

IMMUNIZATION: THE BEHAVIORAL ISSUES



BEHAVIORAL ISSUES IN CHILD SURVIVAL PROGRAMS:
Monograph Number Three

Prepared for

**THE OFFICE OF HEALTH
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT**

By Barbara Pillsbury, Ph.D.

Immunization: The Behavioral Issues
Monograph Number Three

Pillsbury, Barbara (author)

U.S. Agency For International Development, Bureau for Science and Technology. Office of Health. (sponsor)

International Health and Development Associates. 18133 Coastline Drive, Suite 4A, Malibu, CA 90265 (sponsor)

**Behavioral Issues in Child Survival Programs;
A Synthesis of the Literature with Recommendations for Project
Design & Implementation (six monograph series)**

*also available from: International Health and Development Associates. 18133 Coastline Drive, Suite 4A, Malibu, CA 90265

Of all the child survival interventions, immunization has generally had the greatest success thus far. Six out of 10 children worldwide are now fully vaccinated by their first birthday, up from only one to two children out of 10 at the beginning of the 1980s. Nevertheless, as health planners think about further extending--and also sustaining--gains made thus far, it becomes increasingly important to focus attention on understanding and influencing the behavior of community members whose children have not yet been fully immunized. Every year about 3.5 million children in developing countries still die and many more are disabled from vaccine preventable diseases. Even when vaccination services are accessible, and even free, many mothers and child caretakers do not respond. Why? This monograph presents a synthesis and analysis of program experience and research findings concerning the behavioral issues which help explain the under-utilization of immunization. Major findings and recommendations concern the importance of understanding behavioral factors; reasons children don't get immunized; disease-specific beliefs and behavior; socio-economic

correlates of low immunization coverage; parental knowledge and understanding of immunization; parental fears of immunization; low motivation for immunization; mothers' time costs and other constraints; location of service provision; drop outs; vaccination cards; community participation; traditional health practitioners; traditional health beliefs; research methodologies and health education approaches; and, counseling guidelines. This monograph is the third in the series which covers the behavioral issues of the following child survival interventions: Oral Rehydration Therapy; Immunization; Breastfeeding, Weaning and Nutrition; and, Growth Monitoring and Promotion.

PA-ABG-749
ISA 69328

**BEHAVIORAL ISSUES IN CHILD SURVIVAL PROGRAMS:
A Synthesis of the Literature
with Recommendations for Project Design & Implementation**

Monograph Number Three

**IMMUNIZATION:
THE BEHAVIORAL ISSUES**

By

Barbara Pillsbury, Ph.D.

Prepared for

**THE OFFICE OF HEALTH
U. S. AGENCY FOR INTERNATIONAL DEVELOPMENT**

Washington D.C.

INTERNATIONAL HEALTH & DEVELOPMENT ASSOCIATES

July 1990

CONTENTS

PREFACE: OVERVIEW OF THE SERIES	iii
Methodology	iv
Acknowledgements	vii
EXECUTIVE SUMMARY	ix
INTRODUCTION	i
 BEHAVIORAL ISSUES AND SIGNIFICANT FINDINGS	
I. Behavioral Factors in Immunization: Are They Important?	5
II. Is Compliance the Issue?	9
III. Reasons Children Don't Get Immunized: Overview	13
IV. The Cultural Baseline: Beliefs and Practices Related to Prevention and the Six Target Diseases	21
V. Socioeconomic Status and Characteristics	31
VI. Knowledge, Attitudes--and Misperceptions	35
VII. Costs, Constraints, and Competing Priorities	47
VIII. Side Effects, Fears, and Low Motivation	51
IX. Drop Outs	59
X. Community Participation	65
XI. Communication and Language	71
 BIBLIOGRAPHY	
Immunization: The Behavioral Issues	75
Other References Cited	92

PREFACE: OVERVIEW OF THE SERIES

This monograph is the third in the series **Behavioral Issues in Child Survival Programs: A Synthesis of the Literature with Recommendations for Project Design & Implementation**. The series covers the major child survival interventions with the exception of birth spacing. It thus includes the following: Oral Rehydration Therapy; Immunization; Breastfeeding, Weaning and Nutrition; and Growth Monitoring and Promotion. This monograph, like others in the series, sets forth the major behavioral issues related to the intervention, summarizes research findings on each issue, presents recommendations, and includes a bibliography.

Behavioral Factors in Child Survival

Success in child survival projects and programs depends not only on technical interventions themselves but on their being accepted and used by the millions of mothers and other child caretakers who determine in developing countries whether a child lives or dies. This requires that project designers and implementors understand not only the technical but also the behavioral factors that influence child survival in developing countries.

An enormous volume of research has been carried out during the 1980s on topics related to child survival. In addition to basic biomedical research, much of this has been qualitative research designed to provide answers on how to adapt technology, delivery systems, and promotional approaches to individual countries and cultures. Much of this research has been funded by the Agency for International Development (AID/Washington as well as by USAID bilateral projects). Additional research has been supported by UNICEF, WHO, and other organizations, public and private. Many social scientists have also conducted independent research that provides further valuable descriptive material about beliefs and practices of mothers and others that influence child survival.

The findings and conclusions of this large body of qualitative research can be extremely valuable for improving the design, implementation, impact, and sustainability of donor-funded projects and host-country programs.

These research results are not easily available, however, to either AID/Washington or mission personnel outside the countries where individual studies were initiated. Many of the studies have not been published. Some of the reports are still in rough form or in languages other than English. There is no central repository of these studies. Nor, prior to this series, was there any comprehensive bibliography of research on behavioral aspects of child survival programs. It was for this reason that A.I.D.'s Office of Health initiated the "Behavioral Issues in Child Survival: Literature Review and Consultations Project" which produced this series of monographs and bibliographies.

Purpose and Audience of This Series

The immediate purpose of this series is to bring together the major findings, conclusions, and recommendations of this far-flung body of qualitative research on behavioral issues in child survival projects and programs. The ultimate purpose of this series is to help project and program personnel:

- o First, to understand better the behavioral factors that influence whether and how well parents and other child caretakers utilize child survival services; and
- o Second, to design and implement projects and programs that achieve higher levels of participation, more effective adoption of the new behaviors being promoted, and more sustainable impacts.

The monographs are to be used in AID/Washington, distributed to USAID missions, and made available to host-country counterparts, A.I.D. contractors, researchers, and others engaged in child survival activities.

Methodology

These monographs were prepared in two stages. First was the task of bringing together the published and unpublished literature. This was done by: interviewing and consulting with researchers and research sponsors in the U.S. and various developing countries; sending cables to all USAID missions and letters to researchers in other countries asking for relevant materials; conducting computerized and other searches of the published and unpublished reports; and, finally, acquiring copies of reports and publications that appeared germane. Computerized searches were performed by or accessed collections of the following organizations: A.I.D., UNICEF, Popline, the APHA Clearinghouse on Infant Feeding and Maternal Nutrition, Wellstart, and the International Development Research Centre (IDRC). The second stage was analysis and synthesis of the materials collected. The materials examined for the series include well over a thousand published and unpublished reports of research and studies conducted using qualitative, behavioral science methodologies.

Criteria for Selecting Materials Reviewed

In deciding what to include from the voluminous literature relating to behavioral aspects of child survival, the following criteria were adopted:

1. Child survival interventions: Concerning ORT and immunization, the goal was to be as comprehensive as possible. Concerning the area of nutrition improvement, on which an enormous amount of research has been conducted, it was decided to concentrate on two areas: (1) breastfeeding, weaning, and nutrition, with the greatest

emphasis on breastfeeding; and (2) growth monitoring and promotion. Birth spacing was initially included in the series. Here, given the enormity of the family planning literature, the decision was made to focus on materials that explicitly discuss the use of family planning to increase birth intervals for purposes of maternal and child health. A copy of the initial report, Behavioral Aspects of Child Survival: Birth Spacing, by Soheir Sukkary-Stolba, is available from International Health and Development Associates.

2. Research methodologies: Research and studies included are those characterized as behavioral or behavioral science research, in contrast to biomedical research. Priority was placed on qualitative, as opposed to quantitative, studies. The dividing line is thin, however, as many quantitative studies (e.g. KAP surveys) seek to understand the same types of behavior as do the more clearly qualitative studies. **The goal was to seek studies that researched people's motivations and behavior in an in-depth manner**; some research on socioeconomic characteristics has been included, but only when it appears to look in depth at related behavior. Priority was placed on project-related studies and studies of intervention-related behavior (in contrast to research focused more exclusively on traditional behavior--e.g., on mothers' knowledge of ORT as opposed to traditional means of treating childhood diarrhea).

Methodologies examined included those identified as:

- * ethnographic research.
- * anthropological research,
- * in-depth interviewing,
- * key-informant interviewing,
- * observation,
- * participant observation,
- * detailed activity studies,
- * focus group studies.
- * household studies,
- * community studies,
- * community diagnosis,
- * participatory research/evaluation,
- * social marketing research,
- * formative research,
- * motivational research,
- * practice studies,
- * audience research studies, and
- * action research.

Also included, especially when they attempted an in-depth examination of beneficiary behavior, were:

- * KAP (knowledge, attitudes and practice) studies,
- * baseline studies,
- * household surveys,

- * case studies,
- * situation analyses,
- * feasibility studies,
- * operations research,
- * pilot studies and surveys,
- * message testing and product preference trials, and
- * evaluation research based on longitudinal or other in-depth studies.

Project evaluations are also a rich source of information about behavior. Evaluations of the "rapid appraisal" type that are most commonly conducted on A.I.D. projects have generally not been included in this review, however, as they are the subject of other ongoing A.I.D.-sponsored activities (e.g., at Johns Hopkins University).

