



PRICOR

Primary Health Care Operations Research

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Country Report Series

Peru

**Systems Analysis of EPI
Service Delivery in the
Cono Sur**

INTERIM REPORT

SYSTEMS ANALYSIS OF EPI SERVICE DELIVERY IN THE *CONOSUR* OF LIMA, PERU DURING THE 1988 NATIONAL VACCINATION CAMPAIGN

The PRISM Group

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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 Peru by PRISM/PRISMA which has designed and tested an alternative systems analysis methodology.

Although similar to the PRICOR systems analysis methodology, in that it relies heavily on observations of service delivery, a key difference between the two methodologies is the development of a role play methodology to assess service delivery and supervision activities. This allows the study of large samples, particularly in situations where direct observation of service delivery would require large commitments of personnel, time and resources. Another potential use of this methodology is in supervision. Because it is not always feasible for supervisors to assess performance in the field, the integration of an observation checklist with standardized role playing will be developed and tested as a supervision tool.

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Background

Introduction. The *Cono Sur*, or Southern Cone, of Lima, Peru comprises approximately 650,000 people living in peri-urban marginal communities along the southern rim of the Lima metropolitan area. Politically, this area is divided into three well-defined Districts: San Juan de Miraflores (SJM), Villa Maria del Triunfo (VMT) and Villa El Salvador (VES).

The Peruvian Ministry of Health (PMOH) provides health and medical services to the Cono Sur through a network of 14 Health Centers (HC), each with up to six ancillary Health Posts (HP) and a single support hospital, Hospital del Apoyo "Maria Auxiliadora" (HAMA).

The 14 health centers are administered from an office known as the "Entidad Ejecutivo Presupuestal" (EEP), which has responsibility for budget and finances, and serves as the coordinating entity for PMOH activities in the Cono Sur. HAMA is a separate budgetary entity and functions independently of the EEP.

The PRISM-PRICOR Project has been active in the Cono Sur since December, 1987, working in close collaboration with the PMOH to carry out a systems analysis and organizational assessment of health service delivery at the health center level. This effort is targeted on primary health care activities, especially those in the Child Survival Action Program (CSAP), at the 14 health centers.

The objective of the project is two-fold: 1) to develop a methodology for systems analysis that can be applied by local and intermediate managers for the routine monitoring of service delivery; and 2) to concentrate this methodology mainly on the process of service delivery rather than on inputs and outcomes.

This report covers the systems analysis of the PMOH's Expanded Program in Immunizations (EPI), specifically reflecting evaluations done as part of the PMOH 1988 national vaccination campaign (VAN88). It incorporates portions of two earlier reports produced by the PRICOR Peru Project: "Peru PRICOR Report #1 - Evaluation of EPI Service Delivery in the Cono Sur of Lima, Peru" and "Interim Report - Performance evaluation of direct service delivery through the use of simulation exercises".

The PMOH Program in EPI. The PMOH has, for over five years, placed heavy emphasis on annual vaccination campaigns (of 3 days, 1-to-2 months apart) to extend immunization coverage. These national campaigns have enlisted the assistance of thousands of volunteer workers from schools, charitable and social organizations, etc., but have consistently fallen short of coverage targets.

The current trend in the PMOH is to integrate immunizations into general service delivery as much as possible, while continuing to run annual campaigns, particularly in rural areas where a constant source of vaccine is difficult to maintain.

A PMOH decision to carry out a national vaccination campaign (VAN88) in May and July of 1988 offered a concrete opportunity for the PRICOR Peru Project to carry out a limited systems analysis and to test key instruments for EPI service evaluation that The PRISM Group has been developing as part of the project.

Project focus. The PMOH focus on campaign-based immunizations meant that routine vaccination services were severely disrupted (e.g., little vaccine and few syringes were available for routine immunizations in many health centers) during the period originally designated within the PRICOR Peru Project to study EPI services. As a result, the project's EPI evaluation has been limited to service delivery and support system performance observed during the campaign.

This was the first major field effort of the project. As such, it represented as much an opportunity for instrument development and testing, and for the validation of data-collection methodologies, as it did an opportunity for a systems analysis. Both aspects are reflected in the following discussion.

Goals of the Analysis

Coverage assessment. While the emphasis of the PRICOR systems analysis is on the process of service delivery, it is not intended that the outcomes arising from that process be ignored. It is clear that a complete description of the EPI system in the Cono Sur must include some information about the immunization coverage it is attaining in the catchment population.

As a practical matter, the PMOH directorship in the Cono Sur specifically requested that the project provide an answer as to whether or not the coverage from routine service delivery was already meeting the standards of the EPI program (i.e., 80% of children in appropriate age groups protected).

Available information, much of it anecdotal, suggested to many of them that a campaign was not needed in the Cono Sur. The Cono Sur directors were unanimous in their preference for investing available resources in better routine services than in such a campaign but lacked convincing evidence to justify an exemption from VAN88. To meet this need, the project carried out a pre-VAN survey to verify existing coverage.

Systems analysis. The primary objective in this study was to describe how service delivery personnel assigned to the VAN88 campaign actually provided the requisite services. Issues addressed included the quality of care and counselling as part of direct service delivery; and planning, supervision, training, logistics and record-keeping as part of support service delivery.

From preliminary experience with the Cono Sur health system, we had reason to

suspect that the delivery of EPI services would not be found to be grossly deficient and that support services, in general, would prove to be adequate to the need. We were able, therefore, to focus a significant amount of effort on the assessment of the quality of vaccination direct services executed by the PMOH staff participating in VAN88.

Performance analysis through the use of Simulation Exercises (SIMULEX). An important part of the PRICOR Peru Project is the development of efficient methods for the measurement of quality of care given during direct service encounters. Work on the second day of VAN88 was, therefore, focused exclusively on quality of care items as part of an effort to validate SIMULEX as a substitute or analogue for direct observation. This analysis has been reported previously and will not be included here. The data on performance, however, will be included since they identify specific aspects of care-giving and counselling that are either well- or poorly-done by the health workers in the Cono Sur.

Methodology

Constructing a model of the EPI system

The initial step in the systems analysis was the construction of a model that included the important activities that make up the VAN campaign. This information was obtained from a variety of sources, including: Focus/Informant groups made up of health workers from the Cono Sur (separate groups were formed for nurse auxiliaries, nurses, general physicians, and health center directors); interviews with individual VAN coordinators (for the Cono Sur, for each district, and for each health center); review of PMOH norms and manuals; review of appropriate international literature (including the PRICOR Thesaurus); and the project team members' own experience.

The model was constructed according to the principles presented in a document previously submitted as part of the PRICOR Mid-term Evaluation: "The PRISM Systems Analysis Model - A summary with emphasis on the framework of analysis".

As a result of our discussions with PMOH staff and our experience with previous VAN campaigns, we knew that certain categories of activities were not likely to be very fruitful areas for detailed assessment (e.g., basic supply logistics have almost never been a problem in the Cono Sur due to its urban nature and closeness to the PMOH central warehouses).

We, therefore, made the decision to operationalize only certain parts of the model in order to test components of both the analytical and process models

which this project was introducing to the PRICOR approach. As mentioned, a very heavy emphasis was placed on performance of direct services (quality of care and counselling).

Ultimately, the EPI systems analysis was divided into the following categories:

PRE-VAN:

Coverage	Existing levels of vaccine coverage prior to the first day of VAN88
Planning/coordination	On-going, prospective, open-ended interviews with designated coordinators at Cono Sur, district and health center levels

FOR VAN DAY 1:

Macro-description	Organization of health center and its vaccination posts; staffing; transport; etc.
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INDIVIDUAL PERFORMANCE INDICATORS:

Sterility maintenance
Cold chain-Individual
Vaccine quality checking
Vaccination technique
General education
Reactions education

UNIT (VACCINATION POST) INDICATORS:

Cold chain-Unit
Vaccine quality assurance
Information/supervision
Supplies-Unit

Health center refrigerator (cold chain)

WORKER PERCEPTIONS:

Experience with VAN
Training
Information/feedback
Worker satisfaction

**FOR VAN DAY 2 AND SIMULATION EXERCISES
(ALL INDIVIDUAL PERFORMANCE INDICATORS):**

- Sterility maintenance
- Cold chain
- Vaccination technique
- Expiry/Quality check
- General education
- Reactions education
- Socioemotional effort
- Record-keeping

Existing coverage

Coverage was determined in the week before the first day of VAN88 using the standard W.H.O. cluster sample methodology employing 30 clusters of 7 children selected at random in the Cono Sur. Two samples were selected: one for children less than 1 year old and a second for children 1-4 years old. Clusters were randomly selected using a set of maps of the area obtained from the municipal governments in each District and updated by the PRISM-PRICOR team.

The survey was carried out during 18-20 May with the collaboration of nurses and health auxiliaries under the coordination of the HAMA Epidemiology Unit. The questionnaire was a one page document that asked for basic identifying information and data from the child's immunization record (UNICEF Carnet), if available, or a vaccination history from the mother or other guardian if a Carnet were not available.

Observations on VAN Day 1 (May 22)

Performance was determined by direct observation at immunization posts during the first day of VAN88, Sunday, May 22nd. Fifteen collaborating nurses and health auxiliaries from HAMA, provided via the HAMA Epidemiology Unit, acted as observers for the PRISM-PRICOR Project. Each received approximately 8 hours of training in carrying out the observation protocol. Each observer was assigned to cover VAN activities at one HC and at ancillary vaccination posts being supervised by the HC. One observer was assigned to cover the VAN effort at HAMA.

Data was collected using an Immunization Observation Checklist (IOC), which is included in Appendix 1. Quality of care aspects of service delivery (i.e., individual performance indicators) were ultimately calculated based on 65 items from the IOC scored Yes/No/Not Applicable and covering the delivery of anti-polio vaccine (10 items), DPT (19 items), Measles (23 items) and counseling and education (13 items).

The 65 items could also be grouped according to the type of task they

represented: 1 - sterile technique (20 items), 2 - maintenance of cold chain (3 items), 3 - correct dosage and injection technique (28 items), 4 - checking vaccine expiration/condition (1 item), 5 - informing mother about general information about immunizations (4 items), and 6 - informing mother about possible side-effects and reactions (9 items). The following table lists these 65 items:

#	Item description	Task Area
1	POL-PICKUP VIAL BY NECK KEEPING IT VERTICAL	1
2	POL-REMOVE PROTECTIVE RING & STOPPER MAINTAINING STERILITY	1
3	POL-OPEN THE WRAPPING MAINTAINING STERILITY	1
4	POL-PUT DROPPER IN VIAL & REMOVE PROTECTIVE CASE	1
5	POL-PUT PREPARED VIAL IN COLD BOX	2
6	POL-POSITION CHILD IN SUPINE POSITION IN MOTHER'S LAP	3
7	POL-TAKE PROTECTOR FROM DROPPER	1
8	POL-PLACE HAND ON CHEEKS, OPENING MOUTH	3
9	POL-APPLY 2 DROPS IN MOUTH AVOIDING CONTACT	3
10	POL-PUT PROTECTOR BACK ON DROPPER & PUT IN COLD BOX	1
11	DPT-PICKUP VIAL BY NECK	1
12	DPT-REMOVE PROTECTIVE SEAL OF VIAL WITHOUT TOUCHING	1
13	DPT-CLEAN RUBBER CAP & WAIT UNTIL DRIES	1
14	DPT-ROTATE VIAL SLOWLY IN CIRCULAR MOTION UNTIL WELL-MIXED	3
15	DPT-LOOK FOR SEDIMENT & DISCARD IF PRESENT	4
16	DPT-TAKE NEW SYRINGE FROM ITS CASE	1
17	DPT-ATTACH NEW NEEDLE ON SYRINGE	1
18	DPT-INJECT 0.8CC AIR INTO VIAL	3
19	DPT-REMOVE 0.8CC OF VACCINE FROM VIAL	3
20	DPT-REMOVE AIR FROM SYRINGE	3
21	DPT-PUT VIAL IN COLD BOX	2
22	DPT-POSITION CHILD IN LYING FACE DOWN ON MOTHER'S LAP	3
23	DPT-CLEAN INJECTION SITE W/ SOAPY WATER & STERILE WATER THEN DRY WITH COTTON - OR- CLEAN WITH ALCOHOL AND LET EVAPORATE	3
24	DPT-LOCATE INJECTION IN UPPER OUTSIDE QUADRANT OF BUTTOCKS	3
25	DPT-PLACE FINGERS AROUND INJECTION SITE	3
26	DPT-INTRODUCE NEEDLE AT 90 DEGREE ANGLE	3
27	DPT-ASPIRATE AND VERIFY NO BLOOD COMES OUT	3
28	DPT-INJECT 0.8CC OF VACCINE	3
29	DPT-WITHDRAW NEEDLE WHILE PRESSING ON INJECTION SITE WITH DRY COTTON, WITHOUT RUBBING SITE	3
30	MEA-PICKUP VIAL BY NECK KEEPING IT VERTICAL	1
31	MEA-REMOVE PROTECTIVE COVERING	1
32	MEA-CLEAN STOPPER WITH ALCOHOL & WAIT FOR IT TO DRY	1
33	MEA-BREAK OPEN AMPULE OF DILUENT	1
34	MEA-REMOVE A 3 CC SYRINGE FROM ITS CASING	1
35	MEA-DRAW UP ALL DILUENT	1
36	MEA-SLOWLY INJECTS DILUENT INTO SIDE OF VIAL OF VACCINE	1
37	MEA-ROTATE VIAL SLOWLY IN CIRCULAR MOTION UNTIL VACCINE IS COMPLETELY DISSOLVED (CHANGES COLOR TO PINK)	3
38	MEA-PLACE VIAL OF VACCINE INTO COLD BOX	2
39	MEA-POSITION CHILD SITTING IN MOTHER'S LAP	3
40	MEA-UNCOVER LEFT ARM	3
41	MEA-CLEAN MIDDLE THIRD OF LEFT ARM SITE WITH SOAPY WATER	3
42	MEA-CLEAN SITE WITH STERILE WATER & DRY WITH STERILE COTTON	3
43	MEA-CLEAN STOPPER OF VIAL WITH STERILE WATER	1
44	MEA-REMOVE 1CC SYRINGE (WITH NEEDLE ATTACHED) FROM PROTECTIVE CASE	1
45	MEA-INJECT 0.8CC AIR HOLDING VIAL BY NECK	3
46	MEA-ASPIRATE 0.8CC OF VACCINE	3

47	MEA-TAKE MIDDLE THIRD OF LEFT ARM FORMING A FOLD	3
48	MEA-INTRODUCE NEEDLE AT 45 DEGREE ANGLE WITH BEVEL UP (SUBCUTANEOUS INJECTION)	3
49	MEA-VERIFY THAT NO BLOOD COMES OUT	3
50	MEA-INJECT 0.8CC OF VACCINE	3
51	MEA-INJECT THE VACCINE SLOWLY	3
52	MEA-WHEN REMOVING SYRINGE, PRESS DOWN ON SITE WITH DRY COTTON WITHOUT RUBBING	3
53	EXPLAIN WHICH VACCINES GIVEN & WHICH NOT	6
54	EXPLAIN REASONS FOR GIVING OR WITHHOLDING EACH VACCINE	6
55	EXPLAIN VACCINATION SCHEME	6
56	EXPLAIN THE POSSIBLE REACTIONS AND PRECAUTIONS	6
57	THAT IF ONLY POLIO RECEIVED (NO DPT OR MEASLES) THERE SHOULD BE NO REACTIONS	6
58	REACTIONS-THAT DPT IS SOMETIMES ACCOMPANIED BY SOME LOCAL PAIN AT INJECTION SITE	6
59	REACTIONS-THAT DPT MAY CAUSE SOME FEVER IN 4-12 HOURS	6
60	REACTIONS-THAT MEASLES MAY CAUSE SOME FEVER IN 7-10 DAYS	6
61	REACTIONS-THAT MEASLES MAY CAUSE A RASH IN 7-10 DAYS	6
62	REACTIONS-THAT IT IS BEST NOT TO APPLY ANYTHING FOR LOCAL PAIN AT INJECTION SITE	6
63	REACTIONS-THAT THE CHILD SHOULD BE BROUGHT TO THE HC IF A FEVER PRESENTS	6
64	REACTIONS-THAT THE INJECTION SITE SHOULD NOT BE SCRATCHED	6
65	INDICATE RETURN DATE	6

The IOC also contained items to measure selected indicators of unit (i.e., vaccination post) performance: cold chain (4 items), vaccine quality assurance (2 items), information/supervision (4 items), and supply (i.e., adequate stocks of ...; 10 items). These provide observational measures of certain critical aspects of the support system functioning on the day of VAN.

A separate checklist was incorporated in the IOC to assess the maintenance of the refrigerator at each of the 14 health centers and HAMA. This checklist contained 12 items and was also an observational measure of an important sub-system involved in cold chain maintenance.

Finally, a questionnaire was given to each person responsible for vaccinating at observed vaccination posts to be filled out and returned at the end of the day. This form contained questions dealing with the amount and type of training the worker had received in preparation for the VAN, the amount of information/feedback on performance he or she received during the day, and his or her satisfaction with various aspects of the support given to the VAN effort.

The checklists and questionnaire were drafted initially by the PRISM-PRICOR team from the PMOH norms governing EPI and from the PRICOR Thesaurus developed by the Center for Human Services. The draft was then turned over to working groups of nurses and health auxiliaries from the Cono Sur for their criticism and suggestions. The development of the checklist involved two iterations between the PRISM-PRICOR team and the working groups prior to its pilot testing.

During VAN DAY 1, a total of 206 vaccination encounters were observed for 74 health workers. Only those health workers actually engaged in vaccinating were observed. The number of vaccination posts (including the health center as one vaccination post) observed was equal to the number of health workers.

The operating procedure for the day of VAN1 was the same in each health center, and was basically divided into an equal number of observations in the morning and the afternoon. The observations were of the health-care service delivery and of the health center or post.

The vaccinator had to complete the questionnaire when he/she was able, but much of it was generally completed in the morning before the vaccinations began. The majority of the centers did not start vaccinating on time, and this allowed some time. The questionnaire was completed with the observer present to answer necessary questions.

The observer completed the checklist items dealing with the unit once in the morning and a second time in the afternoon. Observations were made at the health center and in at least 3 health posts.

To monitor direct service delivery, 10 observations were to be done in the health center and 6 were to be done in each of three health posts. An equal number were to be done in the morning and the afternoon. In some health posts, there were children to be vaccinated only in the morning. In several, the observer arrived in the afternoon after the post had stopped service or the staff had left to join a mobile unit going house to house. Due to wide variations in the utilization of vaccination posts and the distances between them, it ultimately proved impossible to control the number of encounters observed per health worker, which varied from 1 to 7.

IOC Revision for VAN2 and SIMULEX

After its application during the first day of VAN88, the IOC was again reviewed by the PRISM PRICOR Team and the Focus/Informant (F/I) Groups created by the project (i.e., working groups of 6-9 doctors, nurses, health auxiliaries, nurse-midwives, and mothers) during a 1-month period to determine what modifications should be made in preparation for the second day of VAN88 (July 10). The review process included a thorough debriefing of the 15 nurses and health auxiliaries who served as observers for the project during the first day of VAN88. These workers had been asked to note anything they felt was not being adequately covered by the current form.

This process resulted in a significant increase in the detail of the IOC in almost all task areas, but most specifically in those involving educational messages and socioemotional aspects of the care encounter. The latter had been left out of the first version of the IOC, and both the observers and the F/I Groups felt that this was an area in which health workers were particularly in need of improvement. The final instrument has been included in Appendix 1.

The following table lists the items related to quality of care in this IOC that have been included in the subsequent analysis. The numbering of these items has been re-done to facilitate the analysis so they do not reflect the original numbering of the IOC. During analysis, two items (12 and 38) dealing with multiple-use syringes, which had been included in the selection, were dropped because of two few observations.

The Task Areas referred to in Table 1 are as follows: 1 - Maintenance of Sterility; 2 - Cold Chain Maintenance; 3 - Proper Vaccination Technique; 4 - Expiry Date/Quality Check; 5 - General Educational Messages; 6 - Reactions to Vaccinations; 7 - Socioemotional effort; 8 - Record-keeping.

#	Item description	Task Area
1	POL-PICKUP VIAL/STERILITY	1
2	POL-CONFIRM EXPIRY DATE	4
3	POL-REMOVE PROTECTIVE RING/STERILITY	1
4	POL-OPEN THE WRAPPING/STERILITY	1
6	POL-PUT DROPPER IN VIAL/STERILITY	1
6	POL-DRAW VACCINE FROM VIAL/STERILITY	1
7	POL-POSITION CHILD CORRECTLY	3
8	POL-TAKE PROTECTOR FROM DROPPER/STERILITY	1
9	POL-SQUEEZE CHILD'S CHEEKS	3
10	POL-APPLY DROPS CORRECTLY	3
11	POL-PUT PROTECTOR BACK ON DROPPER	1
13	DPT-USE NEW STERILE SYRINGE	1
14	DPT-HANDLE SYRINGE TO MAINTAIN STERILITY	1
16	DPT-USE NEW STERILE NEEDLE	1
16	DPT-ATTACH NEEDLE SO AS TO MAINTAIN STERILITY	1
17	DPT-PICKUP VIAL/STERILITY	1
18	DPT-CONFIRM EXPIRY DATE	4
19	DPT-REMOVE PROTECTIVE COVERING/STERILITY	1
20	DPT-CLEAN RUBBER CAP	1
21	DPT-WAIT UNTIL RUBBER TOP DRIES	1
22	DPT-ROTATE VIAL SLOWLY IN CIRCULAR MOTION	3
23	DPT-LOOK FOR SEDIMENT	4
24	DPT-INJECT 0.5CC AIR INTO VIAL	3
26	DPT-REMOVE VACCINE CORRECTLY	3
26	DPT-REMOVE AIR FROM SYRINGE	3
27	DPT-PUT VIAL BACK IN COLD BOX	2
28	DPT-IF MULTDOSE SYRINGE MAINTAIN STERILITY	1
29	DPT-POSITION CHILD CORRECTLY	3
30	DPT-CLEAN INJECTION SITE	3
31	DPT-LOCATE PROPER SITE FOR INJECTION	3
32	DPT-GRAB AREA BETWEEN FINGERS	3
33	DPT-INTRODUCE NEEDLE AT 90 DEGREE ANGLE	3
34	DPT-ASPIRATE AND VERIFY BLOOD	3
38	DPT-INJECT VACCINE SLOWLY	3
38	DPT-WITHDRAW NEEDLE WITHOUT RUBBING SITE	3
37	DPT-SINGLE USE/DISCARD SYRINGE AND NEEDLE	1
39	MEA-PICKUP VIAL/STERILITY	1
40	MEA-CONFIRM EXPIRY DATE	4
41	MEA-REMOVE PROTECTIVE COVERING/STERILITY	1
42	MEA-CLEAN RUBBER CAP	1
43	MEA-WAIT UNTIL RUBBER TOP DRIES	1
44	MEA-OPEN VIAL OF DILUENT/STERILITY	1
46	MEA-USE NEW STERILE SYRINGE	1
46	MEA-USE NEW STERILE NEEDLE	1
47	MEA-ATTACH NEEDLE SO AS TO MAINTAIN STERILITY	1
48	MEA-DRAW UP ALL DILUENT	1
49	MEA-SLOWLY INJECTS DILUENT INTO VIAL OF VACCINE	1
60	MEA-ROTATE VIAL SLOWLY IN CIRCULAR MOTION/BC.	1
61	MEA-VIAL INTO COLD BOX DURING PREP.	2
62	MEA-USE NEW STERILE SYRINGE	1
63	MEA-HANDLE SYRINGE TO MAINTAIN STERILITY	1
64	MEA-USE NEW STERILE NEEDLE	1

86	MEA-ATTACH NEEDLE SO AS TO MAINTAIN STERILITY	1
86	MEA-PICKUP VIAL/STERILITY	1
87	MEA-CLEAN RUBBER CAP	1
88	MEA-INJECT 0.8CC AIR INTO VIAL	3
89	MEA-REMOVE VACCINE CORRECTLY	3
80	MEA-REMOVE AIR FROM SYRINGE	3
61	MEA-VIAL IN COLD BOX AFTER VAC.	2
62	MEA-POSITION CHILD CORRECTLY	3
63	MEA-EXPOSE LEFT ARM	3
64	MEA-CLEAN SITE WITH SOAPY WATER	3
66	MEA-CLEAN SITE WITH STERILE WATER	3
68	MEA-GRAB LEFT ARM	3
67	MEA-INTRODUCE NEEDLE CORRECTLY	3
68	MEA-ASPIRATE AND VERIFY BLOOD	3
69	MEA-INJECT ALL VACCINE	3
70	MEA-INJECT VACCINE SLOWLY	3
71	MEA-REMOVE NEEDLE WITHOUT RUBBING	3
72	MEA-SINGLE USE/DISCARD SYRINGE AND NEEDLE	1
73	EXPLAIN WHICH VACCINES GIVEN	6
74	EXPLAIN WHY VACCINES GIVEN	6
76	EXPLAIN VACCINATION SCHEME	6
76	REACTIONS-NONE FOR POLIO ONLY	6
77	REACTIONS-GO TO H.C. IF OCCUR	6
78	REACTIONS-DPT,POL/PAIN	6
79	REACTIONS-DPT,POL/FEVER	6
80	REACTIONS-DPT,POL/DONT APPLY ANYTHING	6
81	REACTIONS-DPT,POL/DONT SCRATCH	6
82	REACTIONS-DPT,POL/FEVER DURATION	6
83	REACTIONS-DPT,POL/OTHER SYMPTOMS	6
84	REACTIONS DPT,MEA,POL/PAIN	6
86	REACTIONS-DPT,MEA,POL/FEVER	6
86	REACTIONS-DPT,MEA,POL/ERUPTIONS	6
87	REACTIONS-DPT,MEA,POL/DONT SCRATCH	6
88	REACTIONS-DPT,MEA,POL/DONT APPLY ANYTHING	6
89	REACTIONS-DPT,MEA,POL/FEVER DURATION	6
90	REACTIONS-DPT,MEA,POL/OTHER SYMPTOMS	6
91	INDICATE RETURN DATE	6
92	VACCINATOR GREETED THE MOTHER	7
93	VACCINATOR PRESENTED HIM/HERSELF	7
94	VACCINATOR SMILED	7
96	VACCINATOR CARESSED THE CHILD	7
96	VACCINATOR LISTENED ATTENTIVELY	7
97	CARNET WAS FILLED OUT CORRECTLY	8
98	REGISTRY WAS FILLED OUT CORRECTLY	8

VAN DAY 2 Observations

The design for the comparison between SIMULEX and direct service observation (DSO) was based on observing two health workers from each of the 14 health centers participating in the Peru PRICOR Project from the Cono Sur. Each pair was observed by the same observer (nurse or auxiliary) as they performed as vaccinators during the second day of the VAN88 campaign in July, 1988. Each worker was observed for up to 10 vaccination encounters during the course of the day. The procedure followed paralleled that used during the first day of VAN.

