

Resources for Child Health

REACH



A John Snow, Inc. project

PD-ABU-431

TRIP REPORT

ASSISTANCE TO USAID/ISLAMABAD
IN DRAFTING CHILD SURVIVAL PROJECT PAPER

November 9 - December 6, 1987

Didier Patte, MD
Consultant

AID Contract No: 5927-C-00-5068

A

TABLE OF CONTENTS

I.	PLACES VISITED.....	1
II.	PERSONS MET.....	1
III.	EXECUTIVE SUMMARY.....	2
IV.	ACKNOWLEDGMENTS.....	4
V.	TRIP ACTIVITIES.....	4
VI.	SCOPE OF WORK.....	5
VII.	THE EPI COMPONENT OF THE CHILD SURVIVAL PROJECT.....	6
	A. Present Situation.....	6
	B. Constraints and Limitations.....	9
	C. Technical Issues.....	13
	D. Project Description.....	15
	E. Strategy.....	16
	F. Specific Steps.....	16
	G. USAID Input and Estimated Cost.....	21

TRIP REPORT

TO: Pakistan

BY: Didier Patte, MD, Consultant

DATES: November 9, December 1987

PURPOSE: To assist USAID/Islamabad on writing of EPI component of Child Survival Project Paper.

I. PLACES VISITED

ISLAMABAD (Federal): Ministry of Health National Institute for Health (EPI cell)

KARACHI (SIND Prov): District Health Office (EPI, CDD)

HYDERABAD (SIND): Directorate of Health
Several Rural Health Centers and Basic Health Units

LAHORE (PUNJAB Prov): Directorate of Health Field trip to RHC's and BHU's

PESHAWAR (NWFP Prov): Directorate of Health Field trip to RHC's and BHU's

II. PERSONS MET

USAID ISLAMABAD

Ray Martin, Chief, Health, Population and Nutrition
Heather Goldman, Project Officer, Primary Health Care Project
Robert Nachtrieb, Head Project Division
Bill Diechler, Office Manager HPN
Lucia Ferraz-Tabor, Academy for Educational Development, Consultant

NATIONAL INSTITUTE FOR HEALTH

Major-General M. I. Burney, Director, National Coordinator EPI
Colonel Mohamad Akram Kham, National Project Manager, EPI/CDD
Dr. Witjaksono Hardjotanojo, WHO Senior EPI Advisor
Mohammad Iqbal Qureshi, Project Director, CIDA Communication Project

MINISTRY OF HEALTH

Dr. Zaffar, Director, Basic Health Services
Richard K. Osmanski, Management Advisor, PHC Project

PLANNING COMMISSION

Dr. Siraj Ul Haq, Chief, Planning Commission

SIND PROVINCE

Dr. Sajjan Memon, Director Health Services
Dr. Sharif Baluch, Deputy Director Health Services
Dr. Khalid Latif, District Health Officer, Hyderabad
Dr. Omer Baluch, Project Director, CDD
Ms. Fauzia Rahman, WHO Operation Officer EPI

PUNJAB PROVINCE

Dr. Z. A. Khan Director Health Services
Dr. M. Hafeez, Assistant Director EPI
Dr. M. Kaleem Ud Din, Assistant Director, CDD
Dr. M. Siddique, Assistant District Health Officer, Lahore
S. Eshan Ul Haq Communicable Diseases Control Officer, Lahore
Dr. Hanif Shaikh, Senior Medical Officer, Health Lahore
Dr. Asadur Rahman Batthi, Epidemiology Control Officer, Lahore

NORTH WEST FRONTIER PROVINCE

Dr. Irfan Mir, District Health Officer, Peshawar
Mohamad Amjad, Field Supervisor Medical Officer, Peshawar
Dr. Nisar Ahmad, Medical Superintendent, former PHC Director
Dr. Azan Khan, Assistant Director EPI

OTHERS

Julian Lambert, Program Officer, UNICEF
Robert Simpson, PRITECH Project, Washington DC
Dr. Abdul Majid Molla, Professor of Pediatrics, Aga Khan Hospital,
Karachi

III. EXECUTIVE SUMMARY

The EPI in Pakistan developed a new vertical structure whose functioning and impressive achievement mostly rely on the strong personality of its leaders and advisors. Since every province was responsible for implementing the program in its own context and with its own restraints, disparity exists in achievements. In some provinces the EPI is fully operational while it is still finding its way in others which face difficult terrain or scattered population patterns.

The two major questions that the Child Survival Project has to address as two overall objectives for EPI in the coming years are:

- how to turn an exceptional program into a routine, broad basis, and more cost-effective activity which will be able to sustain the already obtained high coverage, and to reach out for the remaining uncovered population which is most at risk; and

- how to bring the low coverage areas up to an acceptable level through a strategy that will ultimately permit integration of services.

The leading proposed strategy relies on the development of MCH services of which EPI is a constituent. Most emphasis is put on antenatal care as an entry point to immunize the mothers against tetanus, to prevent malnutrition during pregnancy and its accompanying low birth weight, and to sensitize mothers to immunization and proper child care.

Such a strategy implies a shift of responsibility toward a greater involvement of the Medical Officers and a broadening of the operational basis of the EPI by including NGO's, private hospitals, and MCH services with an optimization of the operational units, mainly the outreach and mobile teams.