3. Behavior: Whose behavior is included? The focus is primarily on the behavior of mothers and other child caretakers, secondarily on service providers in relationship to the mothers and other child caretakers and, third, some organizational factors that directly affect mothers' behavior (e.g., hospital policies on rooming-in as they influence breastfeeding mothers). Other research on organizational behavior and systems has not been included (e.g., no research on management information systems, health care financing arrangements, or Ministry of Health re-organizations).

4. Research sponsor: Priority was given to studies funded by A.I.D., especially in its 22 child-survival "target countries." Efforts were made to be as comprehensive as possible in finding studies funded by A.I.D.. Unfortunately, some were undoubtedly still missed, given the fact that many USAID mission-funded studies never find their way back to Washington. (The same is true of UNICEF-funded field studies which likewise are not all available at headquarters.)

5. Time frame: A time frame of 1980-to-present was adopted at the time the initial draft report was completed in April 1988. Research conducted before 1980 but reported on after 1980 is also included. Some earlier exceptions have been included as judged important for the particular intervention. A few documents produced since April 1988 have also been included.

6. Other: Several more general items are also included. Among these are: literature reviews, policy statements, topical overviews, and methodological materials.

General Conclusions and Recommendations

1. Further research should build on the findings and cumulative experience to date. Much has been learned during the last few years that can be applied to project design and implementation problems cross-nationally. Issues have been identified and general answers are available. The need is for project and program personnel to use these as a guide and point of departure (rather than reinventing the proverbial old wheel) and only then decide what precise questions remain on a country-specific basis.

2. The findings presented in this series should be further developed to assist health planners in designing and implementing more effective, sustainable projects and programs. Other valuable information in the documents collected for this report but not presented here should also be utilized. Further work should focus on:

- o **Developing explicit procedural guidelines for project personnel to use in design, implementation, and evaluation.** Partial guidance is presented in this monograph, but recommendations need to be streamlined and more tightly linked to decisions in the project process.
- o **Synthesizing the lessons and recommendations about methodologies for learning about behavioral factors in child survival.** Field personnel who are not behavioral scientists need to know, for example, what types of methodologies are appropriate for investigating priority issues, what research can easily be organized in-house, when to call in behavioral researchers, and what sort of guidance to give them. Again, far more has been written than is regularly being used by most USAID missions. Such information is contained or suggested throughout the literature collected for this project. This is a wealth of instructive information that should be summarized.
- o **Analysis of "cross-cutting topics."** Important cross-cutting variables (e.g., socioeconomic status, maternal education, and so on) affect acceptance and use of the child survival interventions. A synthesis of information on these cross-cutting variables can also assist project planning and implementation. These variables are discussed in each monograph as they relate to the particular intervention, but far more is included in the literature collected than could be included here.

About the Bibliographies

As noted above, a selective bibliography accompanies each monograph. For those interventions for which the behavioral literature is voluminous--namely oral rehydration therapy and breastfeeding, weaning, and nutrition--separate volumes, "expanded bibliographies," have been prepared. Copies of the key documents cited are held in the libraries of International Health and Development Associates. Bibliographies are in Wordperfect 5.0 on floppy discs that could be shared with others. An asterisk (*) indicates work funded, partially or in full, by A.I.D. (although it has not been possible to identify all A.I.D.-funded reports).

Acknowledgements

Dr. Pamela Johnson, of A.I.D.'s Office of Health and manager of its Child Survival Program, is to be credited for initiating this activity and for her insight into the critical importance for project success of understanding the behavioral issues in child survival.

This series has been a mammoth undertaking. It would not have been possible without the professional expertise and unstinting dedication of my two valuable colleagues, Ann Brownlee and Soheir Sukkary-Stolba. To them I am deeply grateful.

Nor would this series have been possible without the interest and generous cooperation from professionals in many organizations, especially: A.I.D., UNICEF, the World Health Organization, the Centers for Disease Control, the APHA Clearinghouse on Infant Feeding and Maternal Nutrition, the Center for Population and Family Health at Columbia University, the Evaluation and Planning Centre for Health Care of the London School of Hygiene and Tropical Medicine, the HEALTHCOM Project of the Academy for Educational Development, Applied Communications Technology, the Carolina Population Center, the Centre for Development and Population Activities (CEDPA), the Education Development Center, Canada's International Development Research Centre, the International Science and Technology Institute (ISTI), the International Health and the Population Information Programs of Johns Hopkins University, Management Sciences for Health and its PRITECH Project, John Snow Inc. and its Resources for Child Health (REACH) Project, Manoff International, the Rapid Epidemiologic Assessment Program of the National Academy of Sciences, the Population Council, the Primary Health Care Operations Research (PRICOR) Project, Pragma Corporation, the Water and Sanitation for Health (WASH) Project, Wellstart, and the World Bank. I and my colleagues are extremely grateful for the interest shown by professionals in these institutions as well as for the contributions and stimulating input from many individual researchers.

Several persons have provided valuable assistance for this monograph in particular. For help in gathering materials I am indebted to Dr. R.H. Henderson of WHO's Expanded Programme on Immunization, to Prof. Kris Heggenhougen of the Evaluation and Planning Centre for Health Care of the London School of Hygiene and Tropical Medicine, to Dr. Mary Hassouna and ISTI support staff, to Kathleen Parker at the Centers for Disease Control, and to Ibrahim Jabr, Pierre Mandl, Alan Silverman, David Burleson and others at UNICEF, as well as to many others in the organizations cited above. For their review and thoughtful comments on my preliminary draft I am especially thankful to Pamela Johnson of A.I.D, Robert Steinglass of the REACH Project, Susi Kessler at UNICEF, David Dunlop of the World Bank's Economic Development Institute, and Jeannine Coreil of the University of South Florida.

Finally, I am grateful to Vivian Sellars of the LTS Corporation and to Linda Vogel and Terry Gay of the Office of International Health, U.S. Department of Health and Human Services, for their institutional support of this project.

**Barbara Pillsbury,
International Health &
Development Associates**

EXECUTIVE SUMMARY

This monograph is the third in the series **Behavioral Issues in Child Survival Programs: A Synthesis of the Literature with Recommendations for Project Design & Implementation**. It sets forth the major behavioral issues related to immunization, summarizes research findings, presents recommendations, and includes a comprehensive bibliography.

Behavioral Factors in Child Survival

Success in child survival projects and programs depends not only on technical interventions themselves but on their being accepted and used by the millions of mothers and other child caretakers who determine in developing countries whether a child lives or dies. This requires that project designers and implementors understand not only the technical but also the behavioral factors that influence child survival and acceptance of child survival interventions.

An enormous volume of research has now been carried out on topics related to child survival. Much of this has been qualitative research--anthropological research, ethnographic studies, focus group studies, community studies, KAP (knowledge, attitudes and practice) studies, social marketing research, and so on--designed to provide answers on how to adapt technology, delivery systems, and promotional approaches to individual countries and cultures. The findings and conclusions of this large body of research can be extremely valuable for improving the design, implementation, impact, and sustainability of donor-funded projects and host-country programs.

Unfortunately, these research results have not been easily available outside the countries where individual studies were initiated. It is for this reason that A.I.D.'s Office of Health initiated this series of monographs.

Purpose and Audience of This Monograph

The immediate purpose of this monograph has been to bring together the major findings and recommendations of this extensive body of child survival research as it relates to behavioral issues in immunization. The ultimate purpose is to help project and program personnel design and implement activities and programs that achieve higher levels of immunization coverage--especially coverage which can be sustained over time.

The Background, Goals, and Achievements of Immunization Programs

Every year about 3.5 million children in developing countries die and many more are crippled, blinded, or otherwise disabled from six major diseases that are preventable through immunization. These six diseases are: measles, pertussis (whooping cough), tetanus, polio, tuberculosis, and diphtheria. For all six diseases, vaccines and the means to provide them are readily available, relatively inexpensive, and of proven effectiveness in saving lives.

Many international agencies are engaged in the effort to provide immunization against these crippling and killer diseases. The U.S. Agency for International Development (A.I.D.) has funded immunization activities for many years as part of primary health care projects and their antecedents. In early 1985, A.I.D. identified immunization, with oral rehydration therapy (ORT), as the two lead interventions in its newly-launched Child Survival program. A.I.D. support in immunization relates closely to activities of the World Health Organization's Expanded Programme on Immunization (EPI), launched in 1974, and UNICEF's child survival program, initiated in 1983 with the goal of universal childhood immunization by 1990. The U.S. Congress has mandated for A.I.D. the target of 80 percent immunization coverage (meaning full immunization of 80 percent of all children in all A.I.D.-assisted countries against the six vaccine-preventable diseases).

Significant progress has been made. Globally, of all the child survival interventions, the greatest gains have been achieved in immunization. At the beginning of the 1980s, immunization coverage against the six target diseases was about 20 percent globally. During the past decade many programs have expanded coverage greatly and some countries have now reached over 70 percent coverage or will shortly. In some countries the reported incidence of these diseases dropped has sharply.

An important question now is whether the rapid gains of the past few years can be sustained. In addition, despite the successes in some countries, coverage levels in many other countries remain low. Coverage averages below 40 percent in A.I.D.-assisted countries as a whole, which includes many of the world's poorest nations with the least developed health systems.

Behavioral Factors in Immunization

Of all the child survival interventions, immunization has been the least studied in terms of behavioral factors that influence its acceptance and effectiveness. Immunization is the most "technology-based" of the child survival interventions and thus the one that demands the least from developing country parents in terms of behavior change or mastery of new knowledge or procedures. This means that the behavioral issues are less complex. Certainly this fact is related to immunization's relative success to date. This, and "technological fix" attitudes, also explain why immunization has been a relatively low priority in child survival behavioral research agendas.