Subsequently, all 28 workers and 14 observers were involved in the SIMULEX exercise (described in a previous report), beginning in late July and continuing throughout August to cover everybody. Each worker was observed for a set of 6 standard vaccination vignettes.

From this effort, we ultimately obtained 24 workers, each observed by the same person in both the VAN and SIMULEX. A total of 98 items associated with quality

of care were extracted from the somewhat larger dataset and tabulated for analysis. The tabulation process is described in the section on Results and Discussion.

The comparative analysis of SIMULEX with DSO has been reported previously. Some of the data has been used here for the value it has in pointing out areas of strong or weak performance in the delivery of vaccination services.

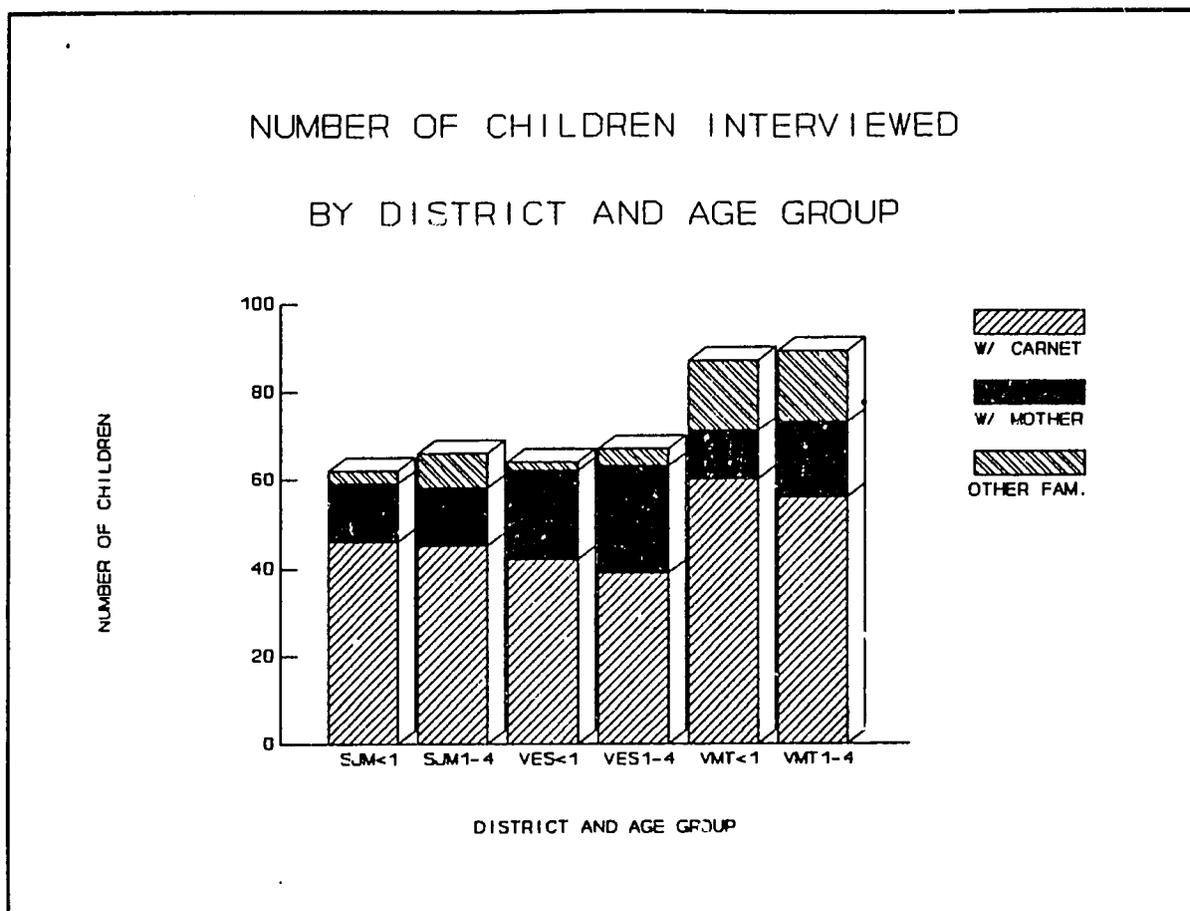


Figure 1

Results and Discussion

Existing coverage. The cluster samples included approximately the same number of children in each of the two age groups and in each of the three districts (Fig. 1). The clusters were stratified by district according to estimated populations, so VMT, the largest, was assigned 12 while SJM and VES each got 9. Fig. 1 also shows the sources of information available on vaccination history: overall 66% of children had a current UNICEF-style Carnet. For two-thirds of the children without Carnet, we were able to interview the mother about vaccination history while the remaining one-third had answers provided by other family members.

Histories elicited from mothers contained enough specific recollection (e.g., whether a vaccination was oral or by injection, location of injection, number of drops, etc.) to suggest their trustworthiness. Those from other family members were significantly less detailed and certain. Therefore, the final tabulations were made using a combined set of data from Carnets and Mothers' Histories, representing 89% of all interviews.

Table I

PROYECTO PRICOR - Carnet/No Carnet

WITH CARNET:							Percent -				
	Num	Polio	DPT	Meas1	BCG	All	Polio	DPT	Meas1	BCG	All
SJM<1	46	20	15	5	41	3	43%	33%	11%	89%	7%
SJMI-4	45	37	37	35	35	27	82%	82%	78%	78%	60%
VES<1	42	23	23	8	37	7	55%	55%	19%	88%	17%
VESI-4	39	30	29	28	28	21	77%	74%	72%	72%	54%
VMT<1	60	24	25	14	55	11	40%	42%	23%	92%	18%
VMTI-4	56	46	41	49	49	28	82%	73%	88%	88%	50%
Total	268	180	170	137	245	97	63%	59%	48%	85%	34%
WITHOUT CARNET - REPORTED BY MOTHER							Percent -				
	Num	Polio	DPT	Meas1	BCG	All	Polio	DPT	Meas1	BCG	All
SJM<1	13	2	3	3	8	1	15%	23%	23%	62%	8%
SJMI-4	13	10	11	10	13	8	77%	85%	77%	100%	62%
VES<1	20	2	2	3	12	2	10%	10%	15%	60%	10%
VESI-4	24	12	11	18	20	9	50%	46%	75%	83%	38%
VMT<1	11	0	0	1	7	0	0%	0%	9%	64%	0%
VMTI-4	17	9	9	11	13	6	53%	53%	65%	76%	35%
Total	98	35	36	46	73	26	36%	37%	47%	74%	27%
WITHOUT CARNET - REPORTED BY OTHERS							Percent -				
	Num	Polio	DPT	Meas1	BCG	All	Polio	DPT	Meas1	BCG	All
<1	21	6	7	3	16	2	29%	33%	14%	76%	10%
1-4	28	19	18	17	25	16	68%	64%	61%	89%	57%
Total	49	25	25	20	41	18	51%	51%	41%	84%	37%
WITH CARNET + WITHOUT CARNET/REPORTED BY MOTHER							Percent -				
	Num	Polio	DPT	Meas1	BCG	All	Polio	DPT	Meas1	BCG	All
SJM<1	59	22	18	8	49	4	37%	31%	14%	83%	7%
SJMI-4	58	47	48	45	48	35	81%	83%	78%	83%	60%
VES<1	62	25	25	11	49	9	40%	40%	18%	79%	15%
VESI-4	63	42	40	46	48	30	67%	63%	73%	76%	48%
VMT<1	71	24	25	15	62	11	34%	35%	21%	87%	15%
VMTI-4	73	55	50	60	62	34	75%	68%	82%	85%	47%
Total	386	215	206	185	318	123	56%	53%	48%	82%	32%

Table I presents the actual data for each of the two age groups in each of the three districts included in the sample. Rates (expressed as percentages) are calculated for each of three groups: children with carnet, children without carnet whose mothers responded to the interview, and children without carnets for whom a person other than the mother responded.

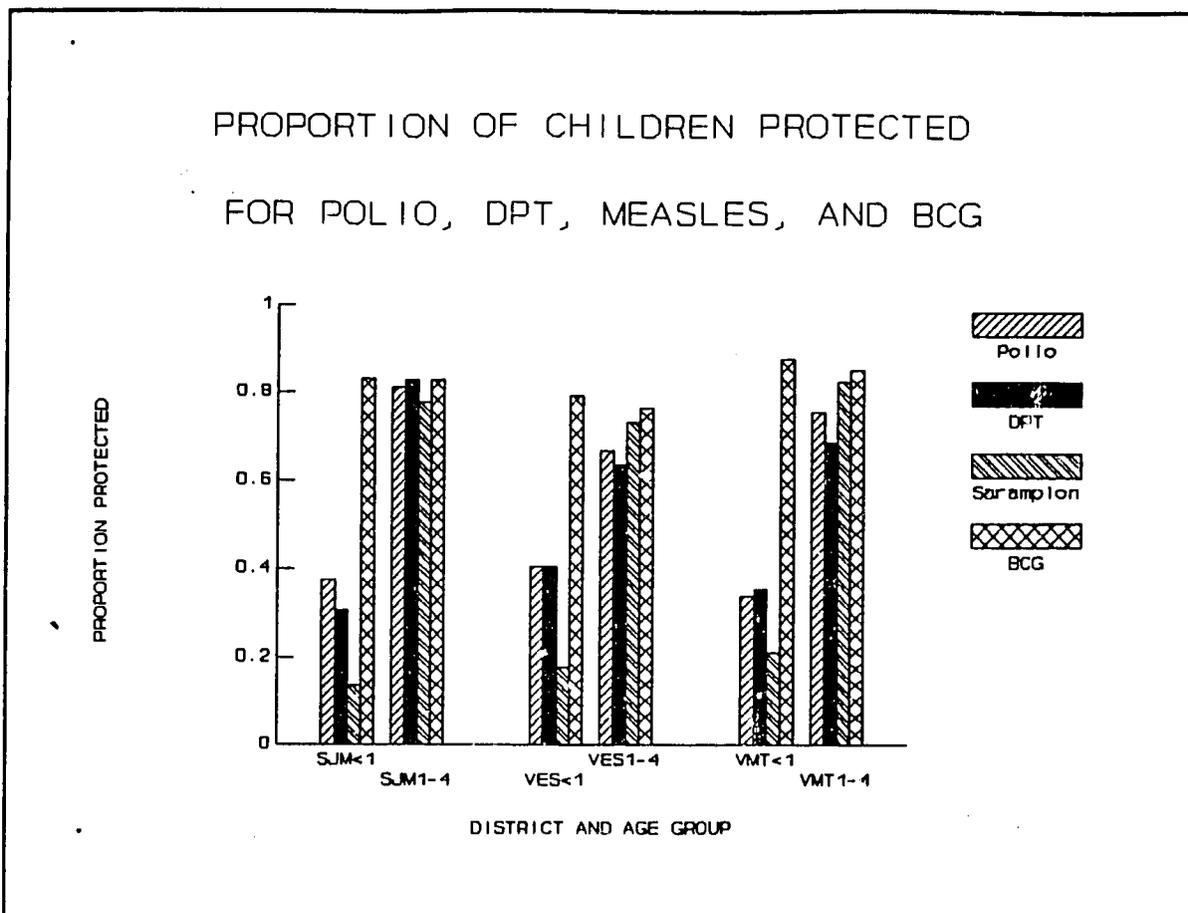


Figure 2

Existing levels of protection in the community just prior to VAN were found to be at or almost at the prescribed norm of 80% for all vaccines in the 1-4 year-old group (Fig. 2). Coverage of BCG, which is given at birth at all obstetrical facilities in the Cono Sur, was above 80% in the < 1 year-olds, as well. The summary figures for DPT, Polio, and Measles in the < 1 year-olds are below 80%, but not particularly meaningful since this group includes many children too young to have been vaccinated as yet.

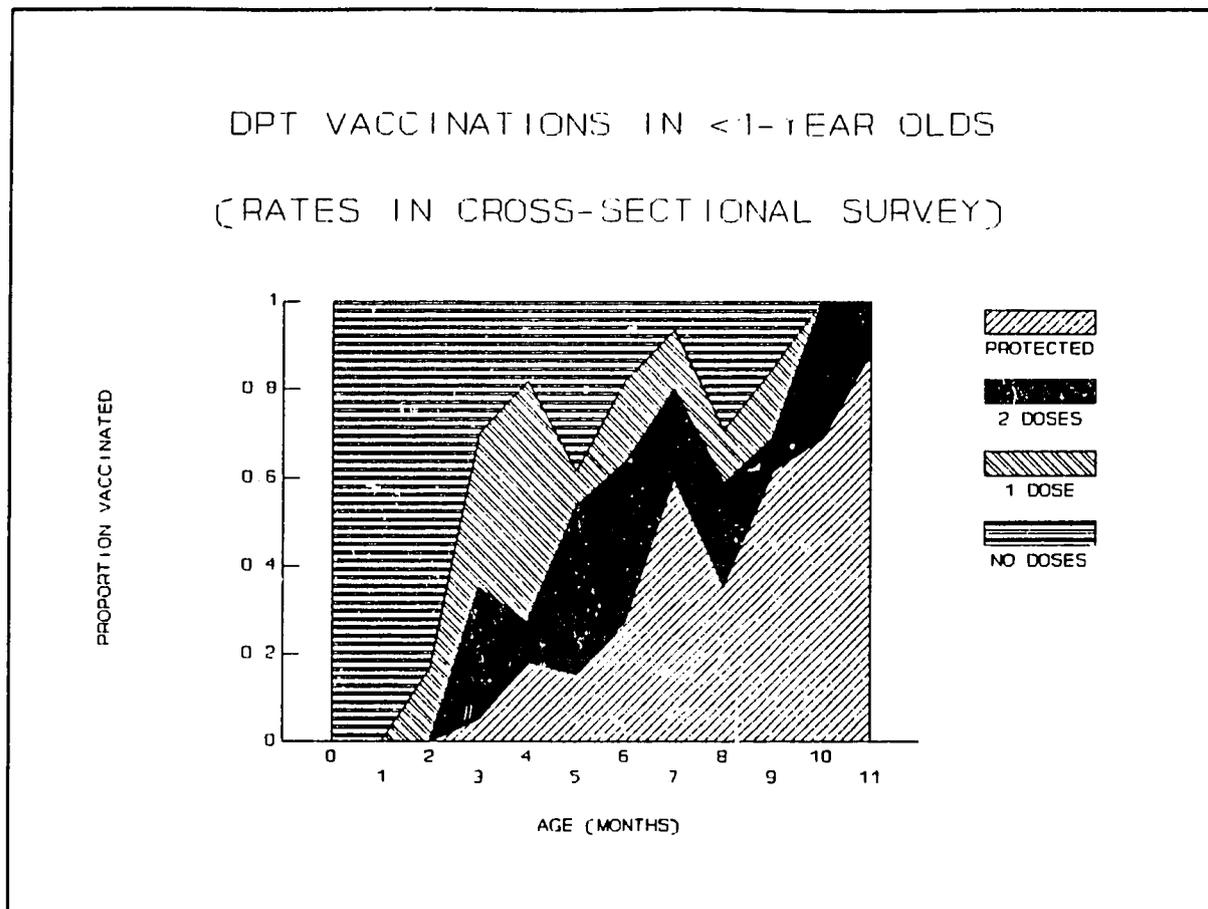


Figure 3

A closer examination of the dynamics of DPT vaccination (Fig. 3) shows that 80% coverage for Doses 1, 2 and 3 is achieved at the approximate ages of 4-6 months, 7-9 months, and 11 months, respectively. The pattern is virtually identical for anti-Polio immunization. For Measles vaccination, 50% coverage was observed at about 12 months and 80% coverage by 18 months.

The existing coverage in the Cono Sur supports the contention of the PMOH area directors that investing their resources in routine EPI rather than campaigns is warranted since only modest improvements are still needed to meet all coverage targets mandated by the program.

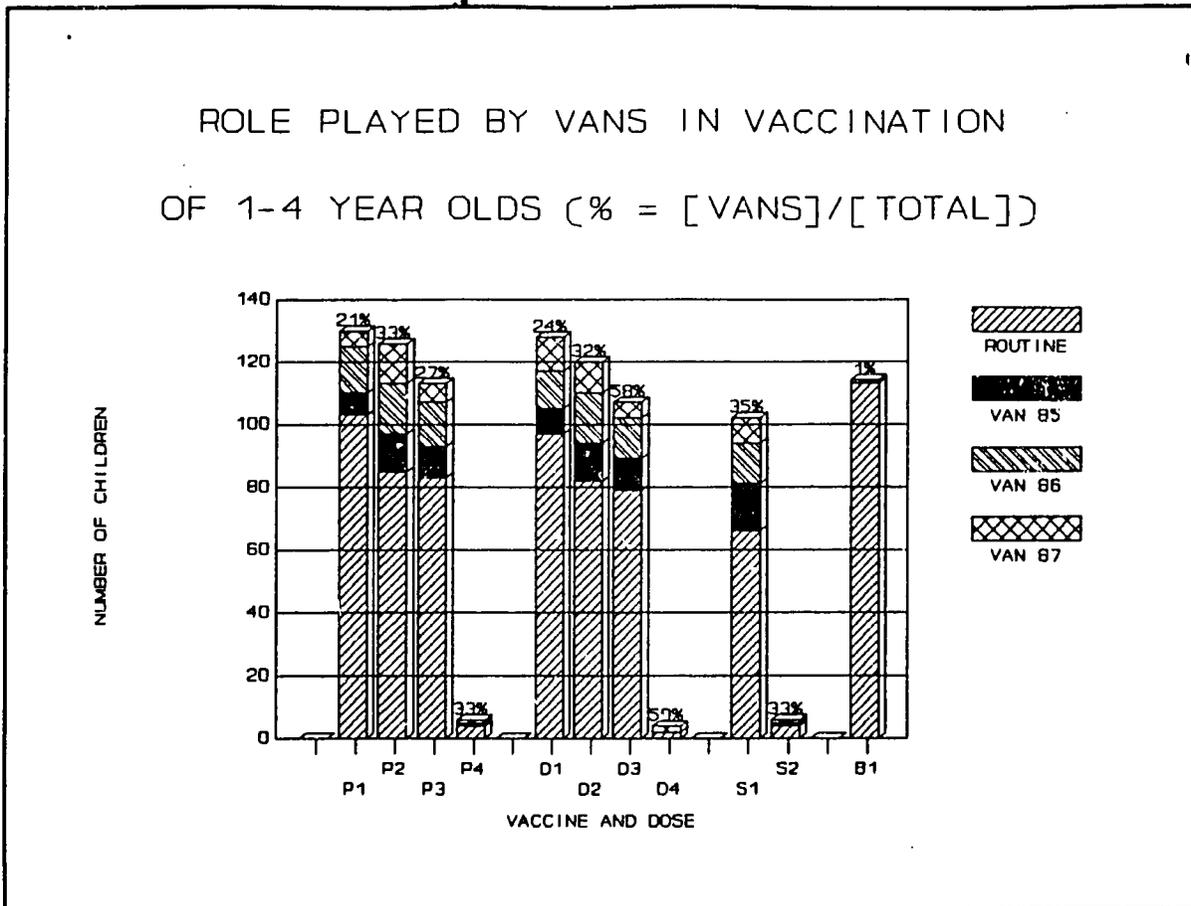


Figure 4

This argument is strengthened by Fig. 4, which shows the relative contribution of previous VANS (in 1985, 1986 and 1987) to the immunization coverage of children in the 1-4 year-old group. Overall, previous VANS accounted for only approximately one-third of the immunizations (excepting BCG) given.

A cost-effectiveness analysis of VAN88 versus routine immunizations is currently underway, but the preliminary data presented here already suggest strongly that a management decision to forego campaigns in the Cono Sur in favor of enhancing routine EPI services is a sound one.

Planning/coordination for VAN DAY 1. The planning and organization of the VAN in the Cono Sur was the responsibility of an EEP-level coordinator (working out of HAMA), three district coordinators, and a coordinator for each of the 14 health centers.

The overall coordinator was named approximately 10 weeks before the first day of VAN was to take place, the district coordinators were named 8 weeks before, and all 14 health center coordinators were not named until 4 weeks before the first date.

The central PMOH published a set of manuals and guides specifically for VAN88: to guide and support both its organization and the training required. Unfortunately, sufficient copies of these manuals were not made available to the coordinators until mid-May (14 days before). It was learned that thousands of copies of these manuals were stocked in the central warehouse but they were not being released because the complex sequence of official requests and authorizations had not been completed until that time. The Cono Sur and other Lima metropolitan areas received copies still in time to be of use in training; some rural UDES, we were told, did not.