Although the EPI in Pakistan has achieved commendable and resounding results, its functioning raises some fundamental issues which need examination and discussion in order to direct AID's input toward the potentially most effective lines of action. These are:

Under-utilization of Public Health Outlets

Two different approaches are proposed.

- One would be for urban areas where the role of the private sector, including NGO's, should be emphasized.
- Another would be for rural areas where the major thrust should center on improving the quality of service which will attract more mothers.

Low Motivation of the Medical Officers

Making MO's responsible for the personnel and performance of operations in their posted areas, both curative and preventive, could increase their motivation and commitment. This correspondingly requires that they be given effective authority over their staff and that all kinds of reporting is channeled through their offices.

Program integration

Integrated management: At this point in time, fully integrating the upper level of management may not be feasible. Therefore, the establishment of a steering body liaisons between the various activities and their supportive institutions is highly desirable. It would enable the project to derive more benefit from strengthened MCH activities.

Integrated operations: and efficient approach would be to build integrated teams which would include the LHV's, to deliver comprehensive MCH services. This infers the recruitment of more female staff, their training, and means of transportation acceptable to them.

Key technical issues also discussed

The Door to Door Strategy: The role of the outreach/mobile teams should be re-centered to deal more appropriately with the hard to reach community. Intensive social mobilization campaigns should aim at bringing the mothers living within reasonable distance from a health center to get services there.

Tetanus Toxoid Immunization: A major effort must be undertaken to immunize pregnant women against tetanus. Because of cultural constraints, it does not seem feasible to immunize all CBA women. The NWFP has initiated specific TT campaigns operated by exclusively female teams. This could be a model.

Reusable vs Disposable Injection Equipment: The EPI managers have opted for disposable syringes and needles for all outreach work which represents the majority of vaccinations. This raises 2 problems:

- the proper use of this equipment and its proper disposal and
- the dependence on foreign supply with the consideration of cost of disposable equipment to ensure a steady flow of supply.

IV. ACKNOWLEDGMENTS

I am grateful to all those who, at the NIH, the MOH and the USAID mission in Islamabad, participated to the elaboration of this project and devoted hours out of their precious time to discuss in depth every aspect of it.

I am particularly indebted to Colonel Mohammad Akram Khan who made my field trips a pleasure, and to the USAID staff who gave full support to the team.

V. TRIP ACTIVITIES

NOVEMBER 9	Arrive in Pakistan
10	Briefing at USAID/Islamabad
11-12	Study project documents, Child Survival Strategy Paper, background material.
13	Confer with design team members on various aspects of the project (Diarrhoeal diseases, communications, training, costs, disease surveillance)
14-16	Meeting with EPI/MCH key people at MOH and NIH in Islamabad.

- 17-19 Trip to Sind Province. Meeting with EPI officials in Karachi and Hyderabad. Discuss EPI urban strategy. Meeting with province health services director. Visit urban and rural health facilities.
- 20 Confer with design team members on findings in Sind.
- 21-22 Trip to Punjab. Meeting with key officials EPI and Health Services, Lahore. Visit rural health outlets. Trace and meet outreach teams in villages.
- 23 Meeting at USAID mission. Discuss project outline.
- 24 Meeting with planning commission officials. Depart to North West Frontier Province.
- 25-26 Field visit NWFP. Meeting with MCH/EPI senior personnel in Peshawar. Visit rural health facilities and outreach/ mobile teams.
- 27-28 Writing first draft of EPI component.
- 29 Design Team presents project outline to MOH and NIH officials
- 30 Discussion of EPI component with EPI national manager and WHO EPI advisor.
- DECEMBER 1 Discussion of EPI 2nd draft with EPI national director. USAID internal review of project components.
- 2-5 Writing final EPI component of the Project Paper.
- 6 Leave Pakistan.

VI. SCOPE OF WORK

This trip was performed at the USAID/Islamabad mission's request. The scope of work was to design the EPI component of the 6 year Child Survival Project due to begin in 1988.

The EPI component will be incorporated into the Project Paper, along with the documents produced by other team members, and it is, therefore, only part of a whole.

VII. THE EPI COMPONENT OF THE CHILD SURVIVAL PROJECT

PRESENT SITUATION

ACHIEVEMENTS

Coverage

An interprovincial survey based on a cluster sampling was conducted in March-April 1987 in Pakistan. It showed commendable results as 69% of children 12-23 months of age were found fully immunized, and 35% in the under one age group. The low drop out rate between the first and third doses of multi dose vaccines reflects the efficacy of follow-up mechanisms and the ability of the program to trace defaulters. The coverage of mothers with tetanus toxoid is also encouraging when compared to the extremely low figures found in 1984. However, since less than half the women had vaccination cards (to compare with 97% of the children), only a value of 19% can be ascertained.

Wide disparities can be found from one province to another. Punjab has by far the highest coverage, with the lowest coverage found in the exclusively rural provinces (Baluchistan and AJK). Rugged terrain, insufficient logistic support and, to some extent, difficulties in proper management account for these less than satisfactory results. In the other provinces of Sind, Punjab and NWFP, coverage of the 12-23 month age group is within comparable range between rural and urban areas in each province. In the under one year age group, Punjab achieved better coverage in the urban areas compared to the rural ones.