MAJOR CONCLUSIONS AND RECOMMENDATIONS

1. The Importance of behavioral factors. Planners and Implementors of immunization programs must make greater efforts to understand local perceptions and behavior that influence parental willingness to have their children vaccinated. Better understanding of local perceptions and behavior related to immunization is absolutely essential for: (1) extending coverage to the "unreached" and the "hard-to-reach;" (2) reducing drop-outs; and (3) building sustainable programs.

2. Immunization acceptance. The terms "immunization acceptance," "continuation," and "completion" should be used in place of "compliance." Programs should educate parents sufficiently about the value of immunization that they accept it voluntarily. Compliance often implies undesirable top-down pressures.

3. At-risk children. The probable at-risk population (children least likely to be taken for immunization) are those in large families of low socioeconomic status in which mothers have a low educational level. The at-risk child may live in a remote rural village but may also be a recent migrant to the city or an urban or peri-urban slum-dweller. This means that those least likely to make up the group not covered are children in poor families, especially the "poorest of the poor."

4. Reasons children don't get immunized. In most countries the reasons are similar and include the following:

- a) Mothers have too many competing priorities, daily subsistence included, and too little time for them.
- b) Many mothers don't understand immunization, have many misperceptions, and don't regard it as very important.
- c) Vaccines produce side-effects that mothers fear and about which they receive little effective information.
- d) In many countries, immunization services are not adequately and reliably available.
- e) Many health workers do not adequately inform mothers as to why and when they should return for additional doses.
- f) Missed opportunities -- many facilities often fail to vaccinate children who have come at time when they should be vaccinated, even though supplies and trained health workers are all present.

5. Research on reasons children don't get immunized. Project personnel should: (1) bring together what is known in the country about these reasons; and then (2) fund appropriate research to identify reasons definitively. The guidelines presented in this review may be used to develop country-specific questions.

6. Disease-specific beliefs and behavior. Conduct disease-specific studies to determine how mothers in rural and urban-marginal areas perceive and treat each of the target diseases, as well as their perceptions about the vaccine for that disease. This should be done on a **country-specific** and culture-specific basis. Subsequently it may be instructive to share findings cross-nationally. Nowhere in the literature is there any summary of perceptions and behavior specific to any of the six vaccine-preventable diseases. Understanding disease-specific perceptions and behavior within a country is especially important: (1) for reaching the "hard-to-reach"; and (2) for building sustainable programs.

7. Research on socioeconomic correlates of low immunization coverage. Health planners should understand socioeconomic determinants of low immunization acceptance in their specific country. However, rather than launch large sophisticated studies, it is important to get this information quickly, and use it for designing approaches to reach the low-acceptance groups.

8. Parental knowledge and understanding of immunization. Health care workers must first have an accurate understanding of immunization and then focus more on educating the community about what immunization is and why it is important. Incomplete and superficial knowledge on the part of parents results in: (1) misperceptions and (2) unfavorable attitudes, both of which contribute to low acceptance and high drop-out rates. More detailed and more accurate knowledge about immunization on the part of both fathers and mothers will be necessary for increasing and maintaining acceptance levels. This does not require a thorough, sophisticated knowledge but, in most countries, certainly more understanding than is common today.

9. Fears. Planners must develop better communication approaches to overcome parental fears. Parents fear numerous things related to immunization: side effects from the vaccines and from poor immunization technique and, in some countries, criticism and pressure from health workers. These fears are more acute in less educated mothers. They also pose greater barriers for poorer mothers and those for whom immunization services are not conveniently accessible.

10. Low motivation for immunization. Planners must also work with local leaders and provide community members with a better understanding of immunization in order to raise motivational levels. Many parents simply aren't very motivated to have their children immunized. Some become motivated through "social mobilization" activities of an immunization campaign, but lose motivation after the campaign is over. The reasons for low motivation depend a great deal on education, poverty, and on other circumstances and constraints of the individual mother.

11. Mothers' time costs and related constraints. Project planners and managers must take into their planning the limited time and competing priorities of poor, developing country women. Women in families that live on the margin, depending on day-to-day subsistence activities, have little surplus time for activities that are not essential for daily life. In many mothers' perception, immunization is one such activity.

12. Access: location of service provision. Immunization programs should attempt to provide services close to women's homes or places of work. Many women are sufficiently positively inclined toward immunization to seek it out if long travel and waiting time is not involved. If a major time investment is required, the cost is too great for many.

13. Drop outs. Country-specific KAP studies should be conducted to determine why, in the individual country, mothers initially attracted to immunization, don't return for the follow-up doses. Changes should then be made to attract them back. The average drop-out rate between DPT-I and III has been estimated at about 25 percent. Reasons are generally known but need to be clearly understood in each country. If mothers could be motivated to return for second and third doses, coverage rates would rise by a about 15 to 20 percentage points.

14. Vaccination cards should be designed so that mothers can tell easily by looking at them when to return for the remaining doses. Many cards in use today are not easily comprehended even by literate mothers. This is one major or at least contributing reason for drop outs--especially among mothers who are not highly motivated or who face major constraints. A model for improving vaccination cards exists.

15. Community participation. Health workers and project personnel should use whatever means are available to increase community participation. Despite sentiments that "community participation is passe", and although effective community participation is not easy to achieve, community participation is essential to reach the high coverage rates that are the goals of EPI and UCI programs.

16. Traditional health practitioners should be part of the focus of health education efforts in countries where the public frequently consult them. Traditional practitioners are not necessarily opposed to "modern" medicine and may be useful allies as they are often the first specialist consulted by community members.

17. Traditional health beliefs. Health education should build on traditional beliefs and practices whenever possible. Health workers are usually more successful if they build on, rather than discount, preexisting beliefs about disease causation.

18. Research methodologies and health education approaches developed for other child survival interventions should be adapted for learning how to communicate about and for popularizing immunization. This includes social marketing approaches (used carefully), short-timeframe ethnographic studies, and methodologies developed in the fields of ORT and growth monitoring.

19. Counseling guidelines developed for family planning should be used to develop generic guidelines for counseling on immunization side-effects and benefits. Currently little counseling on side-effects occurs. Much more has been developed along these lines in family planning which could easily be built upon.

INTRODUCTION

Of all the child survival interventions, immunization has generally had the greatest success thus far. It is the most "technology-based" of these interventions and thus the one that demands the least from developing country parents in terms of behavior change or mastery of new knowledge or procedures. For immunization programs to succeed, they must instill some new attitudes and some new knowledge, but their success does not depend on parents learning and repeating new procedures, as the other child survival interventions generally do. This means that the behavioral issues are less complex. Certainly this fact is related to immunization's relative success to date.

Nevertheless, as health planners proceed to think about further extending--and also sustaining--gains made thus far, it becomes increasingly important to focus attention on understanding and influencing the behavior of community members whose children have not yet been fully immunized.

The Purpose of This Monograph

The goal of this monograph is thus to bring together findings from qualitative research and the related literature about behavioral factors in immunization and to make recommendations to health planners for fine-tuning programs to increase and sustain immunization coverage.

The Background and Goals of Immunization Programs

Every year, about 3.5 million children in developing countries die and many more are crippled, blinded, or otherwise disabled from six major diseases that are preventable through immunization. For all six diseases, vaccines and the means to provide them are readily available, relatively inexpensive, and of proven effectiveness in saving lives.

These six vaccine-preventable diseases are: measles, pertussis (whooping cough), tetanus, polio, tuberculosis, and diphtheria.

A.I.D. support in immunization relates closely to activities of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). Several key dates are important in the development of these efforts. In 1974, with the worldwide eradication of smallpox in sight, WHO launched worldwide an Expanded Programme on Immunization (EPI). In 1977, WHO adopted the specific goal of providing immunization for all children of the world by 1990 (subsequently referred to by UNICEF as "UCI/1990"). In 1982, UNICEF proposed the concept of a "child survival and development revolution" (CSDR) as a response to the need for low-cost high-impact

measures during the global recession of the early 1980s. This was adopted by UNICEF and the United Nations in 1983. Immunization took a lead in this strategy. In 1984, several countries, with UNICEF support, embarked on "accelerated immunization programs" in pursuit of the goal of universal childhood immunization by 1990.¹

A.I.D., which had been funding immunization activities for many years as part of primary health care projects and their antecedents, joined in and, in early 1985, identified immunization and oral rehydration therapy (ORT) as the two lead interventions in its newly-launched Child Survival program. The U.S. Congress has mandated for A.I.D. the target of 80 percent immunization coverage--meaning full immunization of 80 percent of all children in all A.I.D.-assisted countries against the six vaccine-preventable diseases.

In nearly all countries, full immunization means, for each child:

- o Three doses of DPT (against diphtheria, pertussis, and tetanus);
- o Three doses of polio vaccine;
- o One dose of BCG (against tuberculosis);
- o One dose of measles vaccine; and
- o Two doses of tetanus toxoid for the mother before her child is born.

"Universal childhood immunization," as presently conceived, does not actually mean full immunization of all children. Rather, it means: (1) availability of immunization against the six target diseases for all children, and (2) full immunization of at least 75 to 85 percent of children against each target disease. The target coverage for "universal immunization" is now variably established in different regions of the developing world--for example, 75 percent coverage in Africa and 85 percent in China (UNICEF 1987a).

The general goal of national immunization programs is to increase immunization coverage and, ultimately to thereby reduce mortality and morbidity due to the target diseases. WHO has estimated that, from the initiation of a nationwide program, most countries require 5 to 10 years to achieve immunization coverage levels in the range of 60 to 80 percent (Henderson 1984b).