The coordinators at all three levels were nurses or senior nursing auxiliaries with substantial experience in running previous immunization campaigns. They showed great efficiency in the preparation of planning forms and the calculation of supply needs based on official estimates of catchment population and routine vaccinations completed to date during the current year.

Each health center was documented as having at least one afternoon training session in the two weeks before VAN DAY 1 and 4/14 were monitored by project staff and assessed as adequate (3/4 used role-playing in which health workers participated). No checklist had been developed for this assessment at this time.

The major constraint on coordination was the lack of transportation or funds for transport available to the four higher-level coordinators. This made it difficult to arrange meetings which everyone could attend and, thus, coordination of mass communication efforts to promote the VAN and of logistics support (delivery of supplies, transportation on day of VAN, provision of lunches to workers, etc.) was poor.

This lack of physical inter-communication was exacerbated by the fact that only half of the health centers have telephones. Because the VAN process is so familiar to the coordinators, the overall planning went on nevertheless with little error. The problems that arose tended to be ad hoc rather than structural: e.g., last minute re-assignments of personnel from one health center to cover additional vaccination posts created at another.

The irritation of such problems could have been reduced significantly by good communications. As it was, these problems rarely constrained the ultimate delivery of vaccine services, but this was prevented only by a constant and energetic application of crisis management on the part of the coordinators.

Macro-description of VAN. The 14 health centers and their staffs established 185 vaccination posts throughout the Cono Sur on the first day of VAN. These vaccination posts were located in existing health posts, classrooms, churches, homes, or other buildings scattered around the catchment area of each health center. With very rare exceptions, these posts were no more than 20-30 minutes walking time from the parent health center.

Each vaccination post was to be assigned a vaccinator, a record-keeper, and a motivator. The vaccinator positions were assigned to health auxiliaries with the most experience in immunizations whenever possible.

Each vaccination post was to be opened at 0830 with a standard kit of supplies picked up at 0730 at the health center. Each health center was assigned a single car or other vehicle to transport workers and supplies throughout the day. Transport was available to almost all workers at the start of the day (the project had to provide transport to 8 workers to reach their posts).

Supplies for the health centers had started to arrive no earlier than three days before the VAN and many health centers received bulk supplies as late as Saturday afternoon. Again, availability of transportation was a problem. This meant that much of the division and checking of supplies had to be done at the last minute and that there was little recourse for dealing with discrepancies or unavailable items.

The vaccination teams were to handle the actual immunizations while community volunteers were expected to provide support for house-to-house visits to identify children needing vaccinations and motivate parents to bring them. Some community support was available at each health center and at some, but less than half, of the vaccination posts observed.

Posts were expected to remain open until 2:00-4:00 pm (depending on health center) unless the vaccination team chose to close in order to go house-to-house with a mobile unit. There were six mobile units overall. While a few permanent vaccination teams did spend the late afternoon going into the community, over 90% did not. Of these, well over 30% closed earlier than planned due to lack of work.

Supervision was done by a physician from the same health center who travelled around the catchment area visiting each vaccination post in turn and ensuring that its stock of supplies and ice were replenished as necessary. The health center coordinator was not responsible for direct supervision.

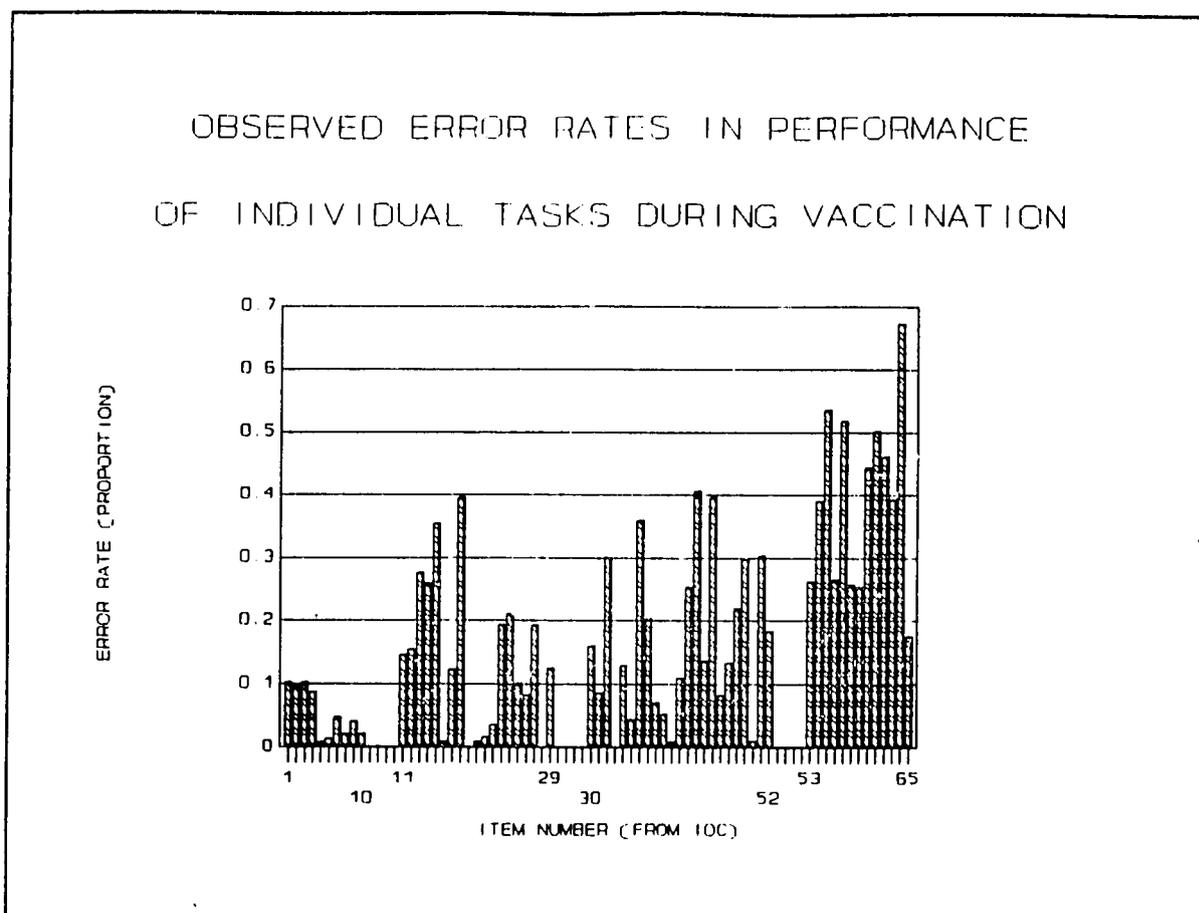


Figure 5

Quality of immunization service delivery by individuals. The items in the IOC for VAN1 have been given above. In the table (pp. 5-7), they are numbered and these numbers are used in Fig. 5, which shows the proportion of individual observations scored "incorrect" for each item (a summation of the data from all health workers observed). Since vaccinators were observed for different numbers of encounters, these individual marks were normalized by scoring each item as correct or incorrect based on the simple majority of scores received for all observations of that item for a given individual. Ties were settled as "correct".

The following six graphs show the overall error rates observed for each of the items in each of the six task areas delineated in the systems analysis model described earlier.

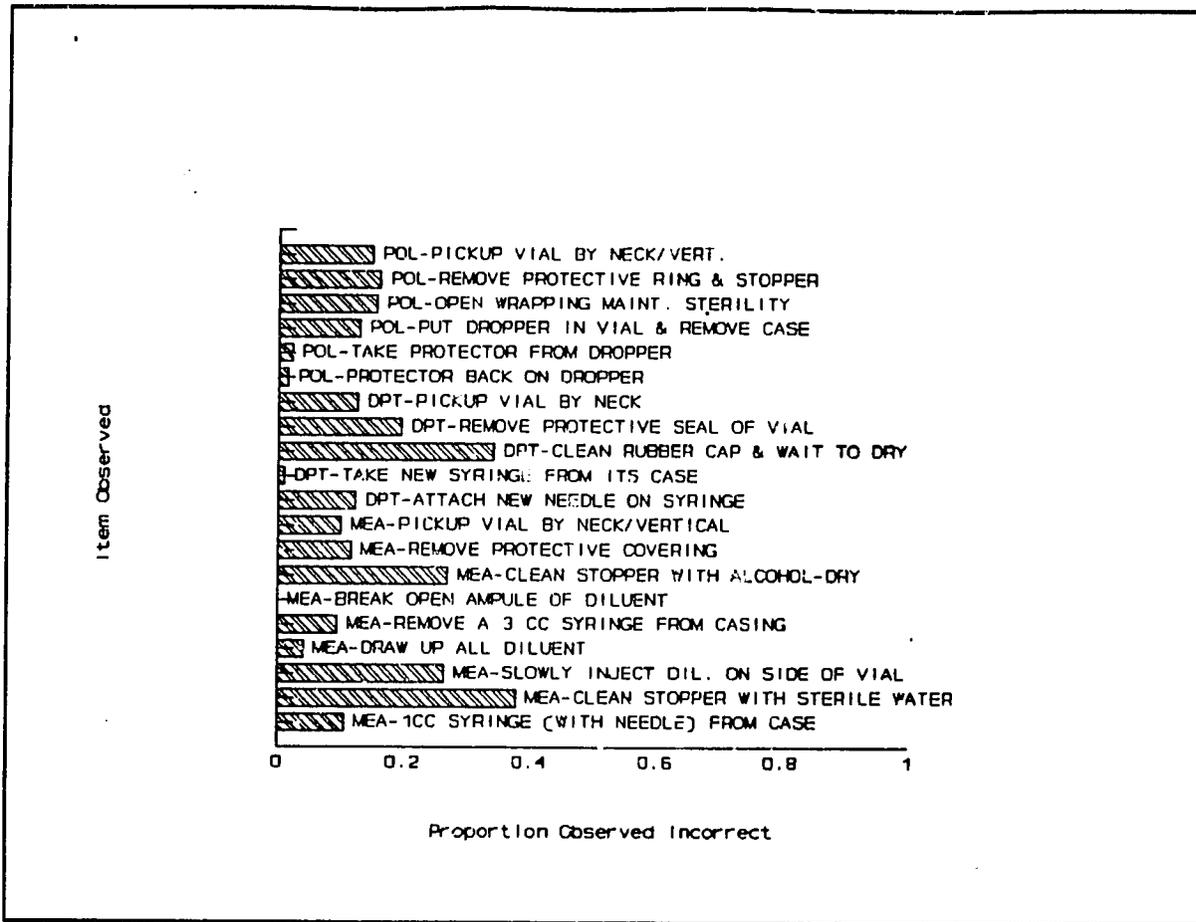


Figure 6

Error rates in items related to maintenance of sterility.

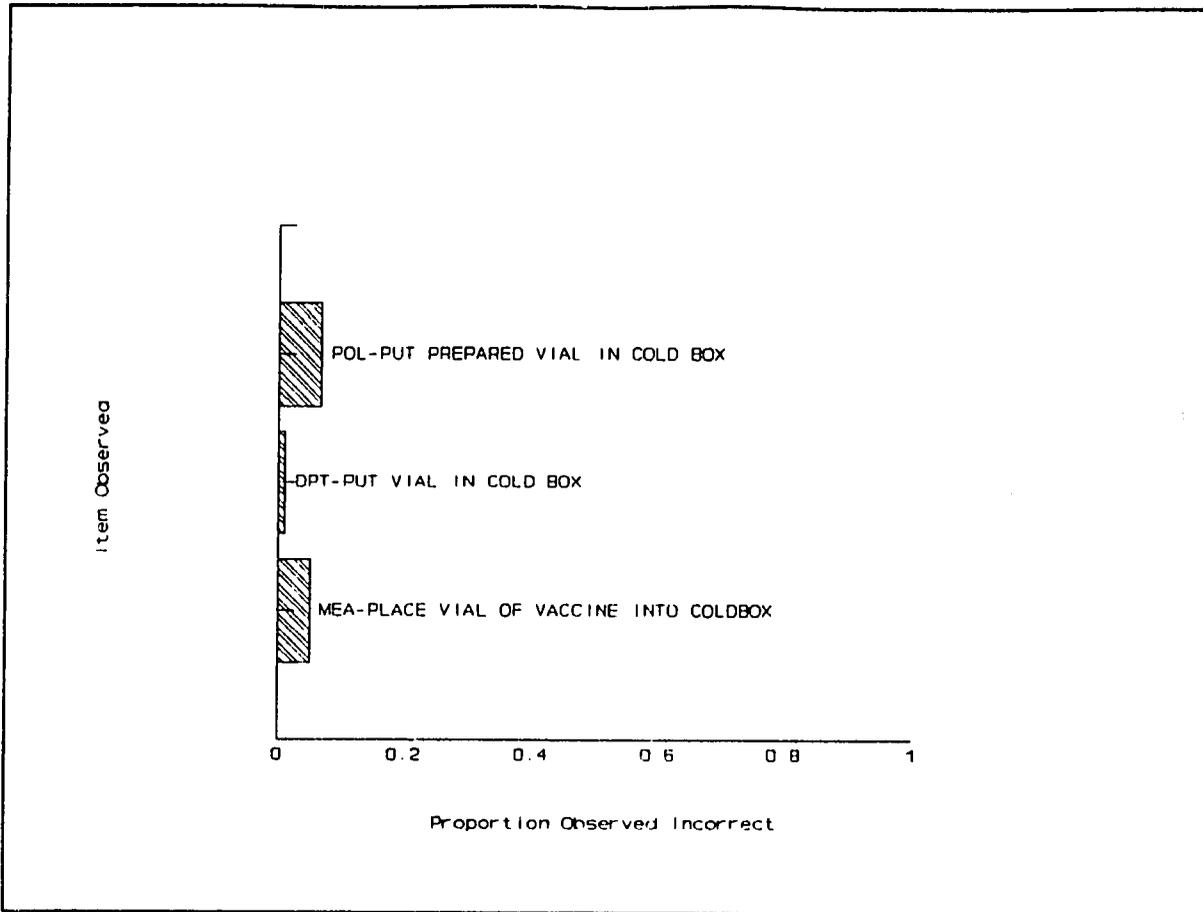


Figure 7

Error rates in items related to cold chain maintenance.

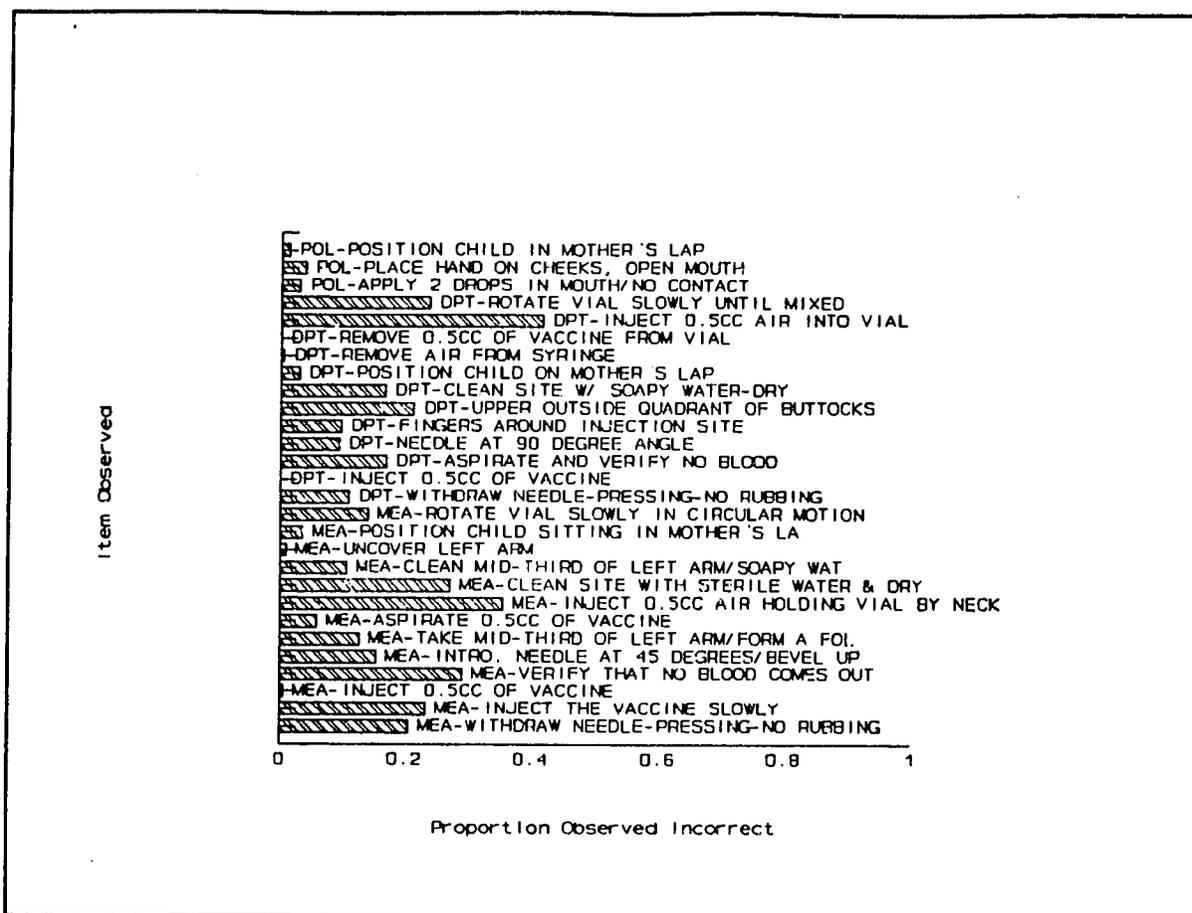


Figure 8

Error rates in items related to vaccination technique.

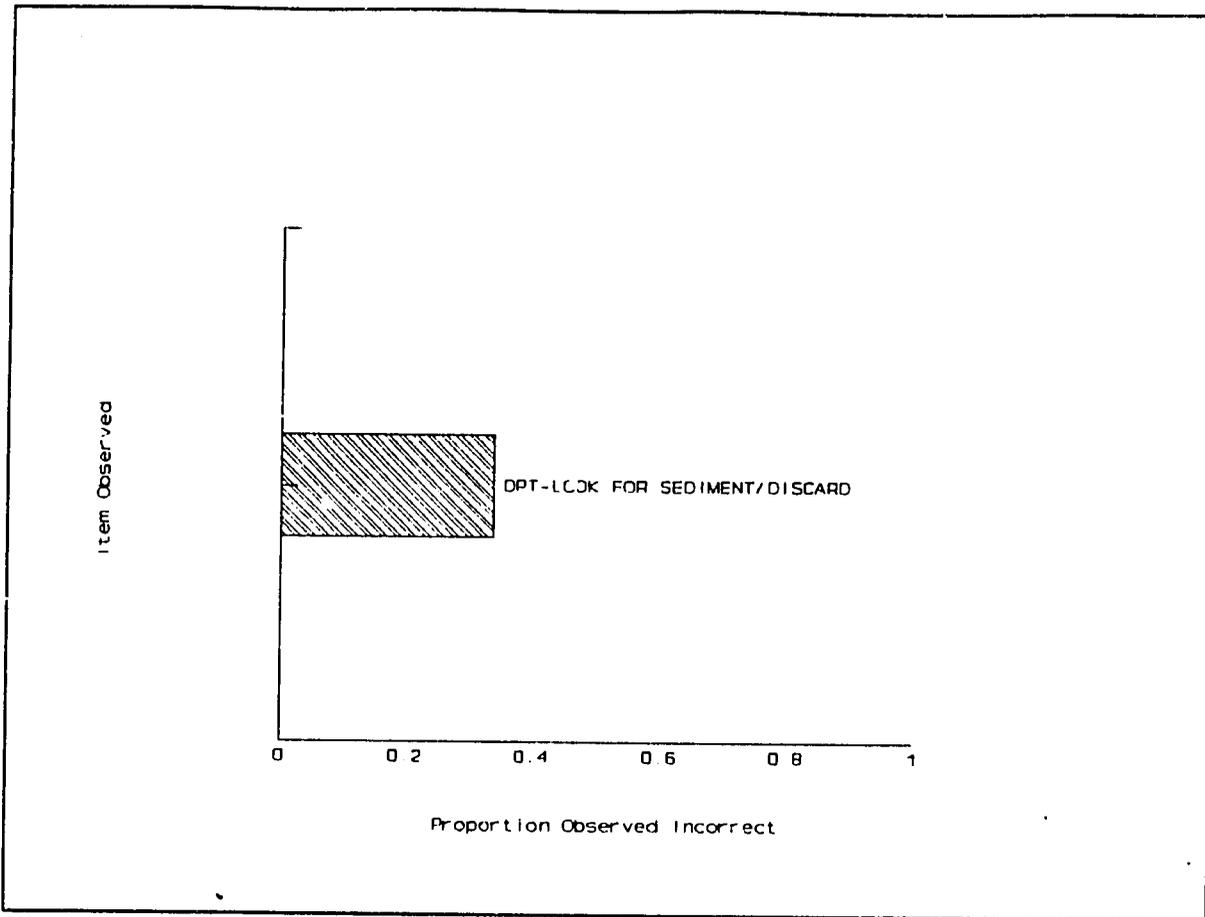


Figure 9

Error rate for the single item measuring control of vaccine quality.

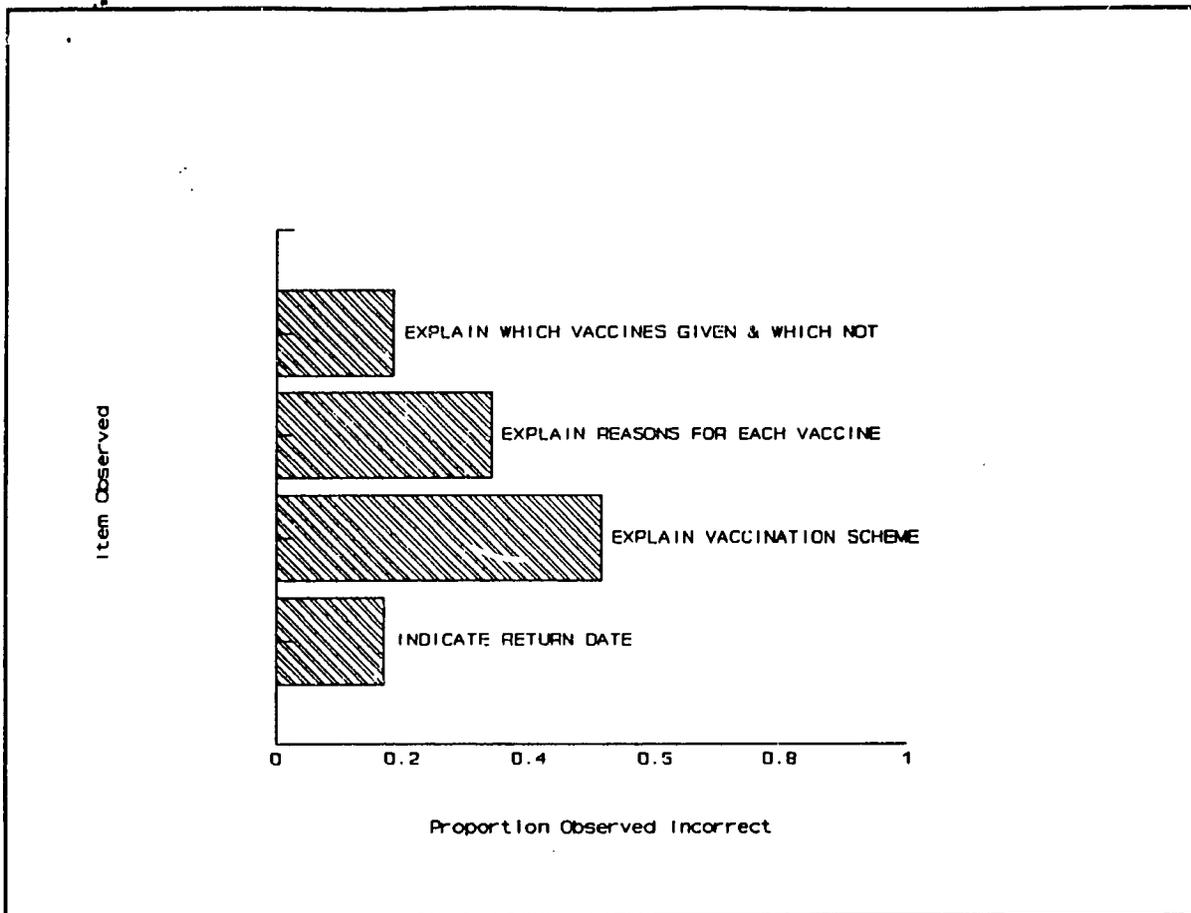


Figure 10

Error rates in items related to general educational messages given during counselling of the mother.