Tables 1 and 2 summarize the results of this survey (rural and urban) by province and by antigen.

Table 1 Vaccine Coverage (in %) by Province and by Antigen Based on Card and History, March-April 1987 Pakistan Interprovincial Survey

Province	DPT		OPV	MEASLES		BCG	Fully Immunized	
	1	3	1	3		Scar	12-23 mo	< 12 mo
Punjab	98	96	98	96	87	95	83	47
Sind	84	67	83	67	68	65	56	23
NWFP	89	78	89	78	77	84	75	25
B'stan	18	10	18	10	12	9	6	2
AJK	83	60	83	60	45	52	38	12
Pakistan	88	80	88	80	75	80	69	35

DPT = Diphtheria, Pertussis, Tetanus vaccine (3 doses)

OPV = Oral Polio vaccine (3 doses)

BCG = Tuberculosis vaccine

Table 2 Vaccination of Mothers with Two Doses of TT (Tetanus Toxoid) by Province, March-April 1987 Pakistan Interprovincial Survey

Province	TT 2 Doses (%)	
	Card + History	Card
Punjab	52	21
Sind	26	16
NWFP	35	23
B'stan	7	7
AJK	12	11
Pakistan	40	19

Sources of Vaccination

The EPI in Pakistan relies on three strategies:

- **Fixed centers** which should cover a 5 km radius around the facility. One vaccinator, rarely 2 (one male and one female), administer vaccinations to children attending the EPI center. The staff delivering other services in the same facility should normally refer children for vaccination to the EPI unit. All antigens are available at any time from 8 a.m. to 2 p.m.
- **Outreach posts** which should cover an area comprising between 5 and 8 km from the center. Two vaccinators, sometimes three (including a female) are dispatched to a clearly delineated area every day. Catchment areas are mapped in every health unit. The normal procedure is for one vaccinator to go from door to door referring children to a temporary post where the antigens are delivered. Vaccinators travel by bicycle or by motor bike most of the time. This is a severe limitation on the use of female staff.
- **Mobile teams** with vehicles and cold boxes cover areas beyond 8 km.

Outreach and mobile teams carry out the greater part of the task, but their role is significantly higher in the rural areas (90%) than urban areas (57%). Together they account for 75% of all immunizations. The private sector plays a less significant role. Table 3 summarizes the source of immunization by province (urban and rural).

Table 3: Sources of Immunization by Province by (%) March-April 1987, Pakistan Interprovincial Survey.

Province	Hospital	Health Centers	Outreach /Mobile	Private
Punjab	3	10	86.5	0.5
Sind	17	9	67.0	7.0
NWFP	20	20	60.0	0.3
B'stan	38	13	49.0	-
AJK	28	18	54.0	-
Pakistan	11	12	75.0	2.0

Impact on child morbidity and mortality

The 1987 Interprovincial Survey attempted to obtain morbidity and mortality data on EPI target diseases. Unfortunately, the design of the survey and data collection were not appropriate and do not permit valid conclusions.

Data collection from an evaluation conducted in October 1986 (source: Stanley O. Foster, Pakistan EPI Surveillance Evaluation, October 18-30, 1986) are summarized in Table 4 below.

Table 4: Number of cases/deaths prevented/not prevented in 1986

Disease	No Immunization		Currently Prevented		Not Prevented	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Neonatal Tetanus	151,990	121,520	15,040	12,030	136,860	109,490
Pertussis	2,869,440	13,350	1,463,400	7,320	1,406,040	7,030
Measles	3,228,120	64,560	1,452,650	29,050	1,775,470	35,510
Diphtheria	358,680	35,870	213,000	21,300	145,680	14,570
Polio	63,700	6,370	30,580	3,060	33,120	3,310
Childhood TB	3,590	3,230	1,510	1,360	2,080	1,876
Total		245,900		74,120		171,780

These figures indicated, in 1986, the following death rates due to EPI preventable diseases per 1,000 live births.

Neonatal Tetanus:	28.8
Pertussis:	1.9
Measles:	9.3
Diphtheria:	3.8
Polio:	0.9
Childhood TB:	0.5

These rates, however, may now be overestimated in regard to the program's coverage achievement. Neonatal Tetanus remains a matter of concern though, and still accounts for more than 60% of not prevented infant deaths. Its current death rate is probably now about 20/1000 live births and this necessitates a major effort be undertaken in mothers immunization.

Monitoring of program activities

All EPI centers have graphic displays of their monthly activities which satisfactorily reflect reality. As a matter of fact, the calculated coverage in 1986 was very close to the actual findings during the field survey. The major problem lies with the circulation of information between the various levels of monitoring. Little feedback is given from the upper level to the peripheral units. These mechanisms are analyzed in detail under the Health Information System section.

CONSTRAINTS AND LIMITATIONS

ORGANIZATIONAL AND MANAGERIAL ISSUES

One of the most striking organizational features of the EPI in Pakistan is that it has grown and developed on a path parallel to--and de facto independent from--the regular health delivery system. This certainly was an appropriate means to circumvent altogether the inability of the system to provide preventive care, the low motivation of its staff and the under-utilization of the public facilities. The underlying philosophy was that, once a workable and sound mechanism had been set-up for EPI, a comprehensive preventive care system could be built on that strength.