To improve immunization coverage rapidly, mass campaigns became increasingly popular during the early 1980s. Since 1984, over 60 countries have undertaken "accelerated immunization programs" and "social mobilization" to spread awareness of immunization and increase coverage (Kessler and Blair 1987). This 1980s "acceleration" strategy differs from the "expanded" (EPI) strategy launched in the 1970s by WHO. Expanding meant extending coverage out and into rural areas from a limited number of facilities; "acceleration" means stepping up and intensifying the process of expanding coverage.

¹Detailed analyses of these developments are presented in Assignment Children 1985, UNICEF 1987a, Kessler and Blair 1987, and Bell 1987.

Significant progress has been made. Globally, of all child survival interventions, the greatest gains have been achieved in immunization. At the beginning of the 1980s, immunization coverage against the six target diseases was about 20 percent globally. Many programs have expanded coverage greatly in the last decade. Some countries have now reached over 70 percent coverage or will shortly. A number of countries (e.g., Malawi, Egypt, and Ecuador) have exceeded 80 percent coverage against at least one of the childhood diseases (A.I.D. 1989:21). In some countries the reported incidence of these diseases dropped has sharply. Great progress has been made, for example, toward the goal of eradicating polio in Latin America. There documented cases of polio had decreased to only some 300 cases in 1988 and only 50-some cases as of mid-1989. This is a great success.

These achievements have been due in part to the challenge presented by the "UCI/1990" goal, and the excitement of the intensified campaign strategy for achieving it, which have succeeded in mobilizing high-level political involvement. An important question now is whether the rapid gains of the past few years can be sustained (UNICEF 1987a, Kessler and Blair 1987). In many developing countries, immunization programs have been functioning at unprecedented levels of performance and intensity. They have mobilized the media, military, and volunteers from thousands of communities. Hundreds of thousands of people have been part of this global effort, and the results are visible. But sustaining such a high level of performance will be difficult (A.I.D. 1988:31-32, A.I.D. 1989:33-41).

In addition, despite the successes in some countries, coverage levels in most developing countries remain low. Coverage averages below 40 percent in A.I.D.-assisted countries as a whole, which include many of the world's poorest nations with the least developed health systems. Furthermore, although measles and neonatal tetanus still account for the vast majority of deaths due to vaccine-preventable diseases, coverage with these two vaccines has lagged (A.I.D. 1989:21).

Behavioral Factors in the Immunization Literature

Of all the child survival interventions, immunization is the intervention that has been least studied in terms of behavioral factors that influence its acceptance and effectiveness. The fact that immunization is the most technology-based of these interventions appears to have resulted in "technological fix" attitudes excluding behavioral studies from many research programs and action agendas. As one leading authority has observed:

"Medical scientists are acutely aware of biological factors affecting deterioration of vaccines due to poor storage and lack of an adequate immune response in children because of malnutrition. Far less attention is given to the social constraints to effective vaccine use" (Mosely 1984).

The contrast in the volume of qualitative research on ORT, for example (huge), to that on immunization (meager), is quite astonishing.² Likewise, far fewer studies and research projects have been funded, and far less has been written, on behavioral aspects of immunization than on breastfeeding and weaning or even growth monitoring.³ Because so few qualitative studies had been carried out concerning immunization, the literature search for this review was expanded beyond work focusing on immunization to include other publications that contain some discussion, even if only minimal, of behavioral factors in immunization. Fortunately, the picture is beginning to change with a number of excellent reports just having been completed.⁴

The costs of immunization programs have been well studied by economists.⁵ Much of the cost analysis and cost effectiveness research, however, has considered only the financial costs of immunization, chiefly those incurred for providing vaccinations. Parental costs--opportunity and other--have generally not been considered or assigned much importance. A recent review of cost effectiveness studies concludes:

"Since these studies have almost uniformly only used "financial" costs and [since] opportunity costs for mothers' time to take their children for immunizations are not insignificant, these data should not be used to draw any conclusions about urban vs. rural, clinic vs. outreach, or other such policy decisions" (Stewart 1988).

If supported by other economists, this conclusion appears a serious one indeed. It certainly supports the need for more attention to opportunity costs and the related determinants of maternal decision-making that are the subject of this monograph.

²On the ORT literature, see Soheir Sukkary-Stolba 1989 (Monograph No. 2 in this series).

³The paucity of qualitative research on immunization is also attested to by H.K. Heggenhougen and C.J. Clements' excellent annotated review (1987) of the literature on the acceptability of childhood immunization; this review is a must for anyone interested in a full understanding of these issues. For a comprehensive bibliography on behavioral issues in breastfeeding and weaning, see Ann Brownlee 1989 (Publication No. 5 in this series).

⁴See Bender and Macauley (1989), Bastien (1988), Blanchet (1989), Coreil et al (1989), Nichter (1989), Streefland (1989), and Rifai (1989).

⁵See the recent reviews by Stewart (1988) and Brenzel (1988). See also: Akin, Guilkey, and Griffin (1985); Zubkoff and Dunlop (1974); Salkever (1976); and Betran (1990).

BEHAVIORAL ISSUES AND SIGNIFICANT FINDINGS

I. BEHAVIORAL FACTORS IN IMMUNIZATION: ARE THEY IMPORTANT?

Issues for Project Design and Implementation

- o Do beliefs and behavior of community members matter?
- o If so, why and at what point?
- o How do they relate to coverage?

Determinants of Immunization Coverage

In developing countries, childhood immunization coverage levels are determined by three main factors:

1. Supply and logistics: The ability of the health and political systems to make vaccination available (accessible and affordable) to the public;
2. Service quality: The quality of health services, including the avoidance of missed opportunities.
3. Communication: The ability of the health and other systems to communicate effectively to the public about the value and availability of immunization; and
4. Acceptance: The decision by parents to take children to be immunized (and by women to become immunized against tetanus) and then follow-through on that decision.

The Focus on Technology

Immunization is the most technology-based of the child survival interventions. Unlike oral rehydration therapy (ORT), immunization does not depend on a mother being able to learn, remember, and later repeat--accurately--a somewhat complicated new procedure. Likewise, infant and child nutrition, especially breastfeeding and weaning, depend, day in and day out, on the mother and what she knows and does. Most birth-spacing methods also demand that individuals learn and repeat--accurately--new forms of (contraceptive) behavior whose success depends almost exclusively on behavior of the couple within their home.

In contrast, "quick fix" and "silver bullet" are expressions that have frequently been applied to immunization. Many health personnel have viewed the issues in immunization as just providing the goods: produce effective vaccines, distribute them, maintain the cold chain, announce when and where vaccinations are being provided, and administer the vaccine--the assumption being that, if immunization is supplied, people will of course recognize it as an absolute good and desire it.¹

Many personnel express the belief that knowledge about vaccines is of little consequence to the success of a vaccination program. Of paramount importance is a reliable supply of vaccines, the manpower to vaccinate, and "compliance." The following comments by one South Asian health planner are representative:

"The beauty of vaccination programs is that they require little from the community beyond lining up and holding out their arm at the proper time. The health worker needs only to tell them to come to the clinic. The technology is relatively simple and mobilizing the community may be done through the influence of village leaders like the school master. It matters little whether a soldier understands the principles of how the rifle he uses works so long as he knows how to aim, load, and shoot. It is the same with vaccinations. All this talk of community health efforts is good for speeches only. To get vaccination programs done, targets must be set and field staff must be closely supervised.... It is like the military" (Nichter 1988:36).

Three Operational Issues in Immunization

A recent progress review identifies six major operational issues in immunization programs that need to receive constant attention (UNICEF 1987a). Among these are:

1. The target coverage needed to attain "herd immunity,"
2. Reaching the unreached, and
3. Sustainability.

These three objectives will not be achieved, we conclude here, unless immunization planners place greater emphasis on understanding local beliefs, behavior, and constraints that influence parents' willingness to have their children vaccinated. Even though a mother does not have to learn and accurately repeat some new procedure, full immunization coverage does require 10, or at least 7, "correct" decisions and repeat trips to a health facility. Let us examine the three issues identified above.

¹This assumption has instructive parallels to a similar guiding assumption which prevailed in family planning in the 1960s, and which experience has subsequently shown to be far too simplistic and optimistic.

1. Target Coverage Needed to Attain "Herd Immunity"

The term "herd immunity," deriving from veterinary medicine, refers to a state in which the probability of a non-immunized individual coming into contact with a target disease is greatly reduced.

Although the term "universal coverage" implies a total coverage of the population, it is unlikely that the total 100 percent will ever be covered. Actually, this may not be necessary for all diseases. Rather, what appears necessary is a coverage level that, while slightly lower than 100-percent coverage, is still high enough to afford "herd immunity." Since the ultimate goal of universal immunization is to eradicate vaccine-preventable diseases such as **polio**, the first step is to try to reach a state of "herd immunity." Even with **measles**, for which the goal is not eradication but control, herd immunity remains important.

A recent study suggests that to achieve "herd immunity" against **measles** or to eliminate **pertussis (whooping cough)**, 92 to 96 percent of children may need to be immunized (UNICEF 1987a).²

2. Reaching the Unreached

If the immediate goal is to raise vaccination coverage in a country from, say, 5 to 25 percent, the beliefs and behavior of parents may not be so important.³ When coverage levels are still very low, there is usually a backlog of parents whose children have not been immunized but who recognize the value of such modern protective measures and respond rather quickly once vaccines are made available locally. It is thus relatively easy, in a country with a well-established health infrastructure and good channels of communication, to increase immunization coverage up to a certain level. The 30-percent increase from 50 to 80 percent coverage is much harder to achieve, however, than the previous 30-percent increase from 20 to 50 percent.

Once the goal is to achieve universal immunization coverage, or even "herd immunity," then it is essential to reach the currently "unreached" population. This cannot be done without better understanding of, and more attention to, the beliefs and behavior of mothers and other child caretakers.

