerdo con PRICOR)
Proyecto Control de Calidad de Atención Primaria

INTRODUCCION

La Dirección General de Salud y la Universidad de Harvard están desarrollando un proceso tendiente a fortalecer la calidad en la prestación de los servicios de salud integral y como parte importante del Proyecto Control de Calidad de Atención Primaria, se ha elaborado el instrumento: Observación del Subsistema de Cadena de Frío, Normas de Aplicación de la Vacuna y disponibilidad de Material y Equipo.

Este instrumento, permite al funcionario supervisor recopilar datos relacionados con:

- a) Conservación de la cadena de Frío (refrigeradora y termo)
- b) Disponibilidad y condición del equipo y material que requiere el Asistente o Auxiliar de Enfermería de Atención Primaria para realizar la actividad de vacunación contra sarampión rubeola parotiditis en los hogares
- c) Disponibilidad de manuales y circulares sobre normas, técnicas y procedimientos de vacunación vigentes, por parte del Asistente o Auxiliar de Enfermería de Atención Primaria.

INSTRUCTIVO PARA EL LLENADO DEL INSTRUMENTO.

- a) El funcionario supervisor realizará las observaciones en el Puesto o Centro de Salud y anotará lo observado, de acuerdo a los componentes del instrumento.
- b) En el punto 4 (Funcionario que supervisa) debe anotar nombre y apellidos del funcionario, no la firma.
- c) Los componentes del instrumento deben llenarse con letra clara y no dejar ninguno de ellos en blanco.
- d) En el espacio Fallas Encontradas y Educación Impartida (última hoja), el funcionario supervisor describirá las Fallas encontradas y la educación impartida, así como otras observaciones que considere.
- e) Al final de esta página, hay otro espacio para que firme el supervisor y el supervisado.
- f) En el cuaderno de Supervisión, debe especificarse claramente, tanto los aspectos positivos como negativos encontrados, así como las medidas correctivas tomadas.
- g) El funcionario que realiza la supervisión debe enviar los instrumentos de cada una de las áreas a su cargo, al Supervisor o Enfermera regional, quienes serán responsables de hacerlos llegar a la oficina de Control de Calidad (nivel central).
- h) En lo que se refiere a los componentes de observación del instrumento, deberá encerrarse en un círculo la alternativa 1, en todos los casos en que lo observado sea exactamente igual a la alternativa de observación.
- i) La alternativa 2, debe encerrarse en un círculo cuando lo observado no coincida con la alternativa de observación. Cuando esto sucede, debe especificarse lo observado.
- j) En la observación #24, el Funcionario que supervisa debe controlar con el termómetro la temperatura del termo antes de salir del Puesto o Centro de Salud e inmediatamente debe anotar la temperatura identificada.
- k) En las observaciones 25 a 29, el Funcionario supervisor deberá anotar en la segunda columna del cuadro, el número correspondiente a la condición del equipo observado. Si se considera que el Asistente o Auxiliar de Enfermería de Atención Primaria, no tiene y no necesita medio de transporte,

anotar el número 4 en la observación #28.

k) En las observaciones 29 a 34 del cuadro sobre Documentación, el Funcionario supervisor debe anotar en la primera y cuarta columna, la Fecha actualizada de la circular y manual donde se indica la norma correspondiente. En las columnas dos y cinco debe anotar para cada norma la Fecha de las circulares y del manual de que dispone el Asistente o Auxiliar de Enfermería de Atención Primaria.

l) En la tercer columna debe anotar un 1 si la Fecha de la circular actualizada coincide con la Fecha de la circular que dispone el Asistente o Auxiliar y un 2 si éstos datos no coinciden. En la columna 6 debe anotar un 1 si la fecha del manual de normas actualizado coincide con la Fecha del manual de normas que dispone el Asistente o Auxiliar y un 2 si éstos datos no coinciden.

2. Región	-----	-----	-----	-----	-----	-----	-----
							4
Centro de Salud	-----						
3. Puesto/Área de Salud	-----						5
Asistente/Auxiliar	-----						
4. Funcionario que supervisa	-----						6
Cargo	-----						
5. Fecha de la observación							
día mes	-----	-----	-----	-----	-----	-----	-----
	7	8	9	10			
6. Anota la hora en que comienza la observación							
hr : min	-----	-----	-----	-----	-----	-----	-----
	11	12	13	14			

LOGISTICAS: MATERIALES

7. Tiene el material y equipo necesario para vacunar a los tres niños seleccionados para las visitas de hoy?
SI FALTA BIOLÓGICO, DILUENTE, JERINGAS, TERMO, MALETIN, HIELO, O REFRIGERADORA : ENCIERRE EN UN CÍRCULO LA RESPUESTA NUMERO 2 Y ESPECIFIQUE LO QUE FALTA

1. Si	-----
*2. No	-----
Qué falta:	-----

CADENA DE FRIO: REFRIGERADORA

8. Tiene hielo en cubos o hielo seco?

1. Si (especifique)	-----
*2. No (Porqué)	-----

9. La refrigeradora está ubicada en un ambiente fresco y bien ventilado?

1. Si	-----
*2. No	-----

10. La refrigeradora está alejada de toda fuente de calor?

- 1. Si.
- *2. No.