The leading strategy has been to minimize the effort of mothers and to deliver services on a nearly door-to-door basis. This has led to the implementation of outreach activities even in the most densely populated areas. Although the EPI in Pakistan has achieved, through this particular approach, commendable and resounding results, its functioning raises some fundamental issues which need examination and discussion in order to direct AID's input toward the potentially most effective lines of action.

Under-utilization of Public Health Outlets

A National Health Survey conducted by the Federal Bureau of Statistics (1985) demonstrated that 50% of health care was provided by the private sector (21% in private hospitals and 29% by private practitioners), 32% was traditional and only 18% was supplied by government facilities. The EPI/CDD Interprovincial Disease Survey conducted in March 1987 further disclosed that only 32% of diarrhea cases received treatment from government facilities.

The reason officially agreed upon for such a low utilization is the distance factor, and distance has been used as a major argument for the intensive development of outreach activities. This assumption is probably only partly correct. A breakdown of the 1987 survey shows that:

- in rural areas, where private practitioners are not inclined to set up business, the utilization rate of public facilities is higher than that of the private sector. In this case the distance factor may play a significant role and favors the public sector;
- in urban areas, where distance is probably not a major determinant of utilization of either type of facility, the private sector delivers twice as much service as the public sector (48% vs 24%). If, within comparable distances, people prefer to go to more expensive care facilities, it is likely that they also go for better services.

A corresponding rural poverty factor may balance this distance factor. In rural areas where income is low, mothers will walk to facilities where the delivery of health services is free of charge. In towns where income is higher and people can afford to pay for services, most of the activity will be on the private side.

With regard to the future development of EPI, this finding may be of great importance. It is generally agreed upon--and with excellent reasons--that the delivery of immunization should remain within the public sector mainly because of cold chain sustainability and quality control. Major difficulties in involving private practitioners and private health facilities as a whole in the EPI are:

- the cost of supplying refrigerators to every possible vaccination outlet;
- the resistance of private practitioners to any kind of control of their activities will make monitoring the cold chain, and therefore the potency of delivered vaccines, a problem.

Now, if the enrollment of the private sector in EPI were considered in an urban-specific strategy, most of these difficulties could be overcome. This leads to a need to define two different types of support:

- One would be for urban areas where the role of the private sector, including NGO's, should be emphasized.
- Another would be for rural areas where the major thrust should center on improving the quality of service which will attract more mothers.

This approach acknowledges facts and will realistically support the main provider of services in each area. As the private sector in towns takes care of twice as many children as the public institutions, NGO's and private clinics could substantially increase the number of vaccinations delivered through fixed facilities. This will improve the program cost-effectiveness and would allow the urban outreach teams to concentrate on unserved areas. It will also provide flexibility for dealing differently with each province according to their population pattern.

Low Motivation of the Medical Officers

It is a current policy of the MOH to staff the most remote health units (BHU's) with Medical Officers. A major reason for this move is the growing number of unemployed doctors. This policy resulted in a shift of responsibilities. Since a resident medical officer became available in these units, he/she was entrusted with curative activities while the paramedical staff was freed for community oriented preventive care and for reinforcing outreach delivery services. Although the EPI has set up its own supervisory system, the Medical Officer is, theoretically, responsible for all types of services delivered by the health unit and correspondingly he/she becomes the immediate supervisor of the local EPI staff and staff of other programs. In other words, the Medical Officer should be the unifying/integrating factor of rural health care delivery.

In fact, having the EPI Medical Officer as the general supervisor of all health delivery in his/her unit, does not work for at least two major reasons:

- one is the absence of proper training of the Medical Officer in community medicine and in EPI delivery. This stresses the need for including community medicine and specific training in paediatrics (immunization, diarrhea control, nutrition, etc.) in the curriculum of medical colleges, and also stresses a need for training/sensitizing the community posted MO's in these fields.
- the other reason belongs to the program structure itself and its mixed lines of command. In present EPI structure--and CDD operations as well if they are channeled through the same lines of authority--actual supervision and reporting bypass the MO at all levels from District on down. For example, the Field Supervisory Medical Officer at the District level holds a direct line of authority down to the outreach teams. This leaves the Medical Officers of RHC's and BHU's uninformed about EPI activities in their areas. In fact, the MO's now have little, if any, sense of the performance of EPI, MCH centers, Malaria control, etc., conducted in their own units.

Making MO's responsible for the personnel and performance of operations in their posted areas, both curative and preventive, could increase their motivation and commitment. This correspondingly requires that they be given effective authority over their staff and that all kinds of reporting is channeled through their offices.

Integration of Services

Discussing the level of authority to be given to the MO's raises the issue of integration of services and particularly of the EPI into the regular health delivery system. The Punjab and the NWFP have already activated some degree of integration aiming at broadening the scope of work of the EPI staff and absorbing the vaccinators--at least some of them--into the health staff. In Punjab this absorption resulted in a temporary set-back when the staff had to be retrained. It is too early to observe a similar effect in the NWFP.