Lessons from family planning, where intensified efforts have been under way far longer than in immunization, are instructive here. Family planning experience has shown a "plateauing" at several levels of acceptance. After finding eager acceptance

²Herd immunity does not apply to **tetanus**, since it is not a communicable disease but an environmental hazard. Against tetanus, 100 percent need to be immunized.

³**Pakistan**, for example, in 1981 had coverage rates for measles and DPT III vaccines of only 2 and 3 percent respectively (Kessler and Blair 1987:30).

among a certain more ready segment of the population, increases in coverage become more difficult and, in individual countries, coverage "plateaus" at certain levels above which it may be, for a time, hard to budge. Stated another way, once the reservoir of overt demand, plus that of easily activated "latent demand" has been satisfied, achieving higher coverage levels becomes more difficult. This is especially true where the remaining people are poorer, women are less educated, the health infrastructure is feeble, and channels for communicating health messages are few.

With immunization, the same "plateauing" phenomenon may be occurring. Even the best conventional immunization programs have tended to reach a "plateau" at around 70 percent coverage, as in **Thailand**.

In such cases, the unreached 30 percent tends to consist of the most socioeconomically disadvantaged groups--thus, those people most in need (UNICEF 1987a:29). These unreached are not just remote villagers, however, but also the urban poor, for whom services may be offered close at hand.

3. Sustainability

It may be easy, especially in the excitement of a high-visibility campaign, to increase immunization coverage to a moderately high level. Moving beyond that relatively easy-to-obtain level, however, and sustaining the coverage achieved requires a fine-tuning and institutionalization of the program.

As in all social programs, such fine-tuning and institutionalization depend on understanding community behavior related to the innovation being promoted. It also requires that the "demand" for immunization that is created among parents by public media and other promotional messages during a campaign or other "acceleration" activity be sustained after those promotional messages are no longer being broadcast.

Finally, immunization "drop out" rates are also an issue in sustainability. Here too progress can be made through greater attention to the perceptions, beliefs, and situational constraints of mothers which cause them to "drop out." In this regard, the behavior and attitudes of health workers are important too, as this is a significant determinant of whether or not mothers return for the full course of vaccinations and influence their neighbors and associates to do likewise.

Conclusions and Recommendations

The importance of behavioral factors. Planners and implementors of immunization programs must make greater efforts to understand local perceptions and behavior that influence parental willingness to have their children vaccinated. Better understanding of local perceptions and behavior related to immunization is absolutely essential for: (1) extending coverage to the "unreached" and the "hard-to-reach;" (2) reducing drop-outs; and (3) building sustainable programs.

II. IS COMPLIANCE THE ISSUE?

Issues for Project Design and Implementation

- o Is "compliance" a useful conceptual approach for increasing immunization coverage?
- o If not, what is?

The Importance of Terminology

Because immunization activity in developing countries has been so focused on the "supply side," understanding of "demand side" factors has been much more limited and superficial. In the medical and health services literature on immunization the term "compliance" is often used and blame appears to be put on the public for not "complying" with the regimen for full immunization. For example, a recent article titled "Immunization Non-Compliance--Time for Action" asks:

"Why is non-compliance such a problem with immunization? Perhaps the answer is not immediately apparent and, indeed, has not been sufficiently studied. Considerable energy has been expended on documenting non-compliance but more effort is needed to ascertain its cause and, subsequently, to suggest appropriate remedies" (Buchanan and Spencer 1981).

In fact, part of the problem may have to do with inappropriateness of the terminology used--which suggests and permits inadequate underlying concepts and understanding. It is difficult for planners and implementors to "suggest appropriate remedies" if they are not clear about basic concepts, or about constraining factors on the demand side. Just as it is important to be precise and scientific about terminology for vaccines themselves, so too with terminology for discussing community response toward vaccines and immunization.

Terms currently used include the following:

1. Immunization coverage. This term refers to the number or percent of eligible persons (children and, for tetanus toxoid, women) who have been "covered," or received the correct number of doses of a vaccine, for the target disease(s). This term does not usually focus thinking on community factors, but on "bottom-line" numbers and on the supply-side making available effective vaccines and vaccinators.

2. Immunization compliance (and "immunization non-compliance"). The problem of low coverage rates is very often expressed by medical and technical personnel as "how to improve compliance." This is a medical term used by physicians in many settings in a pejorative sense against patients (as in "poor compliance"). The term "compliance" also appears to have been common in Africa and elsewhere during the colonial period when a military model for immunization prevailed and immunization was imposed upon "the natives" by authorities who often used force to achieve "compliance" (an approach that still prevails in some areas today). The term is also common in the U.S. and other developed countries where a subtler mechanism, mandatory immunization for school entrance in a system where school attendance is required by law, is used to "enforce" compliance.

In fact, this authoritarian term is quite inappropriate--and misses the realities of developing countries. In developing countries today, "compliance" is a faulty way of looking at the problem. Neither health nor educational systems can force rural villagers "to comply." Instead, the focus must be on making services more accessible, acceptable, and understood so that parents will desire and seek them out. "Compliance" is certainly not consistent with the philosophy of self-help and empowerment of parents that is set forth in many donor statements about immunization (e.g., UNICEF 1987a), let alone the stated philosophies of primary health care, of which immunization must be part.

3. Immunization demand. This term is technically used by economists to refer to the quantity of immunization consumed at a given price (time, money, inconvenience, etc.). In non-technical English, however, it seems somewhat inaccurate. Some parents do demand (or at least ask for) immunization, but many others are just going along with what others demand or ask of them.

4. Immunization use (and non-use). This term is not wholly inappropriate, but it implies immunization is something to be used habitually, as in contraceptive use or use of ORT.

5. Participation (and non-participation) in immunization. This is vague. Sometimes participation is used to mean getting vaccinated (generally, through the government program). At other times it is used to mean participating in the provision of vaccinations to others (as in community participation).

6. Immunization attendance (and non-attendance). This is too narrow and means, properly, attending a clinic or other designated place where immunization is being offered.

7. Immunization acceptability. This doesn't capture the full dynamics. It implies it is the immunization itself which is or is not acceptable. In reality, many parents consider immunization "acceptable" but still don't take their children to be immunized because of other reasons (e.g., distance or competing priorities on their scarce time).

8. Immunization acceptance. This appears to be the most precise and accurate term, and the one most useful for helping project personnel understand more clearly how community members perceive immunization (rather than how physicians, economists, or other researchers do). It means, simply, whether people accept immunization or not. Appropriate companion terms, with reference to a series of vaccinations, are continuation and, finally, immunization completion. Together these must be the immunization goals on the community side: acceptance, continuation, and completion.

Conclusion and Recommendation

The terms "immunization acceptance," "continuation," and "completion" should be used in place of "compliance." Immunization programs should educate parents sufficiently about the value of immunization that they accept it voluntarily. Compliance implies undesirable top-down pressures.

III. REASONS CHILDREN DON'T GET IMMUNIZED: OVERVIEW

Issues for Project Design and Implementation

- o What are the reasons for low acceptance rates?
- o Why do many parents never bring their children for any immunizations at all?
- o Why do some parents begin the immunization series but not follow through?
- o Why do parents who take other preventive measures not see the value of immunizing their children?
- o Why do parents who go to doctors for some services not seek or accept immunizations?
- o What is the relative importance of these reasons?
- o How universal are the answers to these questions?

Reasons for Non-Acceptance of Immunization

Assuming immunization is being offered locally, there is no one reason that explains low acceptance rates cross-nationally. Even within a single country, culture, or geographic region within a country, multiple factors influence immunization acceptance (Heggenhougen and Clements 1987, Hingson et al. 1976).

Factors that influence acceptance rates--and thus explain low acceptance rates--may be categorized as follows.⁴

1. Reasons related to characteristics of the mother and other caretakers,
2. Reasons related to characteristics of the vaccines,

⁴ Reasons for non-acceptance are also referred to in the literature as "user and system variables," "factors affecting immunization acceptance," "determinants of immunization acceptance," "characteristics of non-users" and so on. The term "reasons" seems preferable in helping project personnel and health planners see more clearly how mothers themselves perceive immunization (rather than how researchers do).

Among studies that discuss reasons for non-acceptance are: Heggenhougen and Clements (1987), Coreil (1987a and b), Nichter (1988), Al-Hadi (1981), Bastien (1989), Blanchet (1989), Brown et al. (1982), Booth and Mata (1985), Bonilla et al. (1985), Clark (1983), Friede et al. (1985), and Hassouna (1983).

3. Reasons related to characteristics of the delivery of immunization services, and

4. Reasons related to communication to the public about immunization.

For some purposes it is useful to think about these as either "user side" reasons (chiefly number 1) and "supply side" reasons (chiefly numbers 2,3,4). "User side" reasons include many constraints that project personnel should understand but can do little to change.⁵ "User side" reasons also include problems that project personnel can address through health education and improved communication and interaction. "Supply side" reasons are health system problems that project personnel and health planners may be able to solve.⁶

In some cases there is overlap between whether a problem is seen as having to do with the parent (user) or with the health system (supply side). To illustrate: one reason for high drop-out rates in some communities is that mothers forget when to return for the next dose in a series. This might be considered a user-side problem (and health workers might moan "Oh! Those illiterate mothers!). But the reason mothers forget is in part supply-side related--the fact that health workers often do not take the time to explain adequately to mothers about when to return and why it's important. For their part, some health workers simply may not have time for this. Such a problem is definitely a "supply-side" system problem.

The Central Role of Mothers

As with other child survival interventions, it is mothers who play the key role on the "user side" in immunization. In most countries it is usually mothers who take children for health care services, including immunization. Fathers may occasionally take a child to be vaccinated, but more likely than not their involvement is within the household at the decision-making level. In many households in some countries (for example, **Honduras**, **Bangladesh**, and the **United Arab Emirates**) fathers appear to be major decision-makers with respect to children being immunized (Bonilla et al. 1985; Blanchet 1989:10; Rifai 1989:92). Nevertheless, it is upon mothers that the burden of responsibility for immunization usually falls.