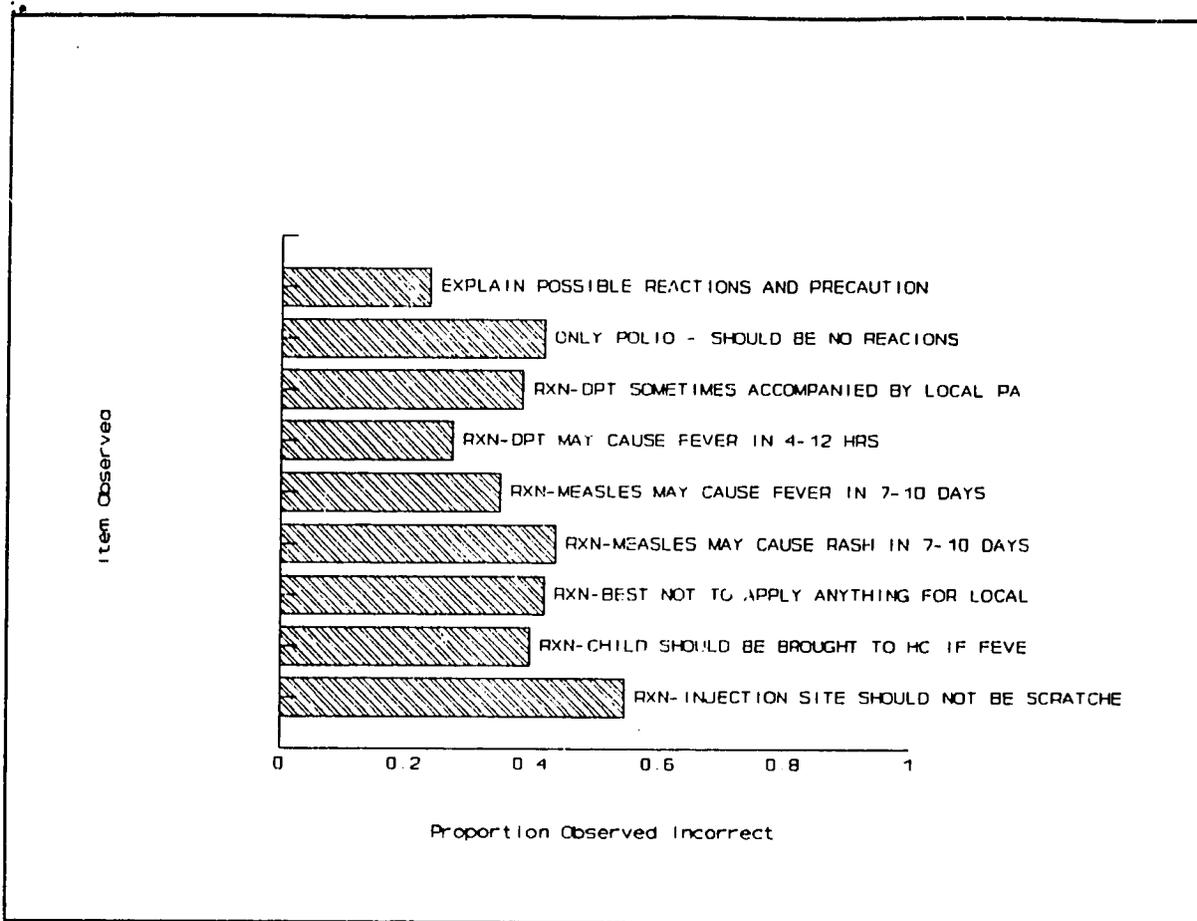


Figure 11

Error rates in items related to messages regarding possible reactions to vaccines to be mentioned during counselling of the mother.

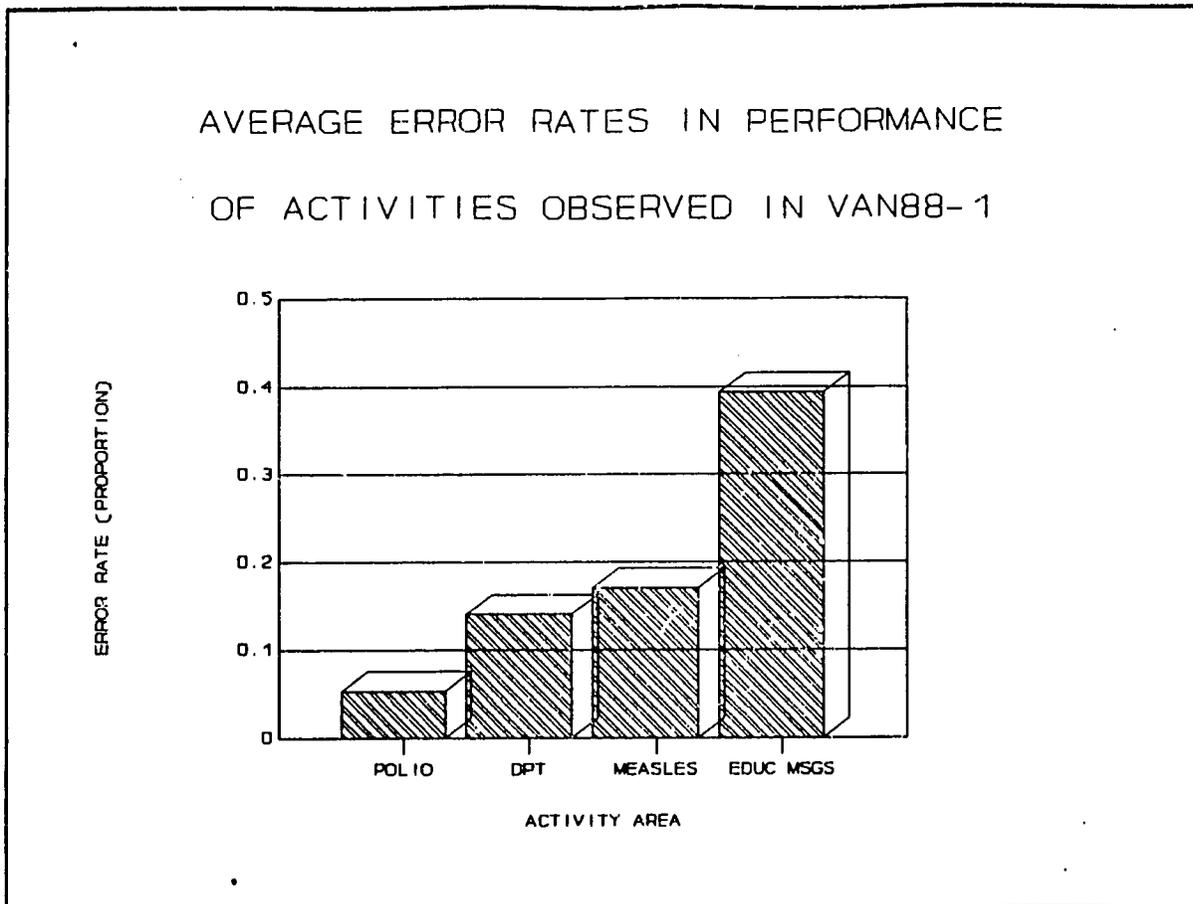


Figure 12

Fig. 12 presents an overall average performance score (i.e., the average of the proportions scored "incorrect" for each item) for each of the four basic functional activities involved in VAN: immunizing with polio vaccine, DPT or measles; and counselling.

As just shown, performance ratings varied greatly between individual items in the checklist, ranging from virtually no errors in the act of taking DPT vaccine from the vial into the syringe (#19) to almost 60% errors noted in informing the mother not to permit the child to scratch the site of the Measles vaccination (#64). These individual observations are important in identifying serious "breaks" in important links in the performance chain.

The overall average performance scores for activity areas suggest a more generalized failure to perform. Though the technical aspects of vaccination appear to be handled well by the health workers observed (error rates below 20% for all three vaccines), there is a clear failure with respect to delivering the associated educational messages and counseling. This is a characteristic problem with campaigns, since long lines often form and time allocated to effort other than the physical act of vaccinating is minimized.

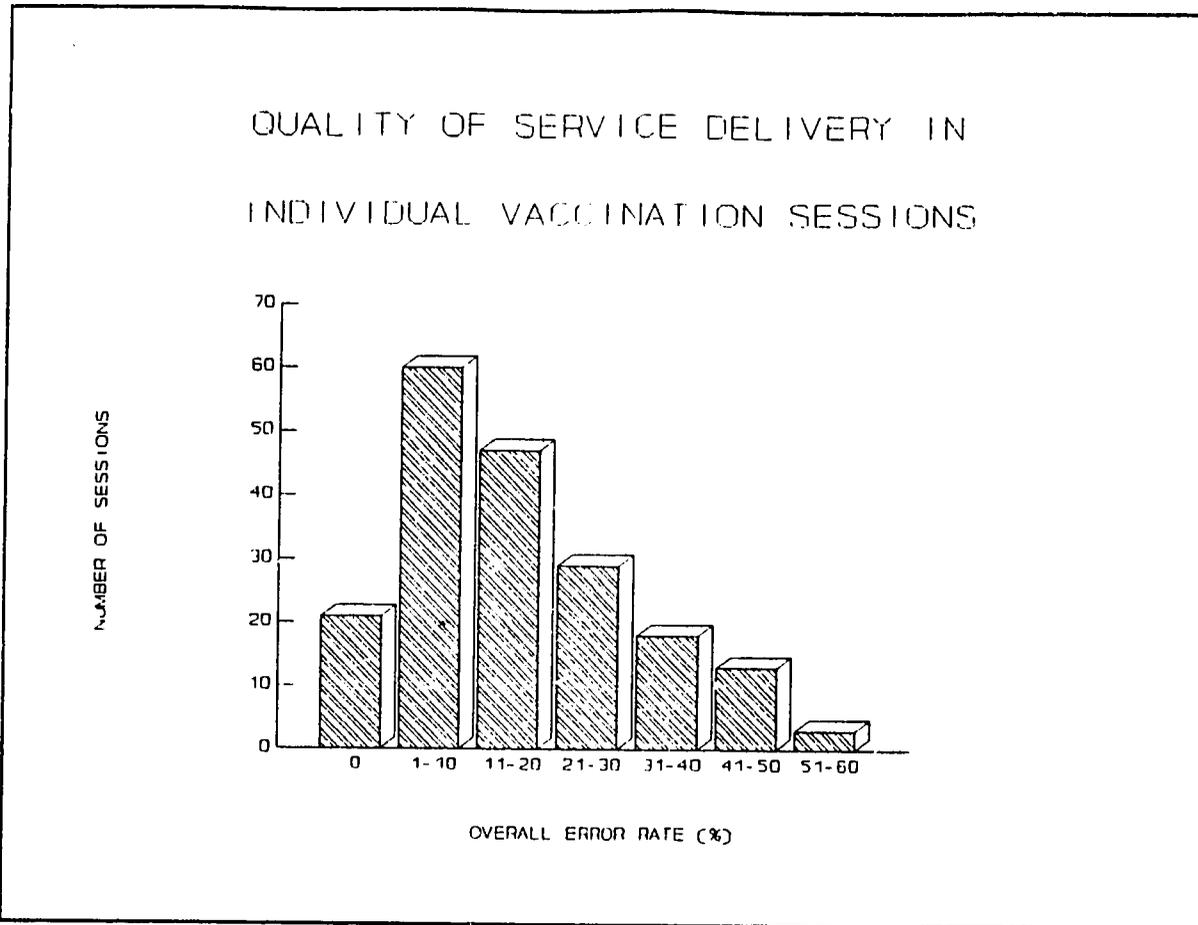


Figure 13

The profile shown in Fig. 13 was obtained by calculating an overall error rate for the individual health workers observed in VAN88. These data are limited to encounters with at least two vaccines given. Fig. 13 demonstrates that the pilot IOC is sufficiently sensitive to identify a range of performances within this group and, in particular, identify individuals who are significantly better or worse than the norm. Once identified, such individuals can receive more attention to determine the reasons behind their performance and to seek ways of bettering the effort of those who are not meeting the standard.

The issue of inter-observer variation must be dealt with at this juncture, since the study design, of necessity, assigned a different observer to each HC. It is worth mentioning, therefore, that limited pre- and post-VAN testing of the observer team showed relatively little inter-observer variation when they all had the opportunity to rate the same performances in role-playing. Further, detailed evaluation of inter-observer variation has been done as part of the second phase of IOC development during the second day of VAN88. These data are currently being analyzed and will be the subject of a later report. Preliminary results, however, suggest that inter-observer variation played only a small part in the differences reported here.

The data of Fig. 5 can be tabulated in a variety of ways to produce comparisons between health workers, HC's or other operational units. The approach taken for producing Fig. 14 was to place items in the IOC into task groupings that reflect some of the main concerns in EPI evaluation. These groupings are somewhat arbitrary and have not been subjected to any validation procedures (such as factor analysis) as yet. Nevertheless, they have intuitive appeal and, in retrospect, a certain amount of empirical value (i.e., they "work").

As discussed above, items were placed in six task groupings: cold chain, sterile technique, checking vaccine quality, correct dosage and injection technique, informing about immunizations, and informing about possible side-effects and reactions. The number of items placed in each task group ranged from 1 to 25. We recognize the need to achieve a better balance in the number of items assigned to each task grouping for statistical purposes; the IOC for the second VAN88 was modified accordingly.

Even with an imperfect design, it appears possible to calculate indices that have substantial power to differentiate the performance of different HCs. We first calculated, for each HC, an error rate for each task grouping based on the total observations made for the health workers belonging to that HC. When similar ratings were calculated for individual workers, we found that variation among workers within an HC was significantly less than that overall between HC's (data not shown). From a management perspective, therefore, the first important performance context to be considered would seem to be the HC rather than the individual.

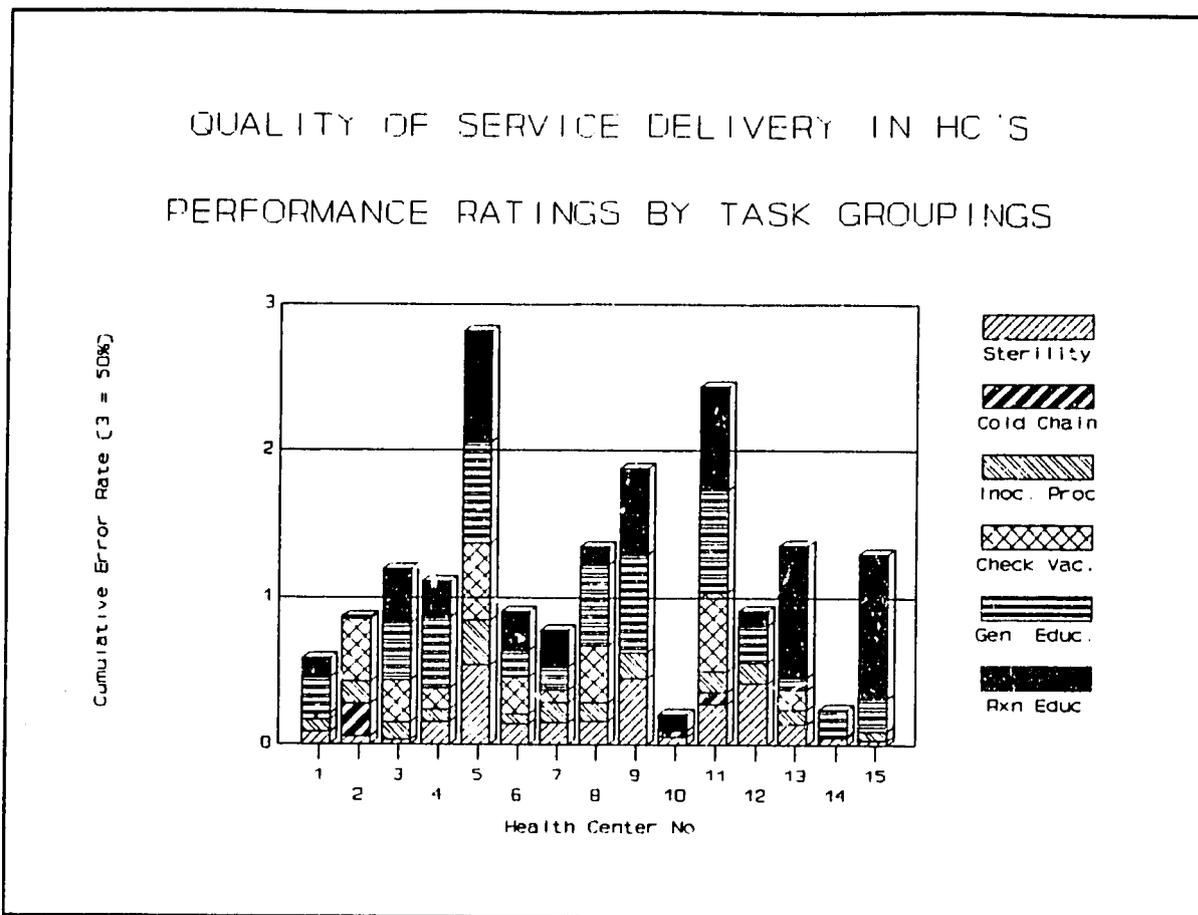


Figure 14

Fig. 14 presents a cumulative performance rating for each of the 14 HC's and HAMA. This overall rating represents the sum of the individual error rates (expressed as a proportion from 0 to 1) for the six task groupings. Since there are six task groupings included, a score of 6 would represent 100% errors in all groupings. A score of 3 denotes a cumulative error rate of 50%.

HC #1 - 4 belong to Villa El Salvador (VES) while HC# 5 - 9 are in Villa Maria del Triunfo (VMT) and HC #10 - 14 are in San Juan de Miraflores (SJM). Site #15 is HAMA, where a vaccination center was set up especially for the VAN (with no ancillary posts).

A number of important points are immediately obvious in Fig. 14: 1) there is a wide range of performance between health centers (over 30-fold difference between #5 and #10); 2) the four task groupings associated with physical delivery of vaccine show uniformly better performance ratings than do the two groupings covering education and counseling; and 3) there is a significant correlation between task group performance ratings within HC's (i.e., the "good" HC's are uniformly good and the "poor" HC's tend to be uniformly poor).

Some anecdotal information that enriches the quantitative data of Fig. 14 is that HC #5, the worst performer, has not had a nurse in its nurse supervisor position for over a year while all the other HC's have had a functioning nurse supervisor. HC #11, the second worst performer, has a directing team (HC head and nurse supervisor) that is routinely ranked as the least motivated and dynamic by their peers in confidential discussions. Site #15, the hospital, gets excellent marks for technical effort but fails badly with respect to informing mothers about possible reactions to vaccines. This site was literally overrun with parents bringing children to be vaccinated, with long lines evident most of the day. Our observer reported that children were being processed "like cattle", leaving little time to talk to and educate the parents.

On the other hand, the two standouts for uniformly excellent performance, HC #10 and #14, routinely get high peer ratings with respect to their management. HC #10 has arguably the best nurse supervisor in the Cono Sur and HC #14 one of the most concerned and active HC heads. HC #14, a "mini-hospital" with an obstetrical wing in addition to its outpatient clinics is the model unit to which visitors to the Cono Sur are generally taken.

These anecdotal observations suggest that the ranking of HC performance shown in Fig. 14 is in line with predictions that might have been made from existing perceptions of the quality of management in each of the HC's, at least at the extremes. A great deal remains to be done to validate these performance ratings as indicators, but as a preliminary result, they are certainly encouraging.

In summary, the overall performance of direct services appears to be very good to excellent in almost all important aspects. While the assessment of performance quality using the IOC and analytical framework just described is sensitive enough to identify activities and units that show some performance weaknesses, it is clear that, overall, direct services delivery in the Cono Sur VAN is a generally strong area of the system.

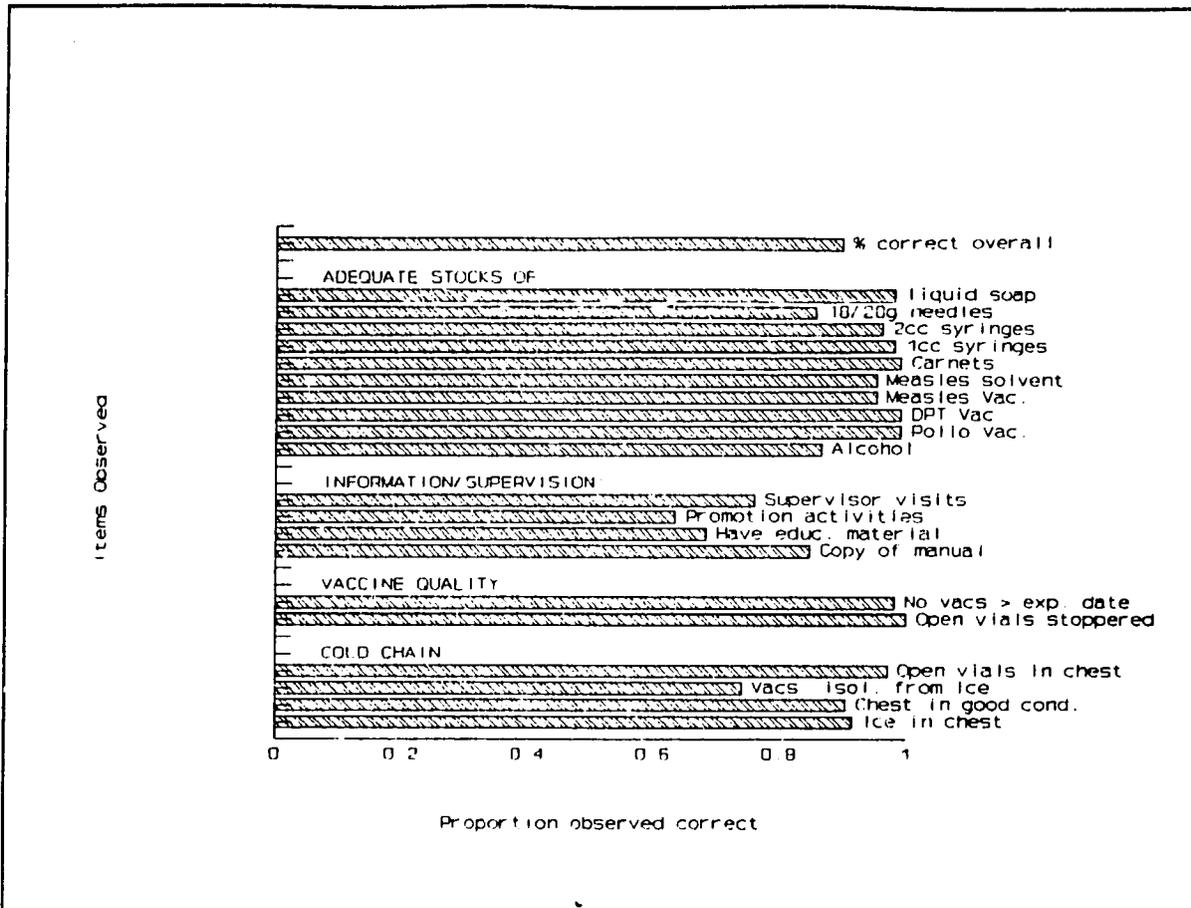


Figure 18

Measurement of unit performance. Fig. 15 contains items relating to a number of logistics and support activities that are more appropriately observed on a unit rather than individual basis. These include whether or not adequate stocks of critical supplies are on hand each time the observer visited the unit, whether vaccine quality and the cold chain were being maintained, and whether the unit could count on the information, communication, and supervisory support it was supposed to receive. Rates were calculated from a sample (i.e., observation at time of visit) that ranged from 80 - 150 depending on the item.