18

11. La refrigeradora está localizada a la sombra?

- 1. Si.
- *2. No.

19

12. La refrigeradora está a 15 centímetros (6 pulgadas) de distancia de la pared?

- 1. Si.
- *2. No.

20

13. Está la refrigeradora sobre una base perfectamente horizontal o nivelada?

- 1. Si.
- *2. No.

21

14. Existe entre una y otra botella con agua el espacio establecido por normas (2.5 cm.)?

- 1. Si.
- *2. No.

22

15. Mantiene únicamente las vacunas en la refrigeradora con la excepción del hielo y botellas con agua?

- 1. Si.
- *2. No. (Especifique) _____

23

16. Mantiene el termómetro en la zona central de la refrigeradora?

- 1. Si.
- *2. No. (Especifique) _____

24

17. El asistente efectúa la lectura de la temperatura de la refrigeradora en la mañana y en la tarde y la registra en el formulario 'Control de temperatura'?

- 1. Si.
- *2. No (Especifique) _____

25

18. Las bandejas donde coloca las vacunas tienen compartimientos (divisiones)?

- 1. Si.
- *2. No (Especifique) _____

26

19. Mantienen las vacunas en las bandejas, clasificadas por tipos?

- 1. Si.
- *2. No (Especifique) _____

27

20. Mantiene las bandejas colocadas sobre los estantes centrales de la refrigeradora?

1. Si

*2. No (Especifique) _____

23

CADENA DE FRIO: TERMO

21. El asistente coloca en el termo, el hielo suficiente para realizar las visitas (3/4 partes del termo)

1. Si

*2. No (Especifique) _____

24

22. El termo este en buenas condiciones para conservar la cadena de frio?

1. Si

*2. No (Especifique) _____

25

23. El asistente saca las vacunas de la refrigeradora, las introduce en una bolsa plástica, la coloca inmediatamente en el termo sobre el hielo?

1. Si

*2. No, Explique _____

26

24. Controle con el termómetro la temperatura del termo antes de salir del establecimiento y anótele en el siguiente espacio: _____

EL EQUIPO QUE UTILIZA EL ASISTENTE ESTA EN LAS SIGUIENTES CONDICIONES. Anotar el número correspondiente, según sea la condición observada.

EQUIPO	CONDICION		OBSERVACIONES
	BUENO	NO BUENO	
25. REFRIGERADORA	4		
26. TERMO			
27. MALETIN			
28. MEDIO TRANSPORTE			

(*) Especificar si la refrigeradora es compartida con funcionarios de la ODSB

DOCUMENTACION.

Muéstreme los documentos donde aparecen las normas en las que usted se basa para aplicar las vacunas contra Sarampión, rubeola, parotiditis y para conservar la cadena de frío.

El supervisor debe anotar el día, mes y año correspondiente a la fecha de la circular y/o manual correspondiente a cada norma, disponible por el asistente.

NORMA	FECHA CIRCULAR	FECHA CIRCULAR DISP. POR EL ASISTENTE	COINCIDE (SI=1 NO=2)	M A N U A L		COINCIDE (SI=1, NO=2)
	ACTUALIZADA		LA FECHA	FECHA	FECHA	
29. Edad para aplicar la vacuna contra Sarampión	___/___/___	___/___/___		___/___/___	___/___/___	36 37
30. Número de dosis que se debe aplicar a cada niño	___/___/___	___/___/___		___/___/___	___/___/___	38 39
31. Frecuencia con que se debe aplicar la vacuna contra Sarampión	___/___/___	___/___/___		___/___/___	___/___/___	40 41
32. Vía de aplicación	___/___/___	___/___/___		___/___/___	___/___/___	42 43
33. Contraindicaciones	___/___/___	___/___/___		___/___/___	___/___/___	44 45
34. Conservación de la cadena de frío	___/___/___	___/___/___		___/___/___	___/___/___	46 47

NOTA: Si el asistente no muestra alguno de esos documentos, el funcionario supervisor deberá anotar en los espacios correspondientes para la Fecha: 99,99,99 que significa que no hay información. Confrontar las circulares y manuales vigentes con las que dispone el asistente. Si coincide anotar un 1 en cada espacio de la tercera columna para el caso de circulares y en cada espacio de la cuarta columna para el caso de manuales.

CADENA DE FRIO: TERMO.

DESPUES DE FINALIZAR LAS VISITAS A LOS HOGARES, CONTROLE CON EL TERMOMETRO LA TEMPERATURA DEL TERMO / ANOTELA CUIDADOSAMENTE EN LA SEGUNDA COLUMNA DEL SIGUIENTE CUADRO:

TEMPERATURA DEL TERMO	
ANTES DE SALIR DEL ESTABLECIMIENTO	AL REGRESAR AL ESTABLECIMIENTO DESPUES DE VISITAS A LOS HOGARES

NOTA: En la primera columna del cuadro anote la temperatura identificada antes de salir del establecimiento (Observación número 21).

TE. ANOTE LA HORA EN ESTE MOMENTO:

hr: min

FALLAS ENCONTRADAS Y EDUCACION IMPARTIDA:

49 50 51 52

FIRMA SUPERVISOR -----

FIRMA SUPERVISOR -----