⁵See, for example, anthropologist Nancy Scheper-Hughes' insightful volume Child Survival: Anthropological Perspectives on the Treatment and Maltreatment of Children (Scheper-Hughes 1987) and her article therein, "Culture, Scarcity, and Maternal Thinking: Mother Love and Child Death in Northeast Brazil."

⁶See also Steinglass et al. (1988), "Missed Opportunities for Measles Immunization." This report provides an excellent model for studying how a health system misses opportunities, some quite easy, to immunize. Also see Keja et al. (1988).

Reasons Mothers Give for Not Immunizing Their Children

What follows below is a comprehensive listing of reasons mothers give for not getting their children immunized.⁷ Obviously the same reasons are not equally a problem in every country (and no ranking has been done here as to importance). For example, when the immunization site is far away, a mother's competing priorities and lack of time are more serious constraints when immunization is provided close by. Discussion of many of these reasons follows below in other sections of this monograph.

1. Reasons related to characteristics of the mother and other caretakers:

(1) Time constraints and competing priorities

- a. Meeting subsistence needs is more essential.
- b. Other economic activities are higher priority.
- c. Family problems consume large amounts of time.

(2) Other socioeconomic constraints

- a. Older children restrict mobility but can't be left behind alone.
- b. Lack of clean or proper clothes.

(3) Lack of knowledge about immunization

- a. Lack of knowledge about kinds of vaccines and how vaccination works.
- b. Lack of knowledge about schedules and repeat doses.
- c. Beliefs about contraindications for vaccination.

(4) Low motivation for immunization

- a. Health is a relatively low value.
- b. Unconvinced of importance of immunization.
- c. Unconvinced of efficacy of immunization.
- d. Discouragement over continuing poor health of child despite efforts to make child thrive.
- e. Fatalism about child survival.
- f. Maternal "negligence" (too many children or the child is a girl).

(5) Fears

- a. Fears of side-effects.
- b. Fears of criticism or other unsupportive comments.
- c. Fear that health workers will apply pressure to use family planning.
- d. Fear that vaccination is a covert form of family planning or that it might result in sterilization.
- e. Fear that acceptance creates indebtedness to the vaccinator.
- f. Public shyness or embarrassment.

⁷Adapted from findings by Jeannine Coreil (1987a and b).

- (6) Community Opinion
 - a. Negative opinions within the community about immunization.
 - b. Esteemed community leaders have not advised or told community members to immunize their children.

2. Reasons related to characteristics of the vaccines:

- (1) Side-effects of the vaccines
- (2) Belief that vaccination is not effective

3. Reasons related to characteristics of the delivery of immunization services (including patient-provider interaction):

- (1) Accessibility
 - a. Immunization site is too far away.
 - b. Road or path to clinic is hazardous or impassable after rain or in the rainy season.
- (2) Availability
 - a. Immunization services are scheduled at a time that conflicts with other duties.
 - b. Not adequately informed of the immunization schedule.
 - c. Arrival of vaccinators is unpredictable (e.g., due to weather or distance).
 - d. Vaccines not in supply (or staff won't open new vial)
 - e. Some vaccines systematically not used on certain days of the week.
- (3) Acceptability
 - a. Poor treatment from health staff (experience personally or reported by others in community).
 - b. Poor injection technique causing pain or side-effects.
 - c. Mistrust of government vaccinators.
 - d. Curative services aren't provided (nor material aid).
 - e. Facility is overcrowded: long wait, service rushed.
- (4) Affordability
 - a. Direct costs.
 - b. High opportunity cost of the mother's time.

4. Reasons related to communication to the public about immunization:

Inadequate communication:

- (a) About the nature and benefits of immunization.
- (b) About when and where immunization is being provided.
- (c) About when to return for follow-up doses.

Checklist to Identify Reasons for Low Coverage

With these reasons in mind, planners may find useful the following diagnostic check list to identify reasons for low coverage.⁸

- o Socioeconomic and Cultural Characteristics:
 - 1. Are there differences in acceptance between different socioeconomic groups?
 - 2. Are there differences between ethnic groups?
 - 3. Are there rural-urban differences or differences among neighborhoods?
 - 4. Are there differences between newly arrived migrants and other groups?
 - 5. Are there differences between malnourished and nourished children?

- o Poor Immunization System:
 - 1. Are immunization sites inconvenient?
 - 2. Are immunization sessions held irregularly?
 - 3. Do immunization services cost too much?
 - 4. Are the procedures too complicated or too time consuming?
 - 5. Does the staff's language or culture differ from the users'?
 - 6. Do parents suffer indignities?
 - 7. Does the immunization team lack methods for finding non-immunized children?
 - 8. Missed opportunities: Do children who should receive a vaccination leave an immunization facility without it?

⁸Based on a checklist developed by anthropologist Judith Brown and colleagues (Brown et al. 1982).

- o Parents' Lack of Information:
 1. Do parents lack information on childhood diseases?
 2. Do parents lack information on vaccines?
 3. Do parents lack information on their children's ages?
 4. Do parents lack information about the immunization program?

- o Unfavorable Attitudes Toward Immunization:
 1. Are influential people opposed to immunization?
 2. Do parents believe supernatural causes are more powerful?
 3. Have parents had past experience with poor immunization services?

In each country it is often the case that a great deal of such information is already available but has not been analyzed. This should be synthesized first and subsequent analysis should build on what is already known. Personnel should ask:

1. Which of these reasons apply in this country (and for which ethnic, religious, or other local sectors of the country's population)?
2. What is the relative importance of these reasons?
3. What are the local dynamics?

Methodology

To discover reasons for non-immunization, researchers may use some combination of the following approaches:

- o Informal and formal discussion with staff;
- o Informal and formal discussion with people attending immunization services;
- o Informal and formal discussions with key community members, including traditional health practitioners;
- o Focus group studies;
- o Anthropological case studies; and
- o Community surveys in different parts of the country (interviewing families, cluster sampling, etc).

Conclusions and Recommendations

Project personnel should: (1) bring together what is known in the country about reasons that children aren't brought for immunization; and (2) then fund appropriate research to identify reasons definitively. The diagnostic outlines above may be used to develop the country-specific set of questions. Obviously this listing does not apply in the same way in each country and project personnel should not generalize directly to the local situation.

IV. THE CULTURAL BASELINE: BELIEFS AND PRACTICES RELATED TO PREVENTION AND THE SIX TARGET DISEASES

Issues for Project Design and Implementation

- o Are there cultural universals (explanations common to all cultures) about what causes disease?
- o Do community members traditionally believe that disease can, or should be, prevented?
- o If so, what do they do to prevent disease?
- o Are people abandoning traditional beliefs under the influence of "modernization"?
- o How do local communities perceive each of the six target diseases? What do they regard as the cause of the disease? Do they regard it as fatal or curable? How do they treat it?
- o How much variation is there from country to country?
- o How much variation is there within countries?

What Causes Disease?

Worldwide there are hundreds of local disease etiologies--explanations for what causes illness. All cultures have traditional beliefs about how disease is caused. In general, however, explanations fall into one of three categories: supernaturally-caused, naturally-caused, or socially-caused (often with considerable overlap). In each country, each of these causes is believed by some people. Nevertheless, there are major differences in interpretation from country to country, and even within countries.

Supernaturally-Caused Illness

This means that people say a disease is caused by an angry or unhappy god, angry or unhappy ancestors, witchcraft, fate, Allah, jinn, or some other powerful supernatural force.

Witchcraft: In **Nigeria**, one group of illiterate mothers who had not immunized their children explained that diseases like **polio**, **measles**, and **tuberculosis** cannot be prevented by "Western medicine." The reason is that these diseases are due to the works of evils and witches who are trying to punish, not the child, but the parents by making the child incapacitated and thereby an everlasting burden to the parents (Adekunli 1978:356).

Ancestral displeasure: In **Swaziland**, most people believe illness is caused by sorcery. A second explanation is ancestors becoming angry and thus withdrawing their protection (Green 1985:278).

Naturally-Caused Illness

Traditional medical theory in many parts of the developing world holds that various illnesses are caused by forces in nature: wind, moisture, and the "hot" and "cold" properties of certain foods (referring not to their temperature but to their "intrinsic" nature). This is true, for example, in much of **Asia** and **Latin America**, where many educated and uneducated people alike attribute illnesses to an imbalance of "hot" and "cold."

Traditional Concepts of Prevention

In all countries and cultures people have the concept of preventing disease. Western medicine may not agree with the effectiveness of some traditional preventive methods, but they persist. Some cultures regard ritual ceremonies to appease local gods, ancestors, or evil forces as prevention against illness. In much of **Asia**, people consume certain "hot" or "cold" foods or tonics to prevent illness. These are concepts that can be built upon for making immunization better understood.

Traditional Vaccination. Some cultures even have a form of traditional vaccination. For instance, in **Swaziland**, kugata is a traditional vaccination performed around a baby's navel. A razor blade is used to make shallow cuts into which are rubbed ashes of herbal medicines burned over hot coals. Similar herbal mixtures (tinyamatane) are burned in preparation for prophylactic fumigations (kubhunyisela) with which Swazis fortify children against a variety of dangers. Typically within the first few weeks of a child's life a traditional healer or clan elder burns the herbal mixture by placing it on hot coals. As smoke rises from the coals the child is positioned, covered by blankets, so as to inhale the smoke. Virtually all Swazi children have undergone protection of this sort. It is believed that those who are unprotected will become victims of serious childhood afflictions (Green 1985:281).