With respect to vaccine quality and cold chain, it is clear that handling and maintenance are excellent with the sole exception that too many units were storing vaccines in direct contact with the ice or cold packs. These data are in line with the observations made earlier on individual handling of vaccines and cold chain.

No problems were encountered with the stocks of critical materials at the vast majority of units. An occasional stockout occurred in the afternoon as the organization began to shut-down. A more pronounced lack of large needles and alcohol was seen in the vaccination posts associated with certain health centers.

This was due to a mal-distribution of the materials which appeared to be based in the late arrival of materials mentioned earlier. Most posts managed to obtain adequate amounts of both materials by direct contact with another posts rather than waiting for the supervisor to bring them.

The worst ratings relate to the information/communications/supervision that was supposed to be done in support of each vaccination post. Though the proportion of posts at which these failures occurred were still a minority, the rates are poor enough to suggest that this is an area needing emphasis in the planning of future campaigns.

Nevertheless, it is clear from this limited set of observational measures that support was adequate to maintain a fully functioning unit throughout the day. The measure for supervisory interaction masks the fact that those units that received supervisory visits during the day usually received 2 or more such visits.

It also should be pointed out that vaccination posts were not more than 20-30 minutes walking time from the health center so that one member of the vaccination team could be dispatched to seek assistance in cases of unresolved difficulties. The project observers noted this in a few instances during the day and this probably helped keep service delivery continuing unimpeded in those situations.

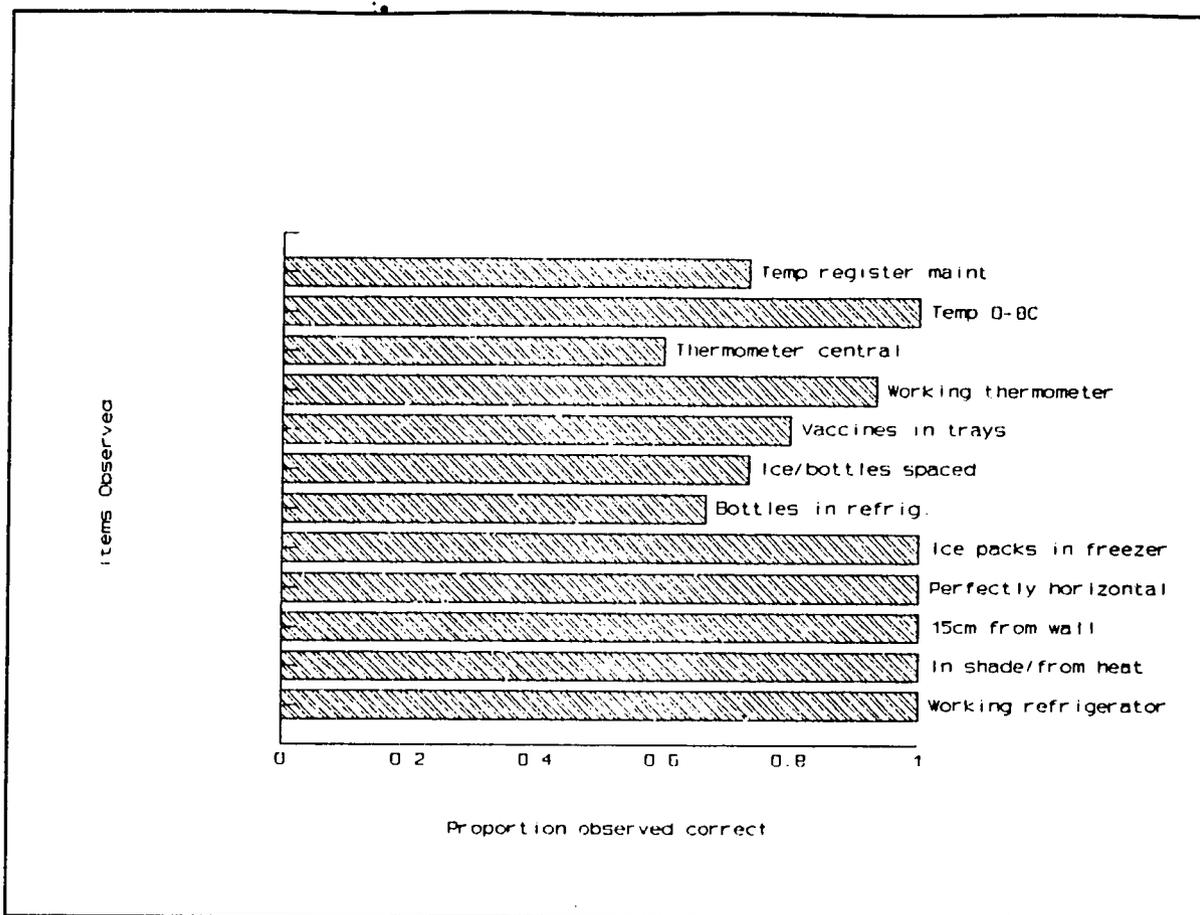


Figure 16

One category of unit performance that relates only to the health center itself is maintenance of the refrigerator used for the cold chain at this level. Fig. 16 presents the 12 items used to measure this indicator.

In general, the ratings given are very good. Several items appear to require a different interpretation when dealing with a campaign situation (i.e., large quantities of vaccines being temporarily stored) rather than the routine. For example, the three items dealing with bottles in the refrigerator, ice/bottles spaced properly, and vaccines in trays were clearly affected by the fact that unusually large amounts of vaccines were present at the health center and stored in the refrigerator.

Maintenance of this type of equipment, which is used frequently and has a high profile, is not difficult in the Cono Sur and it would be a serious indictment of the health center management if one of these refrigerators was found to be non-functioning with no corrective effort having been made.

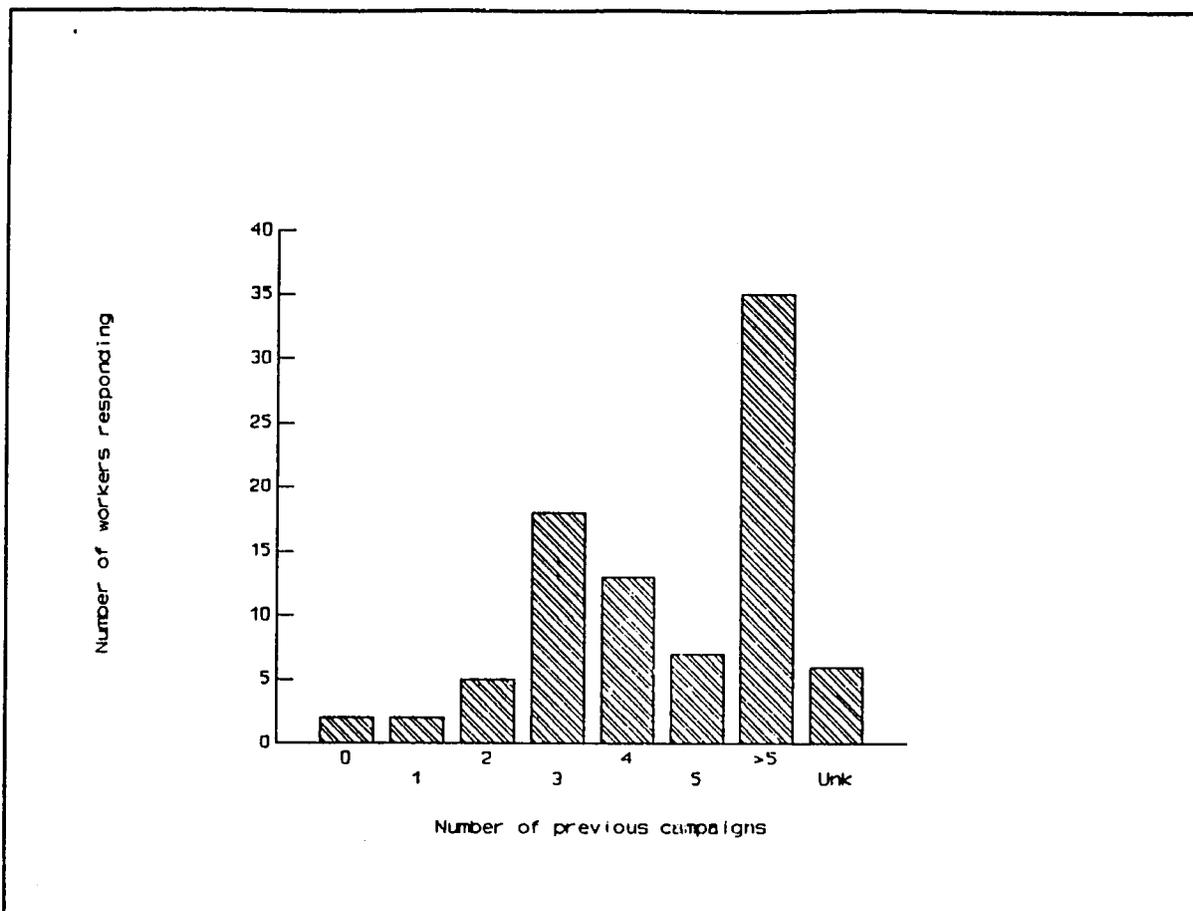


Figure 17

Vaccinator characteristics and perceptions. In addition to observational data, we gathered selected information by questionnaires given to the vaccinators at vaccination posts visited. One question asked was the experience each had in previous campaigns.

As mentioned earlier and shown clearly in Fig. 17, there were few vaccinators without experience of at least one previous campaign and almost half had participated in 5 or more similar campaigns in the past.

The group designated as Unknown represents those respondents who left this field blank.

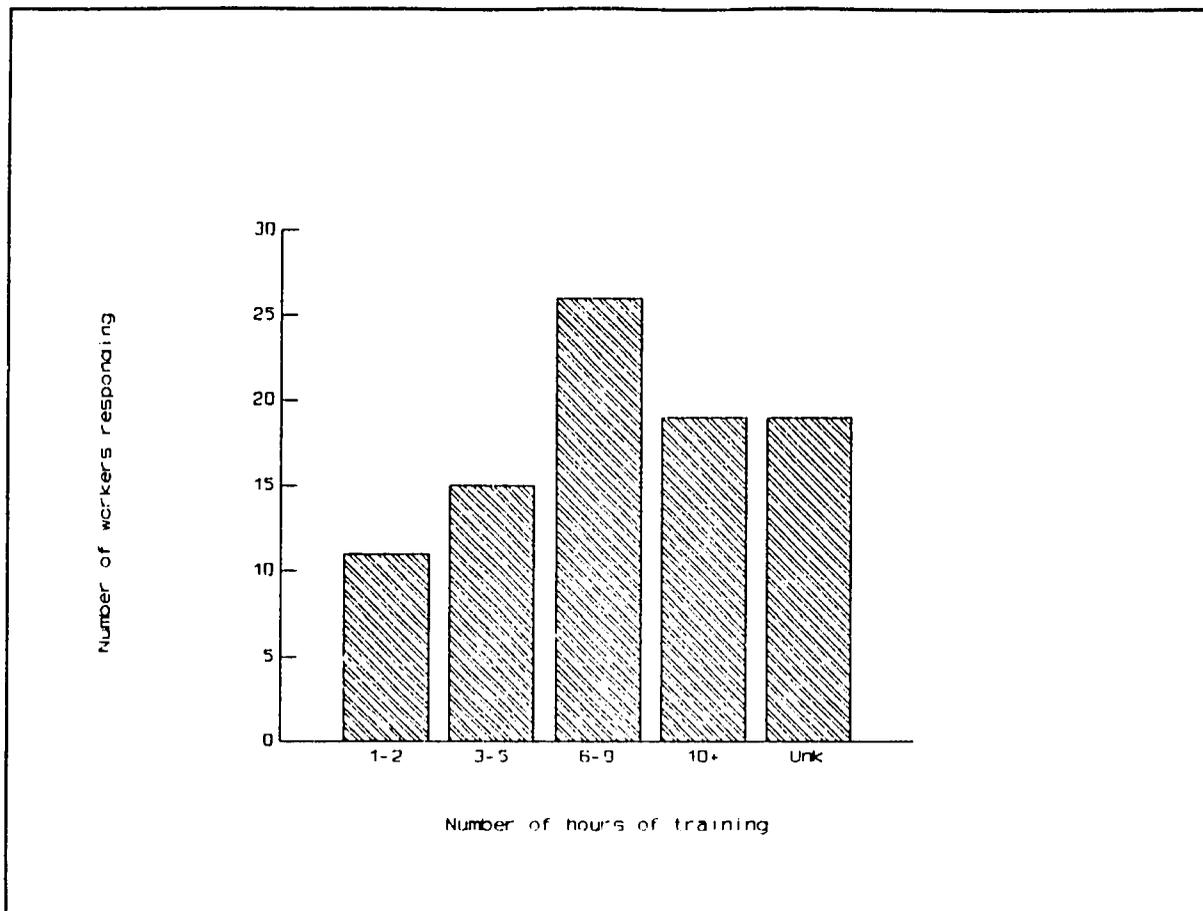


Figure 18

Another question we asked concerned the number of hours of training each vaccinator received specifically for the current VAN. As noted above, all 14 health centers carried out at least one course on EPI during the two weeks preceding the VAN DAY 1.

None of the vaccinators responded by saying he/she had not received any training. The mode centered at 6-9 hours of training, which would correspond to two training sessions. This was the most common pattern reported by the health center coordinators.

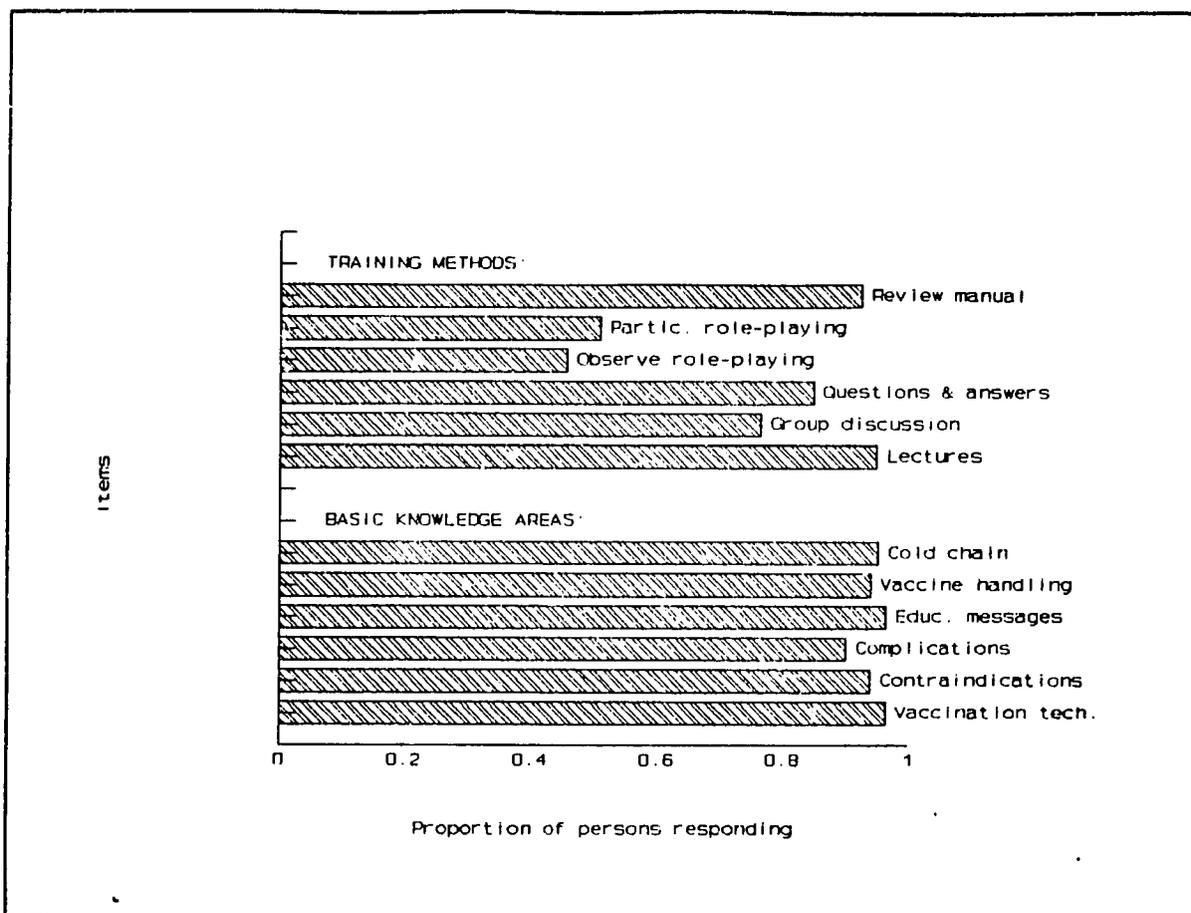


Figure 19

We were interested not only in the amount of training but its nature, as well. Fig. 19 presents items relating to two aspects of this: knowledge areas covered and the training methods employed.

Almost 100% of the vaccinators said they had received training in each of the six key aspects of EPI service delivery measured by our observers. This is consonant with the high ratings these vaccinators received for their performance, though the relationship is, of course, unproven.

With regard to training methods, there appears to be substantial margin for utilizing more concrete, active methods such as role-playing instead of relying on straight lectures or discussions without examples and actual practice. Role-playing is a commonly used training device in Peru and we are advocating its even more widespread application in targeted training linked to monitoring such as that done in this study.

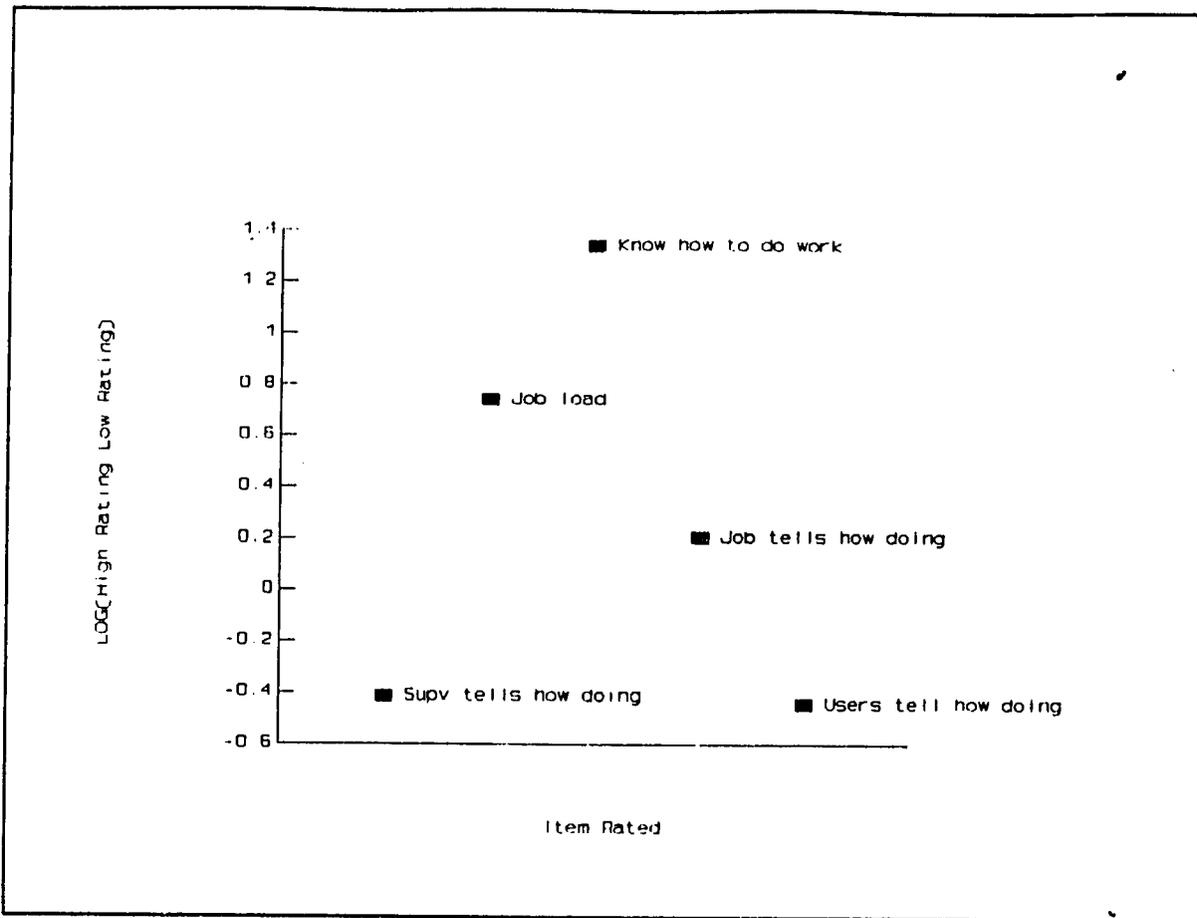


Figure 20

This and the following figure show logarithmic plots of the ratio of positive to negative answers given in response to certain questions about the individual's perceptions and satisfaction. These questions were provided with 5-point Likert scales anchored to responses such as "Strongly disagree ... Mildly disagree ... Neutral ... Mildly agree ... Strongly agree". The actual questions and answers are in the questionnaire included in Appendix 1.

This plot is useful in quickly showing those items for which individuals have shown a strong bias toward answering positively (i.e., "agree" choices) over negatively (i.e., "disagree" choices). The log of the ratio moves ever more positive as the replies favor positive over negative responses. Conversely, a value that is negative indicates that more of the respondents chose negative replies.

In the above figure, the respondents are stating overwhelmingly that they easily know how to do their job and that the job of vaccinator during the VAN tends to be too much rather than too little work. They are almost evenly split as to whether the job itself gives them significant information about how well they are performing. And they perceive that neither the people they are serving nor their

supervisors provide them with specific, concrete information about the job they are performing.