Integration should, in fact, be considered at various levels:

Integrated Management. An enthusiastic central leadership relayed down to the lowest level by a strong supervisory system has undoubtedly been the driving force behind the EPI success. However, this strength relies on a limited number of people and it may weaken with their departure. It is important therefore to broaden the managerial base of the program while it still has strong momentum. The semi-decentralized program organization which permits flexible approaches decided at the provincial level is already a step in that direction. If all components of health

care were to be consistently managed, further delegation of authority would be desirable.

On the other hand, integrated management bears the risk of diluting leadership, responsibility and commitment into the MOH bureaucracy. Although integration is desirable in view of better and more sustainable service delivery, it has to be carefully conducted. The experiences in the NWFP and Punjab should be closely monitored.

An alternative to full integration could be to put under one head--ideally at the district level--management and supervision of complementary activities such as MCH centers, EPI and CDD. This process has already been initiated at the upper management level. The National EPI Project Manager at the NIH is now also in charge of the CDD program. At this level, the growing power of the NIH, an autonomous body reporting directly to the Director General of Health, may be seen by the donors as a convenient means to channel their support. It should be noted though, that the widening gap between the NIH and the MOH may render the integration of child survival oriented services more difficult at the peripheral level. This is particularly true of the role of Lady Health Visitor (MOH staff) which should become a key factor in the Child Survival Project where major components (EPI,CDD) presently fall under the authority of the NIH.

At this point in time, fully integrating the upper level of management may not be feasible. Therefore, the establishment of a steering body liaisioning between the various activities and their supportive institutions is highly desirable. It would enable the project to derive more benefit from strengthened MCH activities.

Integrated Operations. Ideally, a minimum number of health workers should be able to deliver several types of health services. However, one factor of the success of EPI has been its ability to count on an expandable work force dedicated to only one task, even though the number of vaccinators is a bit frightening in view of program sustainability.

It is not realistic to retrain every vaccinator into a multi-purpose health worker. It would be extremely time consuming and would probably distract them from their primary duty. However, they could be instructed to deliver educational messages during their door-to-door visits. A more feasible and more efficient approach would be to build integrated teams which would includethe LHV's, to deliver comprehensive MCH services. This infers the recruitment of more female staff, their training, and means of transportation acceptable to them.

Also, all vaccinators trained from now on should receive multi-disciplinary training.

TECHNICAL ISSUES

The Door-To-Door Strategy

Seventy-five percent of children's immunization has been delivered through outreach teams over the last few years. The proponents of this strategy legitimately point to its success and claim for more support and more means to implement it. Some points are noteworthy though.

Theoretically, outreach teams should cover the population 5-8 kilometers distant from a fixed health unit. In practice, the teams often start their rounds in the immediate vicinity of the center. As a result, the mothers in the nearby accessible areas are not encouraged to attend the health center, and this may hamper the development of the MCH clinics. In addition, it does not create a sense of responsibility toward child care in the community. Should the mothers, living within walking distance--a criterion to be defined locally--be encouraged to get services to the fixed centers through intensive information campaigns, the time and energy of mobile teams could be better utilized to reach the less accessible population. It would also ensure better return for investment in the fixed facilities.

Although the instructions given to the team are to set-up a vaccination post in the villages they visit and to bring mothers and children to this post for immunization, many teams still deliver vaccinations at home under less than satisfactory conditions. A reason for such a practice may be that the team simply has no place to sit. Requesting that accommodation be made to them by local private institutions or by the community would increase awareness and broaden the operational base of the program.

Supervising the daily activity of the outreach teams could typically be a new field of interest for the rural Medical Officer.

Tetanus Toxoid Immunization

the results of the 1987 Interprovincial Survey raised concern about the relevance of the accelerated tetanus toxoid initiative when it disclosed a death rate due to neonatal tetanus of only 4.5/1000. Because of serious flaws in the design and the methodology of the survey, these results are doubtful. As mentioned earlier, actual death rate is more probably around 20/1000 live births.

Immunizing pregnant women against tetanus poses a difficult problem in Pakistan as the overwhelming number of vaccinators are males. Some, among the upper level program managers, have also expressed the fear that focussing more intensely on TT administration would disrupt the functioning of the regular program. In this matter, the various provinces have adopted different approaches for the administration of TT, usually providing delivery through use of EPI centers, regular outreach/mobile teams, and to some extent through MCH centers. Only the NWFP has undertaken a specifically designed accelerated program in some of its districts and has temporarily assigned 24 LHV's to exclusively female mobile teams.

Further interest for TT immunization would first require that the real magnitude of the problem be known. The Child Survival Project should therefore include a morbidity and mortality survey which could also give valuable information on IMR. A baseline survey followed by another in four years is desirable.

Given the cultural constraints that prevail in Pakistan, perhaps the most feasible strategy for the present time is implementation of several provincial campaigns, conducted by female teams and supported by intensive publicity. The NWFP experience may be instructive.

Reusable vs Disposable Injection Equipment

The EPI managers have opted for disposable syringes and needles for all outreach work which represents the majority of vaccinations. Since vaccinators and their supervisors are most firm in that choice, it can hardly be challenged. This raises two problems.