Attitudes Toward Infant Death. In many cultures people regard the death of an infant as natural and do not even confer a name until the infant has passed the first week, month, moon, thirty, or forty days. This itself does not mean a child's life is not valued, but rather that people have accommodated to what has long been inevitable. In rural **Haiti**, for example, **neonatal tetanus** is clearly recognized as a common and fatal disease. Rural people agree that no infant could recover from this disease, regardless of treatment. Thus usually, if the family perceives a child as having this or any other fatal disease, it does not invest either time or money seeking treatment (Coreil 1983).

Son Preference and Discrimination Against Daughters. Preference for sons--and thus preferential treatment of male children--is deeply rooted in the social, economic, and inheritance systems of many countries. It is well-documented that in cultures with strong son preference boys are likely to receive more expensive and better health care than are girls (Ravindran 1986).¹ This appears to be especially true for higher birth order girls--that is, girls who are the fourth or subsequent child born to a couple. Parents are more likely to take a sick son to a doctor ("Western"-type) instead of only a traditional health practitioner, or in addition to a traditional practitioner, while the same parents may take their daughter to only a traditional practitioner.² Obviously this has important consequences for the health of female children, and for child survival programs, including immunization, in many countries.

In **South Asia** intra-household discrimination against daughters in the allocation of food and medical care is especially strong. There, recent studies have demonstrated that such discrimination lowers the health and nutritional status of girls and also results in higher death rates for girls than boys (Miller 1989). It is not only in South Asia, however, that son preference puts female children at greater risk. Of 40 countries studied by the World Fertility Survey, countries showing the strongest son preference were **Pakistan, Nepal, Bangladesh, Korea, Syria, and Jordan**. Asia and Near East countries ranked as having moderate son preference were **Thailand, Malaysia, Sri Lanka; Egypt, Turkey, Yemen Arab Republic, Tunisia, and Morocco**. Of the eight sub-Saharan African countries studied, six -- **Cameroon, Ivory Coast, Lesotho, Nigeria, Senegal, and Sudan** -- also recorded moderate son preference. Of the 12 Latin American countries studied, only two -- **Mexico and the Dominican Republic** -- were found to show son preference.³

While discrimination against daughters is often intentional in South Asia, the neglect of female children is not always willful. Often neglect of female children is more a conditioned response in a situation of scarcity where limited resources need to be optimally invested -- as, for example, in **Northeast Brazil** (Scheper-Hughes 1987).⁴

¹See also Akesode (1982), Bhatia (1983, 1989), Bhuiya et al. (1987), Das Gupta (1987), Ghosh (1986), Goldstone (1984, 1986), Makinson (1985), McKee (1984), Miller (1981, 1985), and Rosenzweig and Schultz (1982).

²Blanchet (1989) discusses this common phenomenon in the context of immunization. This pattern is well-documented throughout the medical anthropological literature.

³World Fertility Survey, Cross-National Summaries, No. 27, October 1983 and First Country Reports (in Ravindran 1986:5-6). India was not among the countries surveyed.

⁴See Cassidy (1980), Hatem (1987), Korbin (1981), Prough and Harlow (1966), and Scheper-Hughes (1984 and 1987).

Regardless of whether discrimination against daughters is casual or deliberate, however, the damage it does to female health is considerable (Ravindran 1986).

Traditional vs. "Modern"?⁵

Medical Pluralism. It is definitely not the case that people must choose between either "traditional" or "modern" medicine. Many if not most poor people in developing countries engage in "medical pluralism," from time to time consulting both traditional health practitioners as well as modern-sector practitioners. In many countries a sick child may be treated with therapies from several traditional and modern practitioners in quick succession or even simultaneously.

This varies considerably from one region to another, however. In **Asia**, coexisting different etiologies, or explanations about the cause of illness, are commonplace. In many Asian countries, illiterates and elites alike continue to consult practitioners of the Ayurvedic, Unani, Sinhala, or Chinese traditional medical systems. This is true in **Africa** as well. In the **Middle East**, in contrast, most elites think traditional healers are quacks who should be outlawed.

How Fast Do Health Beliefs Change? How likely is it that traditional beliefs described in the literature ten years or so ago still prevail today? It is both true that "beliefs change rapidly" and that "beliefs change slowly."

Beliefs change rapidly. Greatly increased communication with the outside world during recent years means that many people in each developing country have abandoned the old beliefs that their parents and grandparents accepted as absolute truth. Many educated middle-age urban residents view health and illness much as an American or European does.

Beliefs change slowly. At the same time, beliefs that have prevailed for generations in a country are not going to disappear overnight. (This is one reason, along with ethnic and religious differences, for the wide variety within a country of beliefs about disease cause and cures.) If Nigerian villagers ten years ago believed that a disease is caused by an angry god, some Nigerian villagers today will still believe this. Those who maintain the old beliefs are usually the most remote (if rural) or the most socioeconomically disadvantaged (if urban). But even many urban elites, as in much of **Africa**, follow traditional practices for familial reasons if nothing else.

One consequence for immunization is that the parents who have not yet immunized their children are probably the ones who still maintain many of the old beliefs. This suggests that project personnel should not discount studies and

⁵This section derives from well-documented conclusions in the vast literature on traditional and indigenous health systems and practitioners. See, for example, Bannerman, Burton, and Ch'en (1983).

descriptions from, say, a decade ago of the health beliefs and practices of local people. Rather, these descriptions can be taken as a point of departure for updating knowledge about the local culture and community. Reports on immunization coverage statistics or the local health infrastructure become more quickly outdated, but traditional beliefs, while abandoned by some, are still clung to by many.

Germs. Many rural and urban-marginal people have accepted the concept of germs and understand that germs cause disease, but have not yet come to understand that there are different types of germs which cause different types of diseases. Furthermore, acceptance of the term "germ" does not mean that people have abandoned traditional disease etiologies, or explanations about disease causation. In **Sri Lanka**, for example, many people have simply incorporated germs into their traditional etiology alongside hot and cold, digestion, impurity, and other such causes (Nichter 1988). In a classic study of a cholera epidemic in **China**, the community used spirit water, in which it believed, while also going along with the government's complimentary magical practice, cholera vaccine (Hsu 1947).

The power of Western medicine. Many people in developing countries have culture-specific local beliefs about the nature of Western medicine. In most **Asian** countries, for example, people generally believe that Western ("allopathic") medicines are more powerful and thus work more rapidly than Asian medicine but have bad side effects as a consequence. In contrast, they believe, traditional Asian medicines (Ayurvedic, Unani, Sinhala, or Chinese) work more slowly but have no or minimal side effects. Beliefs in **Swaziland** represent another variant. There mothers may take their child to both a traditional and a modern practitioner under some circumstances, but often they believe that the child must receive traditional treatment in order to empower the clinical medicine (Green 1985:284).

Disease-Specific Beliefs and Behavior

Nowhere in the literature before 1988 was there any summary of perceptions and behavior specific to any of the six vaccine-preventable diseases. Nor was there any summary of behavioral issues related to the specific immunizations. In fact, not much appears about indigenous beliefs and practices regarding each disease. What follows below is a synthesis of what appears scattered throughout the very sparse literature on this topic. While by no means comprehensive, this provides a start.⁶

Since 1988, two A.I.D.-funded studies have been undertaken which afford good models for similar studies that should be undertaken elsewhere. These are: "Cultural Perceptions of Neonatal Tetanus and Programming Implications, Bolivia" (Bastien 1988); and "Perceptions of Childhood Diseases and Attitudes Towards Immunization

⁶Excellent, succinct descriptions of each of the six diseases, and their treatment and consequences, are presented in the very useful EPI Essentials: A Guide for Program Officers (John Snow, Inc., 1989).

among Slum Dwellers -- Dhaka, Bangladesh" (Blanchet 1989).⁷ The table below, "Perceptions of Immunizable Diseases," summarizes results of the Bangladesh study.

Measles

Measles is highly contagious. Without immunization, almost 100 percent of children in developing countries contract measles between the ages of six months and three years. (Maternal antibodies protect the infant during the first months of life.)

The age at which the child becomes infected is influenced by social and economic conditions as well as by epidemiological patterns. Where housing is poor and overcrowded, measles may occur before nine months of age. In better, less crowded housing conditions, measles may not strike until the second year or even later.

Poor nutrition seems to be the main factor leading to the most severe consequences of measles, which occur in about 30 percent of cases. These include blindness, deafness, and pneumonia or diarrhea leading to death. Overall, some three percent of children in developing countries who acquire measles will die from it or its complications. During famine or among refugee children, death rates may approach 40 percent (Henderson 1984a:2-3, WFPHA 1984:10).

Many rural populations know a great deal about measles. Nevertheless, beliefs surrounding the disease still prevent many parents from bringing their children for treatment at an early stage or otherwise perpetuate detrimental practices.

Many people believe food should be withheld from a child when it is sick. If the child has measles, this can severely exacerbate the condition (WFPHA 1984).

The cause of measles is frequently believed to be supernatural. In **Nigeria** this may be especially true among people of lower socioeconomic status (Odebiyi and Ekong 1982). In Nigeria many people, Christian and Muslim, believe measles to be caused by witchcraft, while others believe it is caused by Sonponna, the smallpox god. Many Yoruba mothers take preventive measures against measles. The most common is bathing and rubbing the body with a herbal mixture, some of which is also drunk daily (Morgan 1969; Odebiyi and Ekong 1982).

In **Ethiopia** children with severe measles are not washed for 40 days. In the meantime, mothers use an appeasement ceremony for "fairies or hidden sisters who come to take the child." Foods including popcorn, coca-cola, and fruit are prepared as a gift for the fairies (Barnabas 1982).

⁷The Blanchet report was available only in draft form at this time; its findings have not been fully incorporated here.