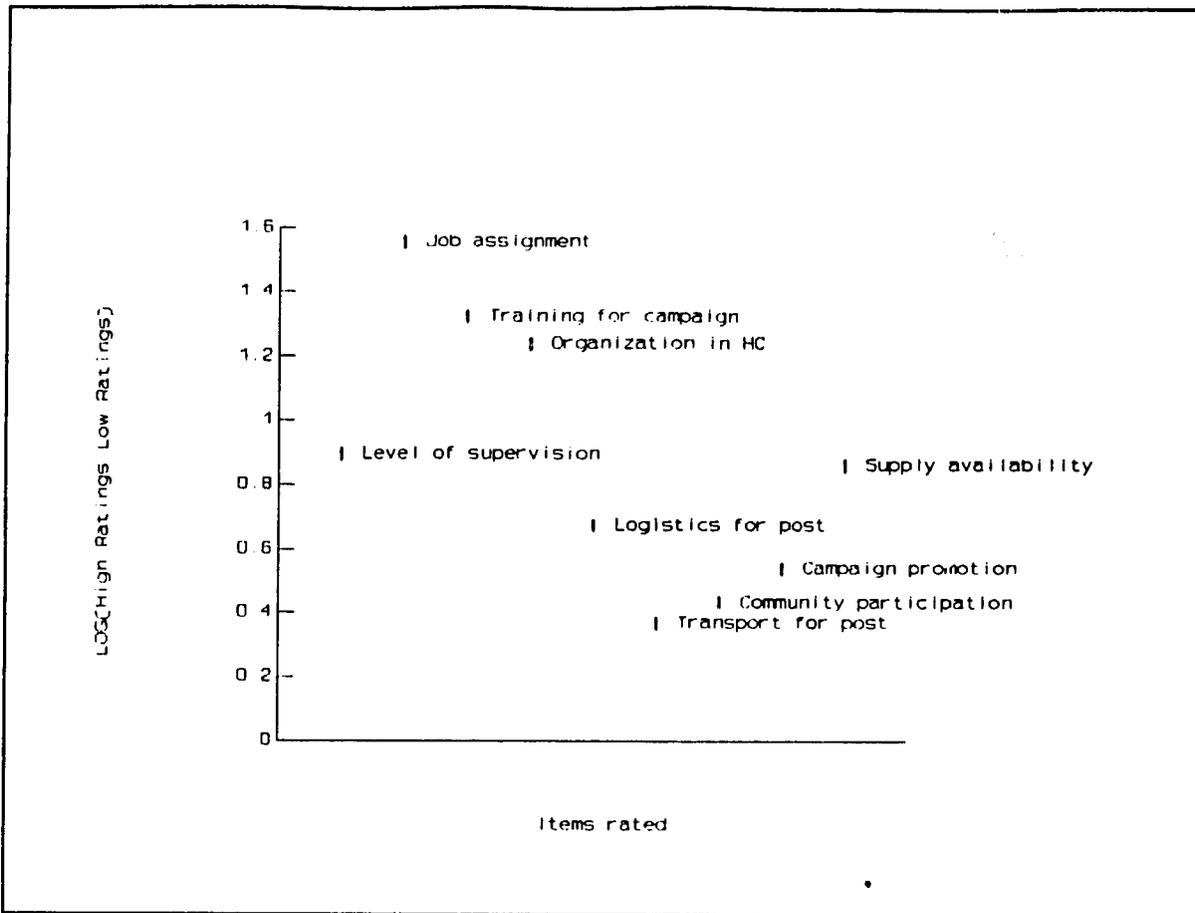


Figure 21

Overall, the group of vaccinators appears satisfied with the job they are doing and the support it receives from the rest of the system. All items measured ended up being positive, which indicates that more group members feel positively about the sub-system under consideration than otherwise.

Nevertheless, the range of values obtained does indicate that a priority ranking exists among these ratings. Vaccinators appear to be quite satisfied with their job assignments, training for the campaign, and the organization of their own health centers. They are significantly less satisfied with campaign promotion, community participation, and the transportation provided, even those these latter still show more positive than negative responses.

Quality of care performance in VAN2/SIMULEX.

Of the original 28 health workers observed during the second day of VAN88, we were able to obtain acceptable SIMULEX sessions from 24. Thus, the following analysis is based on a sample size of 24 auxiliaries. The observations included in this analysis are those made by the primary observers. The same observer/health worker pair was maintained in each of the 24 sets of observations made.

The following pages (Figures 22-30) contain graphical presentations of the overall level of performance of each of the 96 items included in the quality-of-care assessment. These graphs are based on the SIMULEX data only. As we will show subsequently, there is little difference between SIMULEX results and those from DSO in terms of whether a given item was performed adequately or not by the whole group of health workers studied. They are presented solely to augment the observational data previously presented concerning performance of direct services during VAN DAY 1.

The X-axis in each graph is the proportion of observations in which the task was done correctly. The Y-axis gives the number of the item in list in Table 1 and each item is also identified by title. Graphs are grouped by Task Areas. In certain instances, there were too many items in a Task Area to include in a single graph. In those instances, we have divided them into two graphs based on whether or not performance of the given item met our current criteria for acceptability.

The criterion for acceptable performance of an item was that it was done correctly in 70% or more of the times it was observed. Since the number of observations of a given item for a given health worker varied from 2 to 6 depending on the item, the score for each worker was standardized before being used to calculate an overall average score.

Standardization was done by setting a criterion that a worker must have performed a task correctly at least 3 out of 4 times, or the equivalent, in order to be given credit for doing it correctly. Thus, for an item observed only twice or three times, a worker would need to perform it correctly always to get credit. This calculation produced a simple Pass/Fail score for each worker on each item. These scores were then used to calculate the overall performance index: the proportion of workers doing an item correctly out of the total (24) observed.

Each of the following nine pages contains a graph of items covering all or part of a Task Area, followed by notations where appropriate.

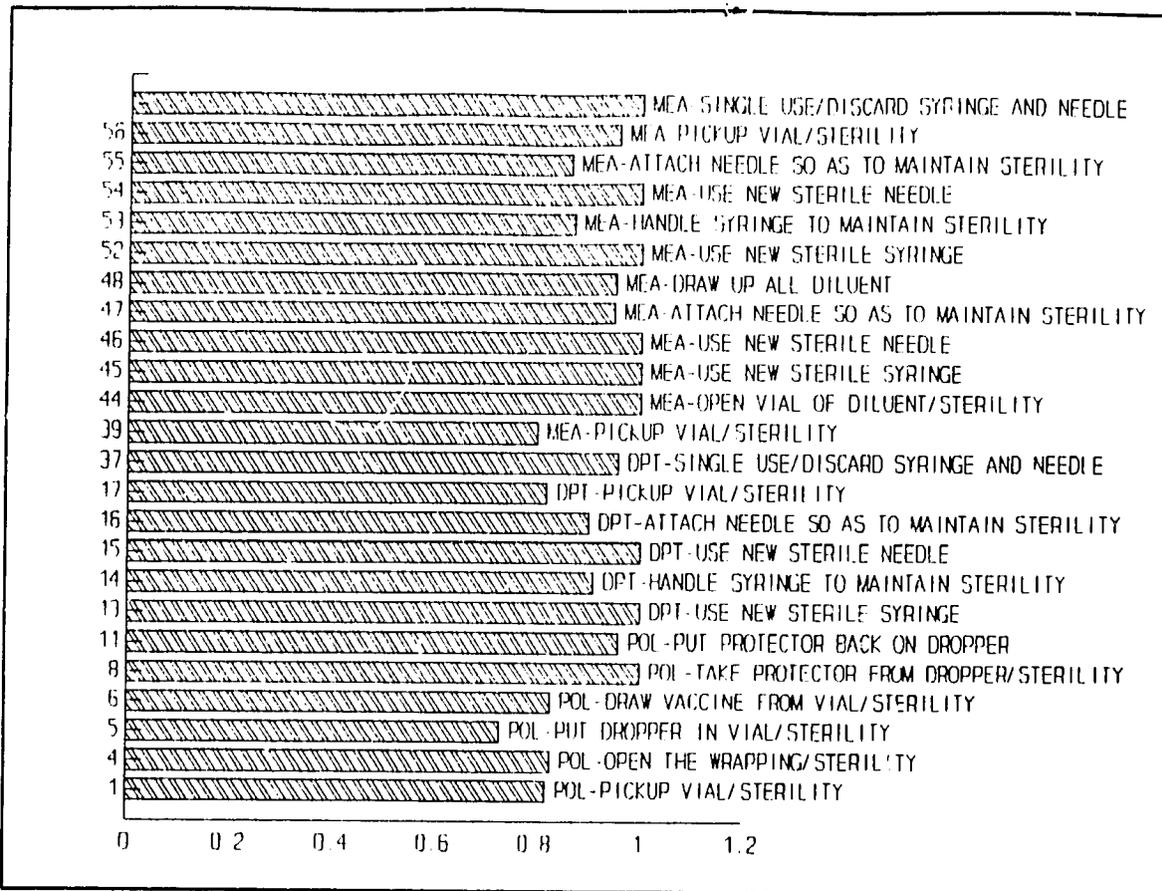


Figure 22. Sterility Maintenance - High-scoring items

Of the 34 items included in Sterility Maintenance, 24 were performed adequately by the current criteria. In general, the handling of polio vaccine and of the syringes/needles for the other two vaccines were done with a high degree of the smoothness and care needed to maintain sterile conditions.

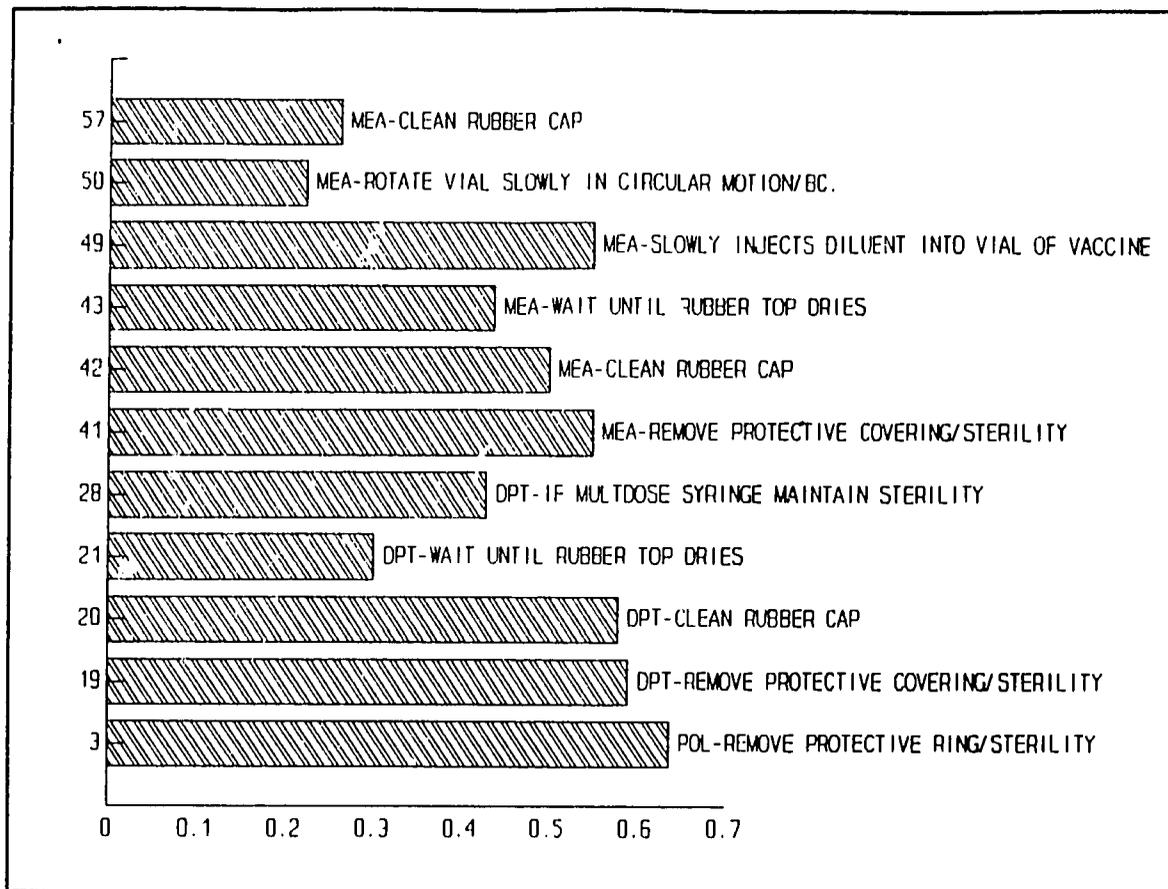


Figure 23. Sterility Maintenance - Low-scoring items

Tasks within the Sterility Maintenance group which were not performed particularly well included most of the steps in handling either the DPT or Measles vaccine vials (NOTE: Item 50 - MEA ROTATE VIAL SLOWLY - has erroneously been included here rather than in Figure 5, below). The opening and cleaning of the rubber top caused particular problems for well over half of the workers observed. Subsequent debriefing indicated that this was an aspect of the process which they did not get to watch or practice very much during EPI training sessions.

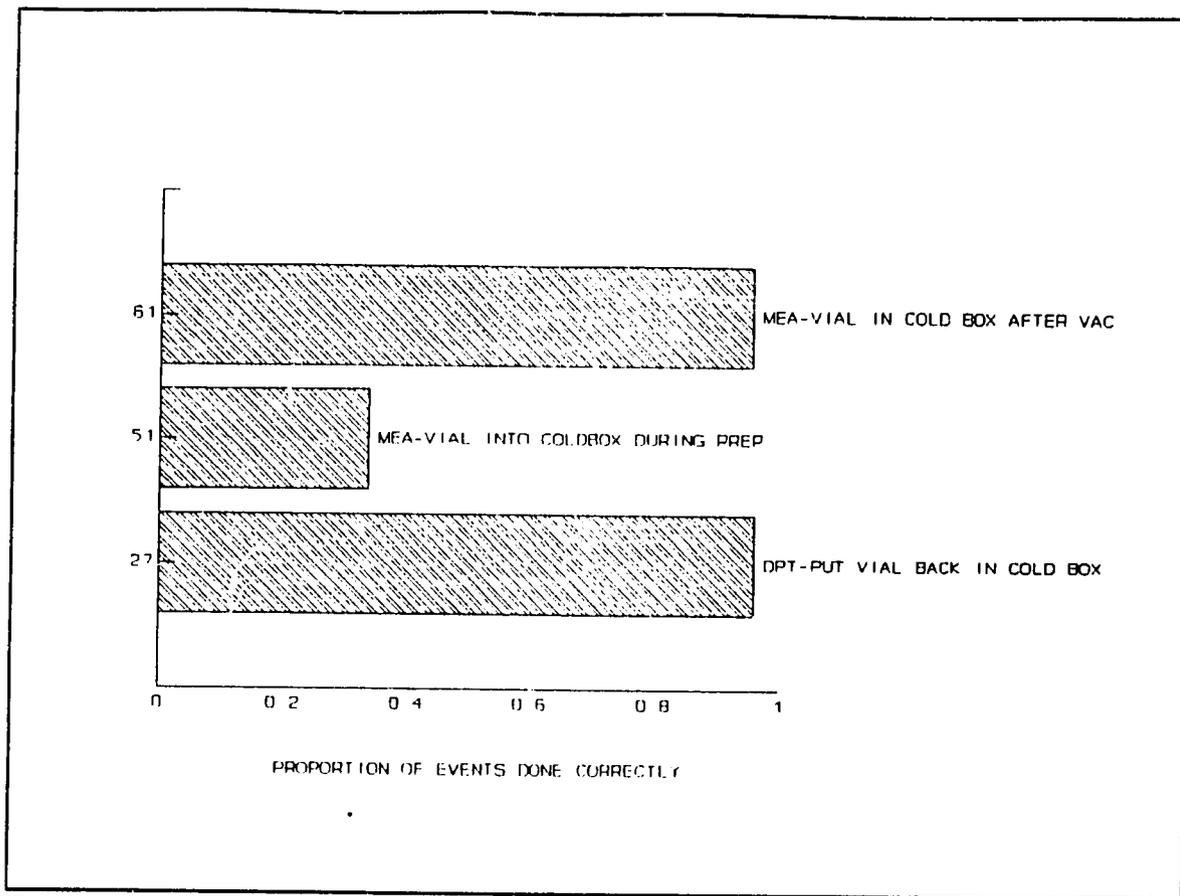


Figure 24. Cold Chain Maintenance items

Cold chain maintenance during the vaccine delivery stage was excellent for both DPT and Measles vaccine. Only one worker in three stored the Measles vaccine in the cold box after preparing it and while he/she was preparing the syringe for the first immunization. When this step is done rapidly, as was usually the case, the time out of the box for the vial was less than 1 minute.

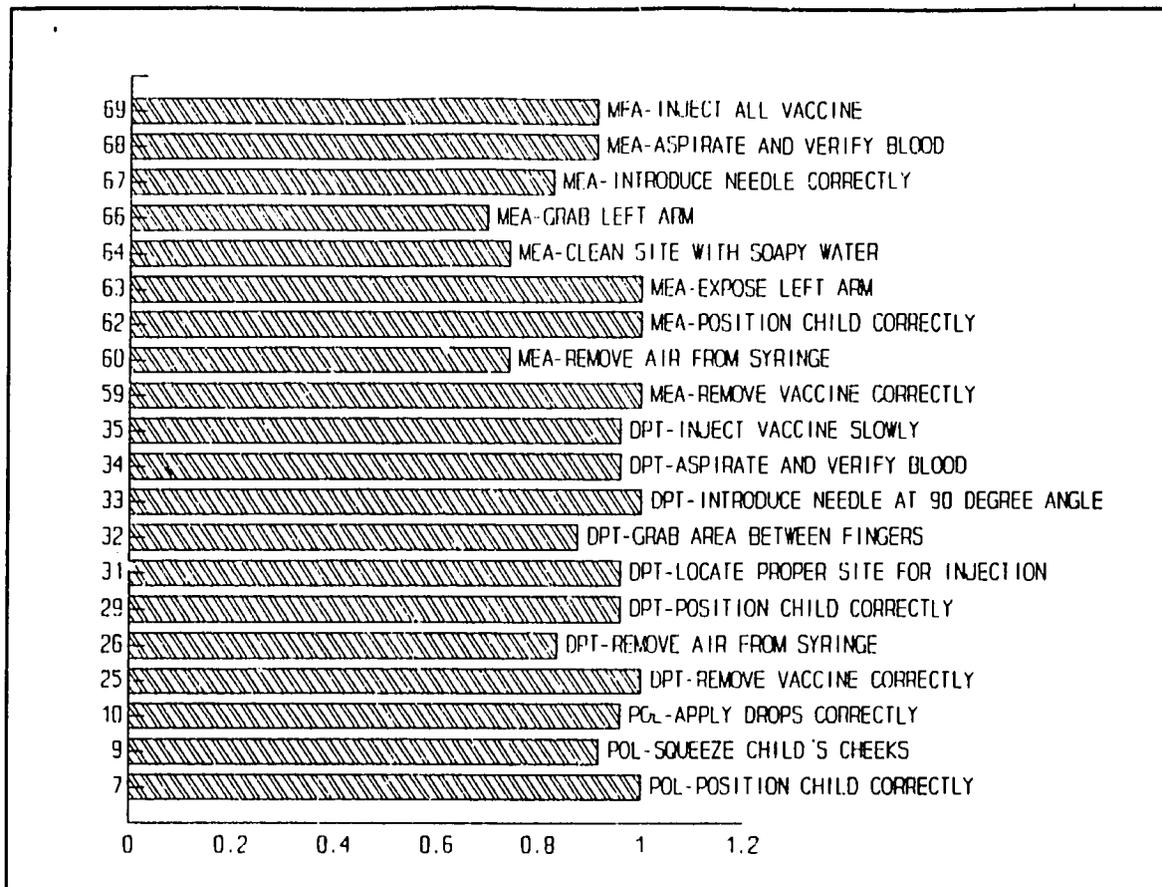


Figure 28. Vaccination Technique - High-scoring items

Good Vaccination Technique was seen in 20 of the 28 items observed. Most of the particular important items (such as introducing the needle at the correct angle in DPT injection, aspirating to verify that a vein has not been entered, etc.) associated with quality performance appear to be done adequately.

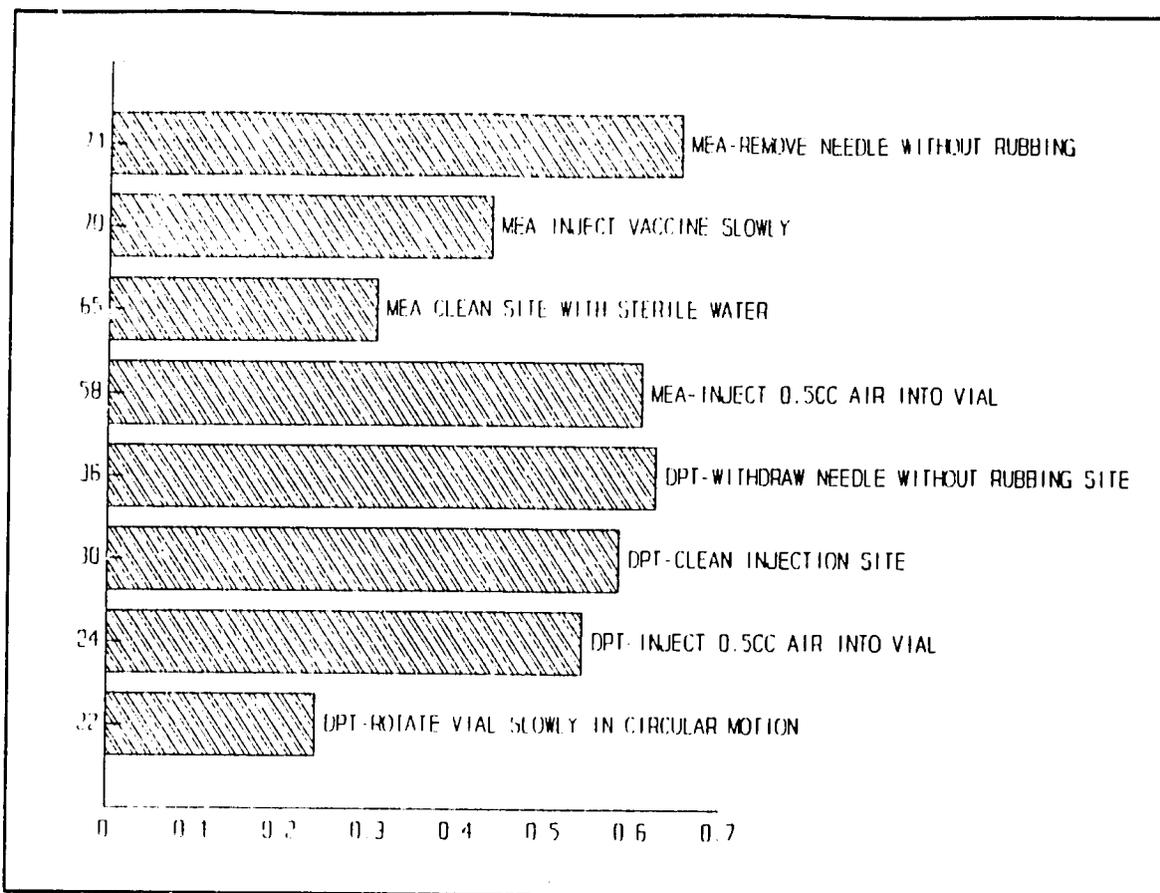


Figure 28. Vaccination Technique - Low-scoring items

The items in Vaccination Technique that did not meet the criterion for adequate performance exhibit a close parallelism between DPT and Measles vaccination. Thus, for both vaccines, problems were encountered with agitating the vials too rapidly and vigorously (NOTE: Item 50 included with Fig. 2 by error), with not injecting air into the vial in order to facilitate withdrawing vaccine, with properly cleaning the site of injection, and with rubbing the injection site after withdrawing the needle.