- One is proper use of this equipment and its proper disposal. It has been found that some teams, as they run short of supply, do reuse the same syringes repeatedly. Also, disposable equipment is sometimes being discarded without first being destroyed, and can be picked up and reused by unscrupulous hakims.
- The second problem is the dependence on foreign supply. Because of customs duty on imported raw material which does not apply to imported syringes, the cost of locally made devices is higher than the foreign imports. Along with the cost consideration of disposable equipment, ensuring a steady flow of supply remains a major difficulty. Assuming that the EPI succeeds in raising the countrywide immunization coverage to 80%, the total number of shots to be administered during the life of the Child Survival Project will be around 170 million. Under the present policy of providing reusable syringes to the fixed facilities and disposable ones to outreach/mobile teams, the cost of injection equipment may vary from \$4.5 million if the number of outreach delivered injections were reduced to 50% of the total number of EPI shots, to \$6.2 million if it remains at its current level of 75%. The total cost would be less than \$1 million if reusable equipment were to be exclusively used. Also, it can not be truthfully said that the extra cost of disposable syringes for the present utilization and disposal practice will buy 100% safety for injections.

In the fixed facilities, reusable plastic syringes are commonly employed. Although the EPI policy is one syringe per child, often very few syringes are available and only the needle is changed. The syringes are boiled once a day in a tray.

The EPI project managers, having decided against field sterilization, should ensure uninterrupted supply of equipment either through a more planned and regulated manner of importing foreign equipment, and/or through promoting (subsidizing?) local production. In either case, proper disposal is essential, and appropriate clips should be supplied.

As for the fixed centers, two options could be considered. One is to supply these health centers exclusively with disposable equipment. This would bring the total cost of injection equipment, including outreach, up to \$7.5 million. The other option is to introduce steam sterilizers which may accommodate up to 80 syringes at a time, and will allow a one child-one syringe practice. This option requires the purchase of appropriate equipment and training in its use, but will be cost effective in the long run. An alternative, for thought, might be to field test the single dose, collapsible and nonreusable syringe (EPIJECT). However, the cost of this method may not compare favorably with the reusable plastic syringes, at least at present.

PROJECT DESCRIPTION

GOALS AND OBJECTIVES

The overall goal of the EPI component is to decrease infant mortality due to immunizable diseases from an estimated current ratio of 40/1,000 live births to less than 15/1,000.

Specific objectives to reach by the end of the project are:

- To ensure full immunization of more than 90% of the children before their first birthday.
- To ensure immunization of at least 75% of new mothers against Tetanus.
- To increase significantly mothers' awareness of proper child care.

STRATEGY

Three key elements define the strategy that the Child Survival Project will support. They complementarily aim at ensuring program sustainability through better use of fixed health centers, and at increasing the efficiency of the outreach teams serving in the least accessible areas.

Reaching out for the most at risk population. It is common knowledge that the small percentage of the community that remains uncovered through regular activity of the EPI, usually represents the poorest, least educated, and most difficult to reach part of the population who suffers the highest infant mortality. Gaining a few percents in coverage in this population may significantly reduce the global IMR. These people are found in the most remote areas, and also--in great number--in the biggest cities, and particularly in the slums. The project will, therefore, support the development of specifically designed urban programs, and the re-centering of outreach teams' attention toward the least served population.

Increasing the number of EPI outlets and improving the quality of service. In order to allow the outreach teams to devote more time to the least accessible areas, the delivering of services in the accessible zones must be improved both in quantity and in quality. This is a precondition for the sustaining of already achieved results. Broadening the EPI operational base includes the enrollment of NGO's and of private institutions into the program, in an effort to turn it into a routine health activity. Improving the quality of services aims at making the health facilities more attractive to the mothers. As an entry point for better child care, the project will support the establishment of Ante-Natal Clinics where the mothers will receive tetanus toxoid, health education, proper care and nutritional advice regarding their pregnancy, and will be motivated to seek immunization for their child after birth. This approach relies on the assumption that pregnancy is a matter of concern for all women, and that offering them adequate service at this particular time may appeal to them. It also assumes that attempting to introduce behavioral changes in this matter is not less reasonable than accepting undemonstrated statements on cultural rigidity. However, it will and must be a very slow process that this project may simply initiate.

Mobilizing the parents for immunization. The project will support massive information/mobilization campaigns addressing EPI and MCH topics. The simplicity of the EPI messages will be utilized to increase awareness and a sense of responsibility toward maternal and child health in the community. In areas served by health centers, media will be used to encourage the mothers to seek care from the facility. The large audience should not be the women only but also the fathers and the health staff as well.

SPECIFIC STEPS

Urban EPI. Participation of the private sector will address the needs of uncovered urban population. NGO's have demonstrated better ability than public institutions to deal with people living in slums and under marginal conditions. On the other hand, private institutions (hospitals, dispensaries) are in best position to catch the wealthiest class.

The terms and conditions of collaboration between the private sector and the EPI must specify that the considered institution will strictly follow the official schedule and methods of immunization, that it will report to the EPI office in due time and according to the program requirements, and that it will accept supervision regarding EPI related activity from the program head office. Those institutions put in charge of outreach posts will have clearly delineated catchment areas.

The program, in exchange, will provide all equipment required to conduct proper operation, mainly cold chain, vaccines, syringes and sterilizers, registers. It will also train the appropriate staff. Where needed, appropriate means of transportation will be procured. It is suggested that rickshaws be considered as an appropriate vehicle in urban settings: they are locally available, inexpensive to operate, easy to maintain and acceptable to the female staff.