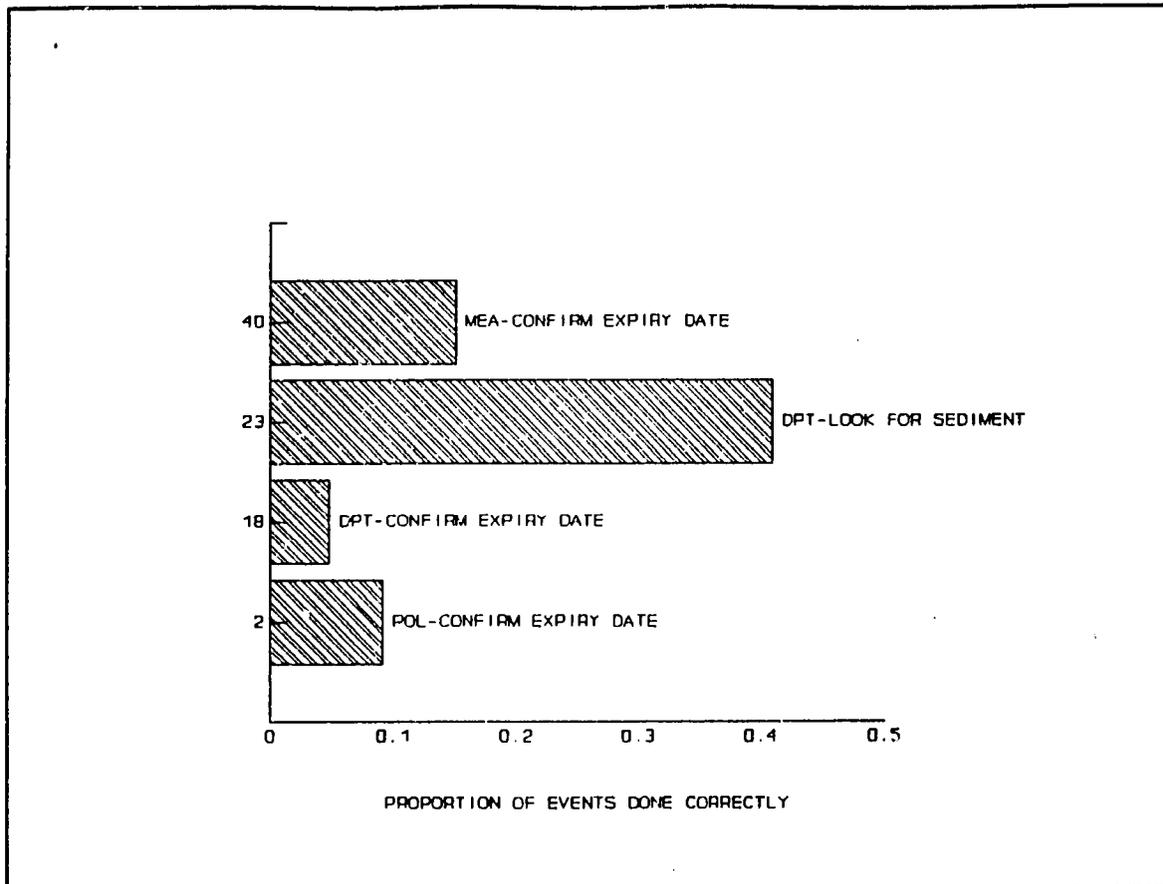


Figure 27. Check Vaccines items

Virtually no one of the health workers studied checked the expiry dates of any of the three vaccines. Only one in three checked the DPT vaccine for sediment prior to using it.

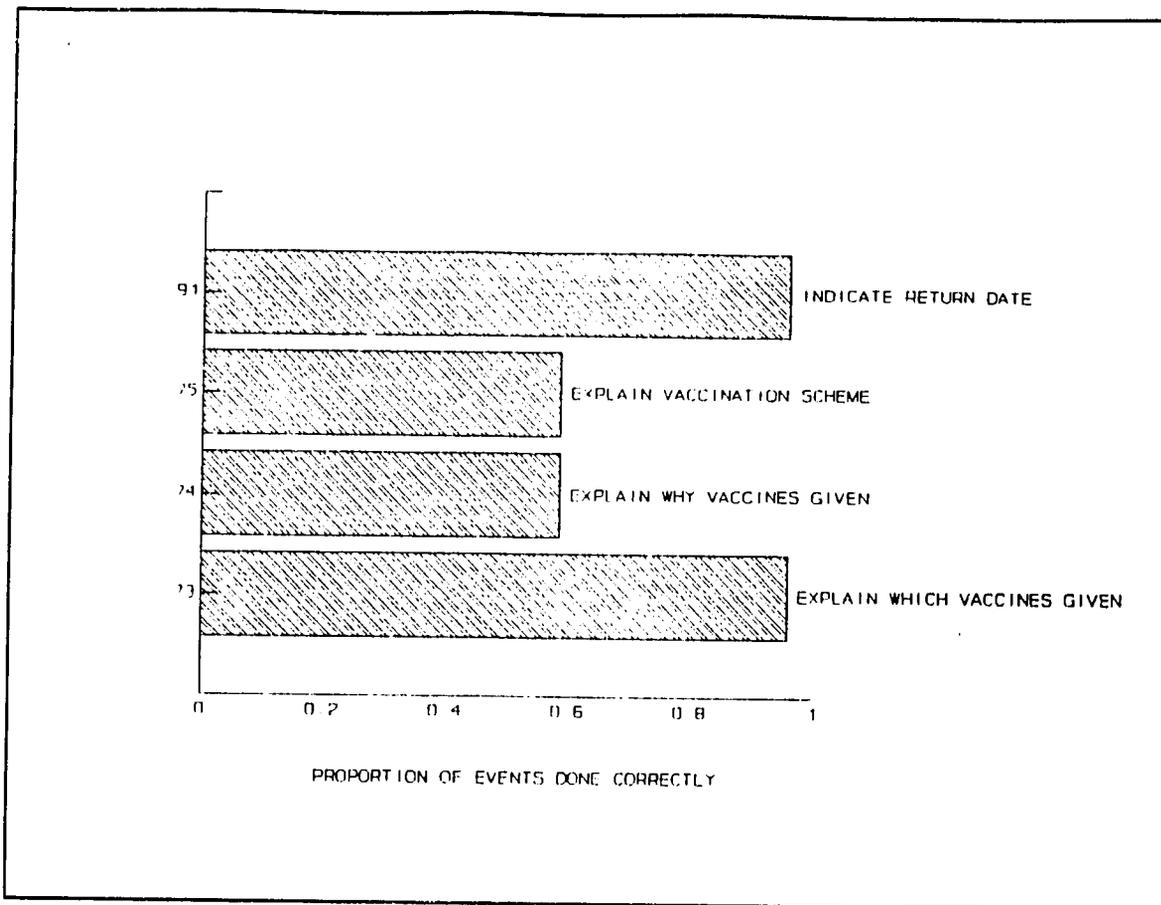


Figure 28. General Educational Message items

Health workers were very brief in their discussion of the immunization process to the "mother" in the SIMULEX (as they were to the real mothers during the day of VAN88). Almost all told the mother what vaccines were given and when to return for the next immunization but only half explained in any detail what immunization was or why the particular vaccines given were used.

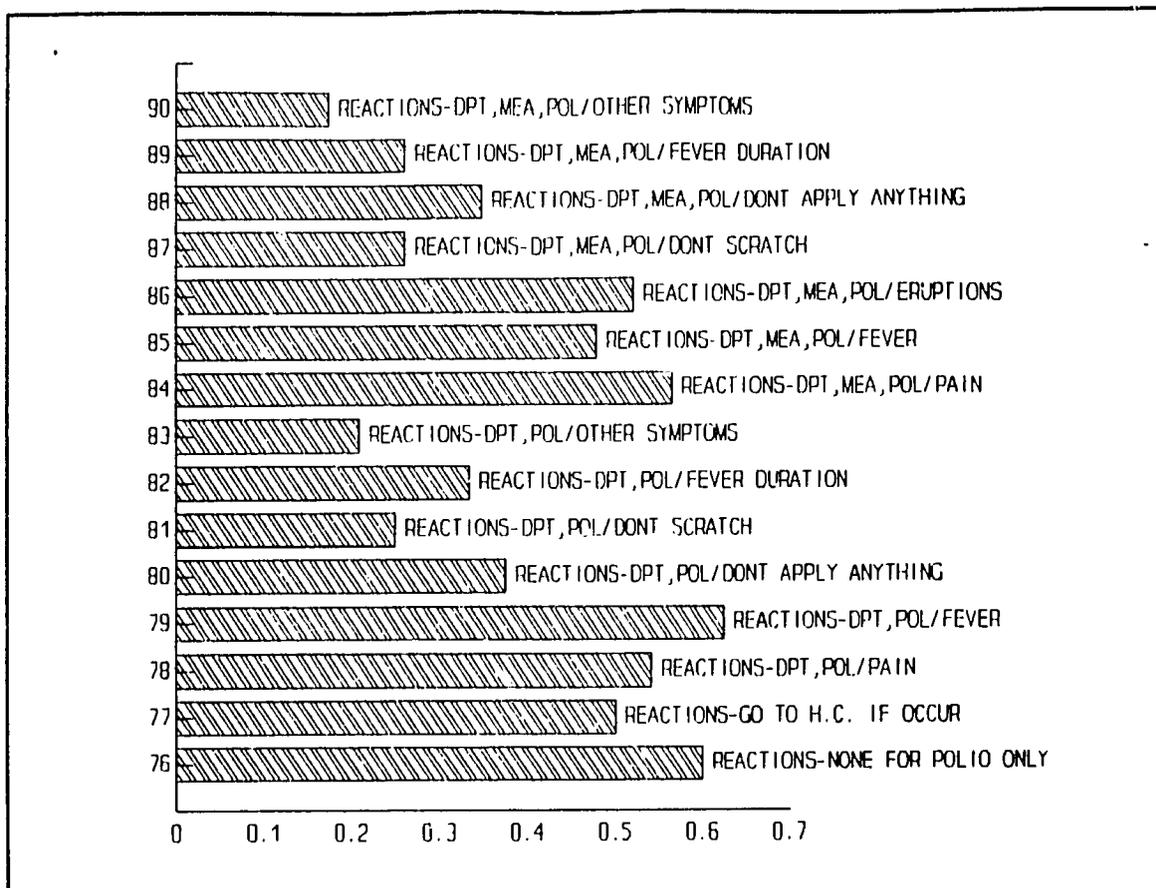


Figure 29. Reactions Messages items

Discussion of specific Reactions to watch for as a result of the particular combination of vaccines given to a child was a task area of completely unacceptable performance. Only 1 of the 15 items surpassed 60% of observed encounters done correctly. In talking to participating health workers afterwards, it became clear that this was an area in which two factors are interacting: a sense of it taking too much time to go over a detailed list of possible reactions with each mother, and a lack of clarity about the precise messages that are to be given in each instance.

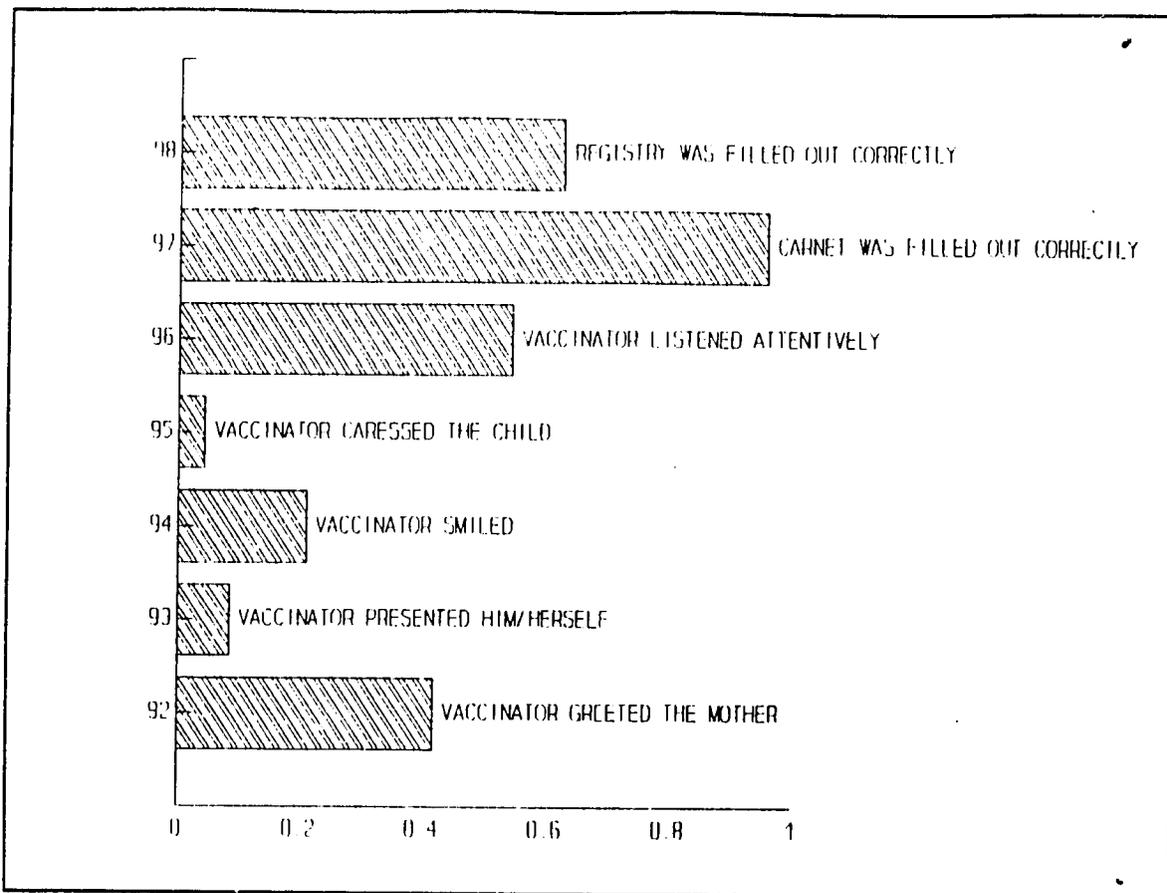


Figure 30. Socioemotional Effort and Record-keeping items

Routine record-keeping was good for the child's carnet but poor for the registry maintained by the health center. The latter was often ignored completely. Comments during debriefing suggested that many health workers may delay complete recording if there is a line of people waiting (as was established in the SIMULEX), trusting to their memories and cursory notes to fill in the blanks afterwards. The DSO data for the same item done during VAN (during which the pressure at most sites was significantly lower than we established for the SIMULEX) showed a correct performance rate of 84%, which supports the comments made during debriefing.

Conclusions

The approach reflected in this report has a number of important advantages for operations-level managers. First, it provides managers with a simple, replicable model for identifying weak areas in service delivery on an individual item basis and, subsequently, on a program (EPI), activity (DPT vaccination), or task grouping (sterile technique) level. Secondly, it provides a basis for comparative evaluations of performance at the level of individual health workers, teams, health centers, or other operational units.

A third advantage of this approach is that, once identified, weaknesses in service delivery in the poorest operational units can be addressed in a positive fashion by enlisting the units with demonstrated best performance as role models or "in-house" consultants to pair with a weaker unit for support. Such a process, depending only on locally available human and material resources promises to be far more efficient and applicable than attempts to bring in outside experts on a temporary basis to offer solutions.

A fourth advantage is that this approach is significantly more sensitive than traditional outcome measurements alone as a method of detect differences in performance. In the current instance, for example, the vaccination coverage data presented in Figs. 1 - 4 suggest a generally adequate level of EPI effort, yet Figs. 5 - 30 clearly show task areas and units whose performance is sufficiently different from the norm (both better and worse) to be noteworthy to the system's managers.

These results were discussed with the PMOH Cono Sur directors in group meetings to determine how best to make use of them in moving to improve system performance. The data were accepted as a potentially valuable tool for targeting training and management support to the HC's and service activities that most seriously need it rather than planning a generalized effort as has been typical of past attempts to improve service delivery.

The general conclusion from this limited systems analysis is that service delivery, of both direct and support services, during VANs is adequate. A simple intervention for future campaigns that would improve the coordination and planning and, thus, reduce the need for crisis management activities to keep the system functioning, would be to provide explicit transportation and communication support to the area and district coordinators during the preparation phase.

Beyond this, the conclusion was to utilize these results to better target the training that is already going on in EPI. As a result, individualized feedback specific to the observations at each health center were prepared and sent to the VAN coordinators prior to the third day of VAN (in October). These feedback reports were utilized by at least 5 of the 14 coordinators in targeting refresher training to their personnel prior to this last day of VAN.

A major innovation we have introduced in methodology is an attempt to get

around the limitations imposed by direct observation of actual patient encounters. Our approach has been to employ simulation exercises (SIMULEX) with standardized vignettes to test the performance of health service delivery personnel in basic care-giving and educational activities. The data obtained from SIMULEX in EPI exercises paralleled closely that obtained from direct observation in the field.

As just shown, Figs. 22-30 (SIMULEX) reveal much the same weaknesses in direct service activities as do Figs. 6-11 (direct observation). Since SIMULEX assessment is done within a non-threatening context in which the exercise is treated as the first stage of a personalized in-service training session, it avoids most, if not all, of the theoretical and practical weaknesses of direct encounter observation.

In any case, these results clearly show that IOC developed for EPI (as is true of those developed for other programs, as well) are applicable to either SIMULEX or direct observation. In both cases, we assume that the subject under observation is aware of that fact and is presenting the observer with behavior that is more appropriately treated as maximal, as opposed to typical, performance.

Nevertheless, these maximal performance data are not interpreted in isolation. The complete battery of instruments now developed (and currently in use for the diarrhea control/ORT program assessment) includes SIMULEX, verbal examinations of content knowledge, checklist-controlled site visits (including record review), interviews with recent users, and confidential questionnaires requesting unit members to rate deviations from the norms in important activities.

Our approach to performance assessment assumes that any significant failure in typical performance will show up in one or more of this battery of instruments. We believe that the battery approach will prove very sensitive for this purpose, and that the evidence to date suggests the SIMULEX merits a key role in that approach.

APPENDIX 1

13. Revise el Carnet y marca al siguiente para el niño:

VACUNA	1a	2a	3a	4a	Mas
POLIO	__/_/_	__/_/_	__/_/_	__/_/_	__/_/_
D.P.T.	__/_/_	__/_/_	__/_/_	__/_/_	__/_/_
SARAMP.	__/_/_	__/_/_	__/_/_	__/_/_	__/_/_
B.C.G.	__/_/_	__/_/_	__/_/_	__/_/_	__/_/_

14. De cuales servicios de salud ha recibido el niño inmunizaciones:

- VAN 84 VAN 85 VAN 86 VAN 87
- P.S. de MINSA C.S. de MINSA Hospital de MINSA
- Policlinico de IPSS/FF.AA. Hospital de IPSS/FF.AA.
- Consultorio Privado Hospital/Clinica Privada

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**HOJA DE OBSERVACION DEL
DIA NACIONAL DE LA VACUNACION 1988**

Fecha: ___/___/___ C.S.: _____

Observador(a): _____

Dirección: _____

Teléfono o Contacto: _____

Formularios en el juego de hojas:

	Paginas c/u	Numero c/u	Numero de paginas
1. Relación de los Puestos de Vacunación	1	1	1
2. Observaciones en el C.S. - mañana	4	1	4
3. Observaciones en los Puestos de Vacunac.			
a. Puesto	5	5 + 5	50
b. Centro de Salud	7	1 + 1	14
4. Encuesta al Usuario	2	24	48
5. Observaciones en el C.S. - tarde			
a. Hoja de sumario	1	1	1
b. Registro de no Vacunados	1	26	26
6. Encuesta al Vacunadores	6	26	156

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1. Relación de los Puestos de Vacunación

No.	Nombre	Dirección
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		

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2. Observaciones en la mañana en el Centro de Salud

2.1. Recursos materiales claves

Puesto	<u>Polio</u>		<u>DPT</u>		Gotero	<u>Sarampion</u>		Carnés	FormA	Total
	<u>Frx20</u>	<u>Frx20</u>	<u>Frx1</u>	<u>Frx10</u>		<u>Jer2cc</u>	<u>Agu22G</u>			
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
11										
12										
13										
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16										
17										
18										
19										
20										
21										
22										

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2.2. Llegado a los C.S. y salida para instalación de Puestos

A que hora deben: a. llegar _____ b. salir _____

c. Coordinador del Centro llega:

No.	Llega	Que hora Sale	No. de Personas
01			___ a Pie ___ por Carro
02			___ a Pie ___ por Carro
03			___ a Pie ___ por Carro
04			___ a Pie ___ por Carro
05			___ a Pie ___ por Carro
06			___ a Pie ___ por Carro
07			___ a Pie ___ por Carro
08			___ a Pie ___ por Carro
09			___ a Pie ___ por Carro
10			___ a Pie ___ por Carro
11			___ a Pie ___ por Carro
12			___ a Pie ___ por Carro
13			___ a Pie ___ por Carro
14			___ a Pie ___ por Carro
15			___ a Pie ___ por Carro
16			___ a Pie ___ por Carro
17			___ a Pie ___ por Carro
18			___ a Pie ___ por Carro
19			___ a Pie ___ por Carro
20			___ a Pie ___ por Carro
21			___ a Pie ___ por Carro

2.3. Observaciones en el Centro de Salud

a. Cadena de Frio en el Centro de Salud

- | | | |
|---|----|----|
| 1) Hay una Refrigeradora en funcionamiento para vacunas? | SI | NO |
| ... si la respuesta es NO pase á Item No. 3 ...
... si la respuesta es SI continúe ... | | |
| 2) Esta localizada a la sombra y alejada de toda fuente de calor? | SI | NO |
| 3) Esta a 15 cm de la pared? | SI | NO |
| 4) Esta perfectamente horizontal (probar con un vaso lleno de agua)? | SI | NO |
| 5) Existen paquetes de hielo en el congelador? | SI | NO |
| 6) Existen botellas de agua en los espacios libres del refrigeradora? | SI | NO |
| 7) Los paquetes de hielo y botellas de agua estan colocados con 2.5-5 cm entre ellos y a igual distancia de los paredes del ref.? | SI | NO |
| 8) Mantiene las frascos de las vacunas en bandejas, sobre las estantes centrales de la ref.? | SI | NO |
| 9) Hay un termómetro dentro de la refrigeradora? | SI | NO |
| 10) El termómetro está en la zona central de la ref.? | SI | NO |
| 11) Está la temperatura entre el rango de 0-8C? | SI | NO |
| 12) Hay un registro de la temperatura correctamente mantenido con datos precisos? | SI | NO |

2.3.b. Incidentes que debe ser mencionado (porque son buenos o malos)

C.S.: _____

Hora	Persona Involucrada	Bueno o Malo?	Descripción
------	---------------------	------------------	-------------

6

3. Observaciones en el Puesto de Vacunación

3.1. C.S.: _____ 3.2. No. de Puesto: _____ 3.3. Hora: a. ____:____ Comenza b. ____:____ Termina

Está ofreciendo vacunas de BCG y anit-Tétano? SI NO

(... si la respuesta es SI, incluye página 5 de esta hoja ...)

3.4. En el momento de llegada del observador:

No. de: a. _____ b. _____ c. _____ d. _____
 ORIENTADORES VACUNADORES ANOTADORES OTROS

e. Voluntarios de la comunidad: _____

f. No. de niños en el Puesto: _____

3.5. Trabajadores:

Nombre	Cargo	presup.	Function

3.6. Observaciones

3.6.a. Cadena de Frio

- | | | |
|---|----|----|
| 1) Hay hielo/bolsas suficiente en la caja termica? | SI | NO |
| 2) La caja está en buenas condiciones para mantener su contenido frio? | SI | NO |
| 3) Las vacunas estan aislados (no en contacto directo con el hielo/bolsas)? | SI | NO |
| 4) Desde hace cuantas horas estan las bolsas (o hielo) sin rememplazarlas? | <4 | 4+ |

3.6.b. Materiales ... hay suficiente para los usuarios actuales (en el Puesto) y 3 más?

Jeringas:	1) 1cc c/a	SI	NO	Solvente:	10) para Saramp	SI	NO
	2) 2 cc	SI	NO		11) para BCG	SI	NO
	3) 5/10 cc	SI	NO	Otros:	12) Carnets	SI	NO
Agujas:	4) 22/23G	SI	NO		13) Formula "A"	SI	NO
	5) 18/20 G	SI	NO		14) Algodon	SI	NO
					15) Alcohol	SI	NO
					16) Jabon liquido	SI	NO
Vacunas:	6) Polio	SI	NO				
	7) DPT	SI	NO				
	8) Sarampion	SI	NO				
	9) BCG	SI	NO				

3.6.c. Otros Indicadores de Performance

- | | | |
|--|----|----|
| 1) Estan los frascos abiertos de vacunas tapados para mantener su condición esteril? | SI | NO |
| 2) Estan los frascos abiertos de vacunas guardados para conservar la cadena de frio? | SI | NO |
| 3) La fecha de expiración de toda las vacunas es posterior a la actual? | SI | NO |

El número de jeringas usadas: _____ 4) 1cc 5) 2cc

El número de dosis registrados: _____ 6) DPT 7) BCG 8) Saramp. 9) Polio

10) El número de carnés distribuidos: _____

- | | | |
|---|----|----|
| 11) Hay un Manual del Personal de Vacunación? | SI | NO |
| 12) Hay materiales educativos (esquema de vacunación, reacciones secundarias, fecha de regresar, etc.)? | SI | NO |
| 13) Hay actividades de promoción entre los vecinos? | SI | NO |
| 14) Visitó el supervisor el puesto? | SI | NO |

15) Cuantas veces hasta el momento: _____

Que hizo?

- 16) __Chequea recursos
- 17) __Observa desempeño
- 18) __Revisa registro
- 19) __Habla con usuarios
- 20) __Participa en prestar servicios

Que tipo de interacción?

- 21) __Alabanza
- 22) __Critica
- 23) __Enseñanza
- 24) __Demostracion

3.7. Observaciones de la prestación del servicio

	Niño 1		Niño 2	
a. Hora cuando empieza:	—:—		—:—	
b. Edad del niño:	_____		_____	
c. Ya tiene carné?	SI	NO	SI	NO
El orient/vacunador dice que:				
d. ...hay contraindicaciones?	SI	NO	SI	NO
e. Lo dicho fue correcto?	si	no	si	no
f. ...algunas vacunas no son necesarias	SI	NO	SI	NO
g. Lo dicho fue correcto?	si	no	si	no
h. POLIO- Recibe?	SI	NO	SI	NO
Preparación:				
1) Coge el frasco verticalmente por el cuello?	si	no	si	no
2) Quita el anillo metálico y el tapón de jebes sin tocar el borde del frasco?	si	no	si	no
3) Abre la envoltura del gotero cogiéndolo por el protector?	si	no	si	no
4) Coloca el gotero en la boca del frasco cogido por el cuello y retira la envoltura?	si	no	si	no
5) Coloca la vacuna preparada en la caja térmica auxiliar?	si	no	si	no
Aplicación:				
6) Coloca al:				
- Lactante en decúbito dorsal sobre la falda de su madre?	si	no	si	no
- Al niño mayor sentado sobre la falda de su madre?				
7) Saca el protector de gotero?	si	no	si	no
8) Coge al niño de los carillos, abriéndole la boca?	si	no	si	no
9) Aplica 2 gotas en la boca evitando contacto con el gotero?	si	no	si	no
10) Coloca el protector al gotero y lo deja en la caja térmica?	si	no	si	no
i. DPT- Recibe?	SI	NO	SI	NO
Preparación:				
1) Coge el frasco por el cuello?	si	no	si	no
2) Retira el sello de protección del frasco sin tocar el jebes?	si	no	si	no
3) Limpia con alcohol y/o agua estéril y espera que evapore?	si	no	si	no
4) Agita lentamente en forma circular hasta que la solución sea homogénea?	si	no	si	no
5) Desecha el frasco que sedimente?	si	no	si	no

6) Saca la jeringa de su envoltura?	si	no	si	no
7) Asegura la aguja a la jeringa?	si	no	si	no
8) Inyecta 0.5cc de aire al frasco?	si	no	si	no
9) Extrae 0.5cc de vacuna del frasco?	si	no	si	no
10) Saca el aire del jeringa?	si	no	si	no
11) Coloca el frasco en la caja térmica?	si	no	si	no

Aplicación:

12) Coloca al niño en decúbito ventral sobre la falda de su madre?	si	no	si	no
13) Limpia con agua jabonosa y luego agua estéril la zona de aplicación y seca con algodón?	si	no	si	no
o Limpia con alcohol y deja evaporar?				
14) Ubica la inyección en el cuadrante superior exterior de la nalga?	si	no	si	no
15) Coge la zona de aplicación?	si	no	si	no
16) Introduce en angulo recto la jeringa?	si	no	si	no
16) Aspira y verifica si no sale sangre?	si	no	si	no
17) Inyecta 0.5cc de vacuna	si	no	si	no
18) Cuando retira la jeringa, presiona sin sobar la zona de aplicación con algodón seco?	si	no	si	no

j. SARAMPION - Recibe?

SI NO SI NO

Preparación:

1) Coge el frasco verticalmente por el cuello?	si	no	si	no
2) Retira el sello protector?	si	no	si	no
3) Limpia el jebes con alcohol y espera hasta que evapora?	si	no	si	no
4) Rompe la ampolla de diluyente?	si	no	si	no
5) Saca jeringa de 3cc de envoltura?	si	no	si	no
6) Carga el diluyente en la jeringa?	si	no	si	no
7) Inyecta el diluyente lentamente por la pared del frasco?	si	no	si	no
8) Agita lentamente el frasco en forma circular hasta que se diluya completamente (cambia de color a rosado)?	si	no	si	no
9) Coloca el frasco de la vacuna en caja térmica auxiliar?	si	no	si	no

Aplicación:

10) Coloca al niño sentado sobre falda de su madre?	si	no	si	no
11) Le descubre su brazo izquierdo?	si	no	si	no
12) Limpia con agua jabonosa el tercer medio del brazo izquierdo?	si	no	si	no
13) Limpia con agua estéril y seca con torunda de algodón estéril?	si	no	si	no
14) Limpia el jebes del frasco con agua estéril?	si	no	si	no
15) Coge la jeringa de 1cc de su envoltura?	si	no	si	no
16) Inyecta 0.5cc de aire cogido por el cuello?	si	no	si	no
17) Aspira 0.5cc de vacuna?	si	no	si	no
18) Coge el tercer medio del brazo izquierdo formando pliegue?	si	no	si	no

19) Introduce la aguja en ángulo del 45 grado con el bisel hacia arriba (subcutánea)?	si	no		si	no
20) Verifica que no sale sangre?	si	no		si	no
21) Inyecta 0.5cc de vacuna?	si	no		si	no
22) Inyecta la vacuna lentamente?	si	no		si	no
23) Cuando retira la jeringa, presiona la zona con algodón seco sin frotar?	si	no		si	no

Alguien del equipo explica:

k. ... cuales vacunas se aplican?	SI	NO		SI	NO	
l. ... las razones?	SI	NO		SI	NO	
m. ... la esquema de vacunaciones?	SI	NO		SI	NO	
n. ... reacciones o cuidados?	SI	NO		SI	NO	
1) Antipolio-ninguna?	si	no	x	si	no	x
2) DPT-dolor local?	si	no	x	si	no	x
3) DPT-fiebre en 4-12 horas?	si	no	x	si	no	x
4) Saramp-fiebre en 7-10 días?	si	no	x	si	no	x
5) Saramp-erupción 7-10 días?	si	no	x	si	no	x
6) Dolor local - no aplicar nada?	si	no	x	si	no	x
7) Fiebre dura - llevar al C.S.?	si	no	x	si	no	x
8) No rascado en zona de inyección?	si	no	x	si	no	x
n. ... indica la fecha de regresar?	SI	NO	X	SI	NO	X
o. Hora cuando termina:	___:___			___:___		

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8. Encuesta para Vacunadores

6.01. Puesto de Vacunación: _____ 6.02. Centro de Salud: _____

HISTORIA PERSONAL

6.03. Edad: ___ años 6.04. Sexo: M F 6.05. Cargo Presup.: _____

6.06. Tiempo de servicio en el MINSA: _____ años

6.07. Ha participado en otras campañas de vacunación? SI NO

6.07a. Si la respuesta es SI, cuantos veces: 1 2 3 4 5 >5

6.08. Recibio el último entrenamiento sobre vacunaciones antes de esta campaña hasta el ___/___/___ (fecha).

POR FAVOR, CONTESTE LAS PREGUNTAS SIGUIENTES PARA ESTA CAMPANA:

6.09. He recibido entrenamiento sobre:

- ___ Aplicación de vacunas
- ___ Contraindicaciones para su aplicación
- ___ Complicaciones de su uso
- ___ Indicaciones al familiar despues de la vacuna
- ___ Conservación de las vacunas
- ___ Cadena de frio

6.10. El tiempo dedicado á este entrenamiento fue: _____ horas en la semana antes del día del Van.

6.11. Las metodologias empleadas en el entrenamiento fueron:

- ___ Exposiciones/Dialogo
- ___ Trabajo del Grupo/Seminarios
- ___ Preguntas & Respuestas
- ___ Sociodramas - como observador
- ___ Sociodramas - como participante
- ___ Revisión del Manual

6.12. Cuan facil le resulta a Ud. saber si esta haciendo su labor correctamente?

MUY DIFICIL DIFICIL FACIL BASTANTE FACIL MUY FACIL

6.13. En que proporcion le da su trabajo información referente a cuan bien lo viene realizando, sin tener en cuenta comentarios o sugerencias de la gente a la que atiende o su supervisor?

NINGUNA POCA ALGUNA BASTANTE MUCHA
INFORMACION INFORMACION INFORMACION INFORMACION INFORMACION

6.14. De cuanta gente que Ud. atiende en la campaña recibe Ud. comentarios o sugerencias?

NINGUNA DE POCAS DE LA DE LA DE CASI
PERSONAS MITAD MAYORIA TODO EL MUNDO

6.15. Cuan recargado fue su trabajo durante la campaña

RELATIVAMENTE MUY MUY
MUY HOLGADA HOLGADA NORMAL RECARGADO RECARGADA

6.16. En que medida conversó su(s) supervisor(es) con Ud. en relación a su desempeño durante esta campaña?

SOLO LO MENCIONO
NINGUNA
DISCUSION

DISCUTIO
EN TERMINOS
GENERALES

LO DISCUTIO
ALGUNAS COSAS
ESPECIFICAS

LO DISCUTIO MUCHO
BASTANTE EN
TERMINOS CLAROS

EN TERMINOS CONCRETOS
Y MUY CLAROS

6.17. Cuan satisfecho(a) se siente Ud. en relacion a los siguientes puntos:

MUY
DESCONTENTO

BASTANTE
DESCONTENTO

UN POCO
DESCONTENTO

BASTANTE MUY
CONTENTO CONTENTO

- a. Su cargo en la campaña
- b. El nivel de supervisión
- c. El entrenamiento para la campaña
- d. La disponibilidad de materiales escritos (Manuales, posters etc)
- e. La organización en su Centro
- f. El apoyo logístico para su Puesto
- g. La movilidad disponible para su Puesto
- h. El apoyo de la comunidad a la campaña
- i. La promoción de la campaña en su zona de responsabilidad

**HOJA DE OBSERVACION DEL
II DIA NACIONAL DE LA VACUNACION 1988**

Fecha: ___/___/___

C.S. - Nombre: _____ Numero: ___

Observadora - Nombre: _____ Numero: ___

Dirección: _____

Teléfono o Contacto: _____

Nombre y Dirección del Puesto de Vacunación: _____

Vacunadora - Nombre: _____ Numero: ___

0. OBSERVACIONES GLOBALES

- | | | |
|--|----|----|
| 1) Hay un Manual para el Personal de Vacunación? | no | si |
| 2) Hay materiales educativos (esquema de vacunación, reacciones secundarias, fecha de regresar, etc.)? | no | si |
| 3) Hay actividades de propaganda entre la población? | no | si |

1. OBSERVACIONES EN EL PUESTO

a. Cadena de frío

Si usa refrigeradora pase a 5

1) Hay hielo/bolsas suficiente en las cajas térmicas?	no	si	N/A	001:	---
2) Las cajas están en buenas condiciones para mantener su contenido frío?	no	si	N/A	002:	---
3) Las vacunas están aisladas (no en contacto directo con el hielo/bolsas)?	no	si	N/A	003:	---
4) Desde hace cuántas horas están las bolsas (o hielo) sin reemplazarlas?	≥4	<4	N/A	004:	---
Pase a b.					
5) Hay una refrigeradora en funcionamiento para vacunas?	no	si	N/A	005:	---
Si la respuesta es NO pase a b.					
6) Esta localizada a la sombra y alejada de toda fuente de calor?	no	si	N/A	006:	---
7) Esta a 15 cm de la pared?	no	si	N/A	007:	---
8) Esta perfectamente horizontal (probar con un vaso lleno de agua)?	no	si	N/A	008:	---
9) Existen paquetes de hielo en el congelador?	no	si	N/A	009:	---
10) Existen botellas de agua en los espacios libres de la refrigeradora?	no	si	N/A	010:	---
11) Los paquetes de hielo y botellas de agua están colocados con 2.5-5 cm entre ellos y a igual distancia de los paredes de la refrigeradora?	no	si	N/A	011:	---
12) Mantiene los frascos de las vacunas en bandejas, sobre los estantes centrales de la refrigeradora?	no	si	N/A	012:	---
13) Hay un termómetro dentro de la refrigeradora?	no	si	N/A	013:	---
14) El termómetro está en la zona central de la ref.?	no	si	N/A	014:	---
15) Está la temperatura entre el rango de 0-8C?	no	si	N/A	015:	---
16) Hay un registro de temperatura correctamente mantenido con datos precisos?	no	si	N/A	016:	---

Materiales para vacunación

Hay suficiente para los usuarios actuales y 3 más:

Jeringas:	1) 1cc c/a	no	si	N/A	017:	---
	2) 2/3 cc	no	si	N/A	018:	---
	3) 5/10 cc	no	si	N/A	019:	---
Agujas:	4) 22/23G	no	si	N/A	020:	---
	5) 18/20 G	no	si	N/A	021:	---
Vacunas:	6) Polio	no	si	N/A	022:	---
	7) DPT	no	si	N/A	023:	---
	8) Sarampion	no	si	N/A	024:	---
Solvente:	10) para Saramp	no	si	N/A	025:	---
Otros:	12) Carnets	no	si	N/A	026:	---
	13) Formulario "A"	no	si	N/A	027:	---
	14) Algodon	no	si	N/A	028:	---
	15) Alcohol	no	si	N/A	029:	---
	16) Jabon	no	si	N/A	030:	---
	17) Agua estéril	no	si	N/A	031:	---

Aplicación (Folio):		NO	SI	
7)	Coloca al lactante en decúbito dorsal sobre la falda de su madre - o - al niño mayor sentado sobre la falda de su madre?	no	si	N/A
8)	Saca el protector de gotero?	no	si	N/A
9)	Coge al niño de los carillos, abriéndole la boca?	no	si	N/A
10)	Aplica 2 gotas en la boca evitando contacto con el gotero?	no	si	N/A
11)	Coloca el protector al gotero y lo deja en la caja térmica?	no	si	N/A
g. DPT- Recibe?		NO	SI	
Preparación (DPT):				
1)	Usa una jeringa para dosis múltiple? (Si usa una jeringa múltiple ya llena pase a 16)	no	si	N/A
2)	Saca una jeringa nueva de su envoltura?	no	si	N/A
3)	Mantiene la esterilidad de la jeringa?	no	si	N/A
4)	Usa una aguja nueva en su envoltura?	no	si	N/A
5)	Mantiene la esterilidad cuando asegura la aguja a la jeringa?	no	si	N/A
6)	Coge el frasco por el cuello?	no	si	N/A
7)	Si es el primer dosis, confirma el nombre y la fecha de expiración?	no	si	N/A
8)	Retira el sello de protección sin tocar el jabe?	no	si	N/A
9)	Limpia el jabe con alcohol y/o agua estéril a) Si si, espera hasta que evapore?	no	si	N/A
10)	Agita lentamente en forma circular hasta que la solución sea homogénea?	no	si	N/A
11)	Mira si hay sedimento en el frasco?	no	si	N/A
12)	Inyecta aire al frasco?	no	si	N/A
13)	Extrae (1 dosis=0.5cc; multi dosis=2.5cc) de vacuna del frasco?	no	si	N/A
14)	Saca el aire de la jeringa?	no	si	N/A
15)	Si queda vacuna coloca el frasco en la caja térmica auxiliar? Solo para jeringa múltiple ya llena:	no	si	N/A
16)	Mantiene la esterilidad de la jeringa y aguja?	no	si	N/A
Aplicación (DPT):				
17)	Coloca al niño en decúbito ventral sobre la falda de su madre?	no	si	N/A
18)	Limpia con agua jabonosa y luego agua estéril la zona de aplicación y seca con algodón - o - limpia con alcohol y deja evaporar?	no	si	N/A
19)	Ubica la inyección en el cuadrante superior exterior de la nalga?	no	si	N/A
20)	Coge la zona de aplicación?	no	si	N/A
21)	Introduce en ángulo recto la aguja?	no	si	N/A
22)	Aspira y verifica si no sale sangre?	no	si	N/A
23)	Verifica que inyecta 0.5cc de vacuna?	no	si	N/A
24)	Cuando retira la jeringa, presiona sin sobar la zona de aplicación con algodón seco?	no	si	N/A
Cuidados con la jeringa (DPT):				
25)	Si es de uso único, la descartó? - o - Si es de uso múltiple ...	no	si	NA
26)	cambio inmediatamente la aguja usada?	no	si	N/A
27)	mantiene la esterilidad de jeringa y aguja nueva?	no	si	N/A
28)	coloca la jeringa en la caja auxiliar?	no	si	N/A
h. SARAMPION - Recibe?		NO	SI	
Preparación (Sarampion):				
1)	Usa una jeringa con dosis múltiple? (Si usa una jeringa múltiple ya llena pase a 24) (Si el frasco ya está preparado pase a 14) Preparación del frasco:	no	si	N/A
2)	Coge el frasco verticalmente por el cuello?	no	si	N/A
3)	Confirma el nombre y la fecha de expiración?	no	si	N/A
4)	Retira el sello protector sin tocar el jabe?	no	si	N/A
5)	Limpia el jabe con agua estéril o con alcohol? a) Si si, espera hasta que evapore?	no	si	N/A
6)	Rompe la ampolla de diluyente?	no	si	N/A
7)	Saca jeringa de 3cc (o 10cc) de envoltura?	no	si	N/A
8)	Usa una aguja nueva en su envoltura?	no	si	N/A
9)	Mantiene la esterilidad cuando asegura la aguja a la jeringa?	no	si	N/A

- 10) Carga todo el diluyente del frasco en la jeringa? no si N/A
- 11) Inyecta el diluyente lentamente por la pared del frasco? no si N/A
- 12) Agita lentamente el frasco en forma circular hasta que se diluya completamente (cambia de color a rosado)? no si N/A
- 13) Si no pasa directamente a preparar la jeringa ... coloca algodón estéril sobre el jabe y coloca el frasco en la caja térmica auxiliar? no si N/A

Preparación de la jeringa (Sarapión):

- 14) Saca una jeringa nueva de su envoltura? no si N/A
- 15) Mantiene la esterilidad de la jeringa? no si N/A
- 16) Usa una aguja nueva en su envoltura? no si N/A
- 17) Mantiene la esterilidad cuando asegura la aguja a la jeringa? no si N/A
- 18) Coge el frasco por el cuello? no si N/A
- 19) Limpia el jabe con agua estéril (no usa alcohol)? no si N/A
- 20) Inyecta aire al frasco? no si N/A
- 21) Extrae (1 dosis=0.5cc; multi dosis=2.5cc) de vacuna del frasco? no si N/A
- 22) Saca el aire de la jeringa? no si N/A
- 23) Si queda vacuna coloca el frasco en la caja térmica auxiliar? no si N/A

Solo para jeringa múltiple ya llenar:

- 24) Mantiene la esterilidad de la jeringa y aguja? no si N/A

Aplicación (Sarapión):

- 25) Coloca al niño sentado sobre la falda de su madre? no si N/A
- 26) Le descubre su brazo izquierdo? no si N/A
- 27) Limpia con agua jabonosa el tercio medio del brazo izquierdo? no si N/A
- 28) Limpia con agua estéril y seca con torunda de algodón estéril? no si N/A
- 29) Coge el tercer medio del brazo izquierdo formando pliegue? no si N/A
- 30) Introduce la aguja en ángulo del 45 grado con el bisel hacia arriba (subcutánea)? no si N/A
- 31) Verifica que no sale sangre? no si N/A
- 32) Verifica que inyecta 0.5cc de vacuna? no si N/A
- 33) Inyecta la vacuna lentamente? no si N/A
- 34) Cuando retira la jeringa, presiona la zona con algodón seco sin frotar? no si N/A

Cuidados con la jeringa (Sarapión):

- 35) Si es de uso único, la descartó - o Si es de uso múltiple ... no si N/A
- 36) cambio inmediatamente la aguja usada? no si N/A
- 37) mantiene la esterilidad de jeringa y aguja nueva? no si N/A
- 38) coloca la jeringa en la caja térmica auxiliar? no si N/A

1. Educación del responsable

La vacunadora explica al responsable ...

- 1) cuales vacunas se aplican? no si N/A
- 2) las razones? no si N/A
- 3) el esquema de vacunaciones? no si N/A

La vacunadora explica reacciones y cuidados: ...

Si recibe POL, pase a 4

Si recibe DPT o DPT+POL, pase a 6

Si recibe SAR o SAR+POL, pase a 12

Si recibe DPT+SAR o DPT+SAR+POL, pase a 17

- 4) No deben haber reacciones por recibir antipolio solo no si N/A
- 5) Si se presentan síntomas lleve al niño al C.S. no si N/A

Fase a 24

- 6) Puede haber dolor local en el sitio de inyección no si N/A
- 7) Puede haber fiebre leve dentro de un día no si N/A
- 8) No aplique nada para el dolor local no si N/A
- 9) No rascarse en la zona de inyección no si N/A
- 10) Si la fiebre dura lleve al niño al C.S. no si N/A

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11) Si ocurren otros síntomas lleve al niño al C.S. no si N/A

Pase a 24

12) Puede tener fiebre leve dentro de 7-10 días no si N/A

13) Puede presentar erupción dentro de 7-10 días no si N/A

14) No rascarse en la zona de inyección no si N/A

15) Si la fiebre dura lleve al niño al C.S. no si N/A

16) Si ocurren otras síntomas lleve al niño al C.S. no si N/A

Pase a 24

17) Puede haber dolor local en el sitio de inyección no si N/A

18) Puede tener fiebre leve dentro de 7-10 días no si N/A

19) Puede presentar erupción dentro de 7-10 días no si N/A

20) No rascarse en la zona de inyección no si N/A

21) No aplique nada para el dolor local no si N/A

22) Si la fiebre dura lleve al niño al C.S. no si N/A

23) Si ocurre otras síntomas lleve al niño a C.S. no si N/A

Pase a 24

24) Si el niño tiene diarrea y recibe POL dice al responsable: lleve al niño al C.S. para que reciba otra vacunación cuando se mejore no si N/A

25) Indica la fecha que debe regresar no si N/A

j. Indicadores de la actitud de la vacunadora
Durante la prestación del servicio, la vacunadora ...

1) Saludó a la madre y/o al niño? no si N/A

2) Se presentó a sí misma? no si N/A

3) Sonrió? no si N/A

4) Acarició al niño? no si N/A

5) Escuchó con interés? no si N/A

k. Documentación

1) Llena correctamente el carné no si N/A

2) Llena correctamente el registro no si N/A

l. Hora cuando termina: _____

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