So far, only Karachi has undertaken the first steps toward establishing an urban program. Most of the possible candidates among private institutions and organizations have been listed and approached. In the words of the local EPI managers, the only limiting factor at this point in time is the lack of physical means.

Such urban programs could apply to the 5 biggest cities in the country and may increase the number of EPI outlets, with their corresponding outreach teams, by approximately 300, more than 100 being located in Karachi.

Antenatal Clinics. The establishment of antenatal clinics is to become a key component in mothers' immunization and health education. It will also play a major role in identifying risk factors, in preventing low birth weight due to mothers' malnutrition, and in increasing the share of the fixed centers in the immunization program. It will also be the common ground for child survival related activities, requiring coordination and some integration process at the managerial level. Three categories of personnel are involved in prenatal care:

The Lady Health Visitor: This staff has received a 3 year training and is, therefore, quite highly qualified. In spite of their denomination, the LHV's are posted in fixed centers--most are in Rural Health Centers--and do not perform field visits. They operate MCH centers. The actual number of LHV's currently posted is unknown. In 1985, the number of registered LHV's was around 3,000. Given the duration of their training, the project should not envision to increase their number but should rather provide incentives in order to attract them to peripheral posts.

The Health Technician: Although their training is much shorter than the LHV's, the Basic Health Service department to whom they report, consider this staff as being of better efficiency. More than 1,900 of them have been trained so far, but only 661 are female who can deal directly with women. A total of 13 training centers are under construction or planned in a near future with a capacity of 900 trainees/year. Five are located in Punjab with a capacity of 100 trainees each, 3 are in Sind, 3 in NWFP, and 2 in Baluchistan, each with a training capacity of 50/year. All centers can accommodate 50% female trainees. Assuming that every training center will be able to recruit as many females as it can train, it will take 7 years to staff each of the BHUs, of which the number will reach 4,119 by 1990, with 1 female health technician. The alternative is to identify and retrain the existing female staff posted in private institutions. Their number is presently unknown.

The TBA (Dai): The GOP has provided training to more than 34,000 of them. However, this training is specifically oriented toward good delivery practice, and not much toward prenatal care. It is not realistic to believe that the TBAs could be used as vaccinators. With little effort though,

they could be instructed and encouraged to liaison with the nearest health facility for pregnancies identification and referring. Short refreshing sessions could be provided at the health center under the responsibility of the female health staff.

Additional equipment required for antenatal clinics is essentially made of educational material (basics on pregnancy, nutritional requirements, immunization, perinatal care), iron folate tablets, and injectable iodized oil in endemic areas (total population affected is 7 million, i.e. 250,000-300,000 pregnancies per year).

Integrated outreach/mobile teams. Wherever feasible, the vaccination teams should be made up of 2 females and 1 male, instead of the current team of 2 males. (A team of 1 male and 1 female may not be acceptable). The limiting factor when female staff is available is the means of transportation. The advantage of mixed teams would be to gain better access to the mothers in the villages. In towns, the use of rickshaws may be appropriate. Where a vehicle is not available locally for outreach, a complement to the regular operation could be to set up an additional mixed visiting team at the tenshil level. This team would do scheduled rounds in the tenshil area.

Tetanus Toxoid immunization campaigns. This approach to the problem of getting mothers immunized has been tested in the NWFP with impressive results. As of June 1987, this province is by far the leader in the matter with a coverage of 36.8% when the next best (AJK) has achieved only 19.7%, and the national average is 18.1%. This was achieved by means of temporarily assigning LHVs to exclusively female mobile teams.

The project will consider the organization of 2 TT immunization rounds at one month intervals in every province twice a year.

Improved health staff commitment. Improving the quality of service requires that the health staff feels responsible for results obtained in its own unit. Two types of action may contribute to the achievement of this objective:

- giving the health officer an effective role of supervision over the entire staff posted in the center. This implies that some training be provided in management and monitoring of activities. It also necessitates that all reports be channeled through his office and signed by him.
- providing incentives to the most peripheral staff, i.e., the operational persons. TBAs could receive some kind of payment proportional to the number of mothers referred to the health unit. As for the health staff, the personnel of the two best performing RHC/BHUs in every region would receive financial bonuses equal to 1-2 months of their salary once a year. Similarly, one District Health Officer could be selected yearly on a performance basis for a study trip abroad.

Social mobilization. A major effort must be undertaken to sensitize the community to immunization and child care. Information campaigns are much needed and must be directed at the family decision makers with regard to child care. It is likely that the fathers may play a key role, and possibly also the grandmothers.

The project will finance radio, TV, and newspaper ads, but it will also support intensive mobilization campaigns. Making the fathers a priority target audience requires that religious authorities be involved. The mosques are most suitable to reach virtually 100% of the male population. Budgetary provision will be made available for getting the imams' cooperation by, for example, supplying audio systems to the mosques.

Incentives will be provided to the mothers for every immunization shot received by the child or herself, and a more substantial gift will be awarded for every child fully immunized.

Management and maintenance of commodities. The EPI has currently no logistic and supply officer at the national level. WHO has advertised a position for a cold chain manager/technician, but the post is still vacant. At the provincial level, the EPI manager is assisted by a cold chain technician who runs a workshop. However, there is nobody specifically in charge of managing and maintaining the program commodities. At least one logistic/maintenance officer must be trained in every province.

At the district level, inventories, order and distribution rosters should be computerized. The district program officer will be trained accordingly.

Monitoring of EPI coverage. The system currently operated to monitor the program activity works satisfactorily at the health unit level. At the district level, computers--provided under the Health Information section--will permit accurate and timely reporting. Computerization of data should lead to the production of feedback documents for the peripheral health units. Training of the EPI district program officer will be necessary.

Feedback from the central level will come in the form of an EPI newsletter supported by the Canadian assistance.

Equipment. Under the terms and conditions of the Articles of Understanding signed jointly by the GOP, WHO, UNICEF, and USAID, all the equipment needed to fit the existing and planned EPI outlets (totaling 4,165 by 1988) will be supplied.

However, in spite of the agreed upon principle of using reusable plastic syringes in the fixed centers, not all of them will be equipped with steam sterilizers and with the appropriate kits of syringes. An estimated number of 2,000 will require new equipment, while, after 1988, all of them will be in need of steady replenishment in sterilizable kits.

Cold chain equipment and vehicles will have to be partly replaced on a respectively 15% (6-7 years life time) and 20% (5 years life time) during the duration of the the child survival project. In addition, after 1988, 1,500 new EPI outlets will have to be equipped.

Since the expansion of service delivery will in part take place in remote areas where electricity may not be available, the project will supply 50 solar systems.

Surveillance and evaluation. The routine data collection for disease surveillance, as well as morbidity/mortality studies, will fall under the Health Information System. Specific surveys will, however, be needed in order to assess true rates of Neonatal Tetanus and to obtain epidemiological data on occurring outbreaks. A reserve fund will be made available for ad hoc intervention in such a case.

External program evaluation should also be performed on a 2 year basis.

Operations research. The project will support research protocols related to EPI operation. Such studies will preferably be conducted by local institutions or universities when they do not directly relate to the program routine activity. A non limitative list may be:

- field testing of single dose non reusable vaccine administration devices (EPIJECT), and the study of its cost effectiveness by comparison with disposable material.
- studying the actual acceptability and safety of reusable plastic syringes for outreach/mobile teams.
- social studies relating to the decision making process regarding child health and particularly immunization.
- investigating new approaches to reach out for mothers and pregnant women in the most conservative areas.
- cost effectiveness of the present EPI strategies
- seroconversion studies (Measles, polio and tetanus vaccines). Resources exist in the country to conduct these studies.

USAID INPUT AND ESTIMATED COST

Urban EPI

Equip NGO/Private institutions with refrigerator, cold boxes (2), vaccine carriers (4), steam sterilizers (2). 300 units @ \$500 \$150,000

Training 3 vaccinators and 1 MO in each unit. 1,200 trainees @ \$100 120,000

Transport for urban outreach in 5 major cities 50 Richshaws @ \$2,000 100,000

Antenatal Clinics

Incentive to post LHVs and female Health Technicians in peripheral units. Include building fitting and upgrading for female accommodation. 500,000

Refreshing sessions for TBAs at health centers (Hands on training once a week for 1-2 TBAs in every center operating MCH clinics. \$5/week/center. Average # of centers over project life: 3,000 750,000

Educational material @ \$100/center 420,000

Tetanus Toxoid Campaigns

2 Rounds 1 month apart twice/year/province.

Advertisement 10 campaigns/year @ \$15,000 x 6 years 900,000

1 mobile team of 2 female vaccinators and 1 driver 10 days/district @ \$200 x 69 districts x 2 rounds x 6 years 170,000

Staff commitment

Retraining of 3,000 MOs @ \$100 300,000

Performance based incentive for TBAs 350,000

Rewarding the 2 best performing health units once a year in each province. 10 persons @ \$200 x 5 provinces x 6 years 60,000

Rewarding 1 DHO every year. 1 study trip abroad per year @ \$10,000 x 6 years	60,000
--	--------

Social Mobilization

- Radio, TV, Newspaper ads	2,000,000
- Posters, leaflets, etc.	1,000,000
- Religious authorities collaboration	300,000
- Incentives to mothers	500,000

Commodities Management/Maintenance

Training if 1 Logistics Officer/province @ \$500 x 5 provinces + 10% turnover/yr	16,500
---	--------

Training of District EPI program officers in computerized inventories, orders, etc. @ \$250 x 69 districts + 10% turnover/yr	15,000
--	--------

Short term TA for training/system installation 4 person months	40,000
---	--------

Equipment

Steam sterilizers for fixed centers.

1988: 2,000 sterilizers + syringe kits @ \$80	160,000
1989: onward 1 kit/center/year @ 30 x 5 years	630,000

Cold chain. 15% of existing equipment/year @ \$200	830,000
--	---------

Vehicles. 20% of existing 500 vehicles/year. 1/3 @ \$12,000 and 2/3 @ \$5,000	3,650,000
--	-----------

50 solar refrigerators @ \$5,000	250,000
----------------------------------	---------

Surveillance and Evaluation

Neonatal tetanus survey, outbreak investigations, external program reviews	350,000
---	---------

Operations research

Fund for local contracts	120,000
Social studies, economic studies	150,000
Fund for external contracts	200,000

TOTAL COST	\$14,092,000
------------	--------------