PERCEPTIONS OF IMMUNIZABLE DISEASES

DISEASE	MEASLES	TETANUS	WHOOPING COUGH	POLIO	DIPHTERIA	TUBERCULOSIS
Category of people believed to be infected	Children	Children Women	Adults Children	Adults Children	Adults Children	Mainly Adults
Source of remedy sought	Home	Fakir Doctor	Home Doctor	Fakir	Home, Doctor, Fakir	Doctor (injections)
Other characteristics of the disease	Culturally important, well-defined Treatment involves elaborate prescriptions including offering to Sitila	3 Types: 1) <u>Tetanus</u> affect parturients if the disease is caused by too much cold doctor is called if it is from bad air fakir is called 2) <u>donosh-tonkar</u> infection after a cut this calls for doctor 3) <u>kichuni</u> neo-natal tetanus which is best treated by fakir	Cause: Complication from a cold Good care not given on time	Magical cure sought but mostly uncureable	All types of cures may be tried out Ill defined Associated with too much cold	Contiguous = AIDS Deadly Bears social stigma

Source: Perceptions of Childhood Diseases and Attitudes Towards Immunization Among Slum Dwellers, Dhaka, Bangladesh by Therese Blanchet, 1989.

In **Bangladesh** it was found that measles mortality is likely to be greater if the mother is less educated, if the household is poorer, and if the child is a girl. Measles cases are also under-reported in poorer households and when the victim is a girl (Bhuiya et al. 1987). This corresponds with the many other reports on sex-biased child mortality differentials in South Asia (see above).

Pertussis (Whooping Cough)

Of the vaccine-preventable diseases, pertussis is second to measles as a cause of morbidity and mortality in some developing countries. It is an acute bacterial infection that affects the respiratory tract causing spasmodic coughing or "whooping" which lasts about one to three months. It is highly contagious; at least 80 percent of children in a non-immunized community contract the disease. Death occurs directly through damage to the respiratory tract or indirectly as a cause of severe malnutrition. Pneumonia is a common complication (Henderson 1984a:3, WFPHA 1984:10).

The "whooping" is easily recognized in older children. In **Ghana**, the public's easy recognition of whooping cough (and **measles**) are cited as reasons for attending vaccination sessions (Belcher et al. 1978). In younger children, however, whooping cough is often difficult to recognize as it does not produce the characteristic "whoop."

Tetanus

Tetanus is caused by a toxin of the tetanus bacillus which resides in the soil and enters the body through broken skin. Neonatal tetanus, a major killer of infants in developing countries, results from contamination of the umbilical stump by unsterile methods of cutting the cord or by application to the stump of matter such as cow dung or mud. The infected newborn will first be unable to suck and soon thereafter unable to swallow or breathe. In about 85 percent of cases, the infant dies, usually in the first two weeks of life.

In rural **Haiti**, as noted above, **neonatal tetanus** is clearly recognized as a common and fatal disease. Rural people agree that no infant could recover from this disease, regardless of treatment. Generally, if parents perceive a child as having neonatal tetanus, they invest neither time nor money in seeking treatment (Coreil 1983:715).

Because tetanus bacteria reside in the soil, there is no hope of eliminating the reservoir of harmful organisms (as was possible with smallpox). Instead, protection comes only through immunization or improved hygiene. Women who have received their second tetanus toxoid immunization during the three years prior to a birth pass immunity to the newborn which protects it during the first few months of life (Henderson 1984a:3-4, WFPHA 1984:10). Immunization with tetanus toxoid is 95 percent effective in preventing maternal and neonatal tetanus if given in two doses with boosters every five or 10 years (and the vaccine is not spoiled).

Tetanus toxoid immunization rates are generally quite low--often lower than rates for child immunization. One reason given (for example, by women in **Bangladesh**), is that they fear immunization will hurt the fetus.

Formerly it was standard practice to immunize just pregnant women. However, many pregnant women do not have access to or do not seek prenatal health care from the formal system. Furthermore, even where they do, many women refuse immunization during pregnancy. Therefore, in many developing countries the policy is now to provide tetanus toxoid immunization to all women of reproductive age in areas where prenatal coverage is low.

Polio

Poliomyelitis (polio) is less a killer than acrippler. It is a viral disease spread mainly by contact with excreta-contaminated food or water. Although nearly everyone in a non-immunized community becomes infected, most persons experience no symptoms. About one out of every 200 children infected develops paralysis. The older the child at the time of infection, the more likely it is to develop severe paralysis.

Where housing and sanitation are poor, polio may not be a very noticeable disease to the community. Because infection spreads rapidly and continuously, most children become infected while still under protection of maternal antibodies. Ironically, as living standards improve children are more susceptible to becoming paralyzed, since spread is less common and children are thus infected at older ages when no longer protected by maternal antibodies (Henderson 1984a:5, WFPHA 1984:10).

Tuberculosis

Tuberculosis (TB) is a bacterial disease spread by coughing and the sputum of infected persons. It is especially common where many people share the same crowded living quarters. TB most commonly afflicts adolescents and adults. While the protective effect of BCG immunization against TB in older persons is questioned, its efficacy in young children has not been put in doubt (Henderson 1984a:6, WFPHA 1984:10).

In children, TB takes many forms. Often the lay person does not recognize it as the same disease that affects adults. In **Haiti**, for example, TB, unlike **neonatal tetanus**, is not perceived as a common childhood illness. Only adults are thought to be susceptible to TB. When TB occurs in Haitian children, it is diagnosed as "chest malady" (Coreil 1983).

Diphtheria

Diphtheria is the least well-documented of the six "EPI diseases." It typically appears as an acute infection of the throat but can also affect the heart or brain of infants and young children (Henderson 1984a:5, WFPHA 1984:11). A classic case study, "Diphtheria Immunization in a **Thai** Community," shows why villagers failed to respond to the call for immunization during a diphtheria epidemic and provides many instructive lessons related to diphtheria, communication about immunization, and social networks as they influence the flow of information in a community and parental decisions to not immunize children (Hanks 1955).

Conclusions and Recommendations

Disease-Specific Beliefs and Behavior. Conduct disease-specific studies to determine how mothers in rural and urban-marginal areas perceive and treat each of the target diseases, as well as their perceptions about the vaccine for that disease. This should be done on a **country-specific** and culture-specific basis. Subsequently it may be instructive to share findings cross-nationally. Nowhere in the literature is there any summary of perceptions and behavior specific to any of the six vaccine-preventable diseases. Understanding disease-specific perceptions and behavior within a country is especially important: (1) for reaching the "hard-to-reach"; and (2) for building sustainable programs.

V. SOCIOECONOMIC STATUS AND CHARACTERISTICS

Issues for Project Design and Implementation

- o Within the same culture, are there differences between different socioeconomic groups in their acceptance of immunization for their children?
- o What are these differences?
- o Does acceptance correlate with income?
With education? With literacy?
- o Are there differences between migrants and others?
- o Are the patterns sufficiently consistent cross-culturally that generalizations can be made for project design?

Socioeconomic Status

It is clear that even within the same culture, ethnic, or religious group, there are correlations between socioeconomic characteristics of sub-groups and their acceptance of immunization. Precisely how generalizable these differences and patterns are cross-culturally and cross-nationally is less clear.

At least a couple dozen studies have sought to determine the relationships between socioeconomic characteristics and high or low immunization acceptance--what we can call the "socioeconomic determinants of immunization acceptance."⁸ An excellent WHO-sponsored study by Kris Heggenhougen and John Clements (1987) summarizes this research.

The main conclusion is that low socioeconomic status, and especially low educational level of mothers, is usually associated with low acceptance of immunization (Heggenhougen and Clements 1987:19-20).

A study in the **Cameroon**, for example, found low coverage associated with "certain neighborhoods, particular ethnic groups, socioeconomic status and newly arrived families" (Brown 1982, 1983). In **Nigeria** a study found that among fully-immunized children, the family size was low, parents were better educated, mothers were younger, and a higher proportion of children were boys (Akesode 1982).

⁸Among these are: Brown et al. (1982), Caldwell (1981), Markland and Durand (1976), Streatfield et al. (1986), Olugbile (1974), Bachani et al. (1983), Bhuiya et al. (1987), Friede et al. (1985), Rosenstock et al. (1959), Selwyn (1978), Clark (1983), Howard (1978), and Hulka and Wheat (1985).

Maternal Education. In nearly all countries, mothers who are illiterate or who have little formal education are less likely to have their children immunized. A study in **Nigeria** found that children of illiterate mothers or mothers with only primary education had the least complete immunization rates (Adekunli 1978:354). The education of fathers is seldom mentioned.

Socioeconomic Status and Cultural Beliefs. Along with socioeconomic status, "cultural beliefs" are often cited as a reason parents don't have their children immunized. The two are often interrelated. Some researchers suggest that a reason for low immunization rates among people of low socioeconomic status is that such people have a greater tendency to believe in supernatural causation of diseases. It is this belief in the supernatural causation of disease, rather than social class itself, that is linked with lower use of immunization services (Odebiyi and Ekong 1982, Heggenhougen and Clements 1987:19).

Social Networks and Social Integration

Social conformity has an important influence on having children immunized. Since availability of information is at least one factor associated with use, and since obtaining such information is influenced by a person's social network, children of parents most socially integrated usually tend to have higher coverage rates.

A study in **Central America**, for instance, found that people most integrated into interpersonal communication networks were the most likely to learn about immunization services (Burt 1973).

In **Indonesia**, as in many other countries, children of mothers who are members of local community organizations are more likely to be immunized (Singarimbun et al. 1986). Likewise in the **Philippines**, it was found that children are less likely to be immunized if parents are not members of community associations or councils (Friede et al. 1985).

Migration and Isolation. In contrast, migration appears to lead to social isolation which tends to correlate with low acceptance of immunization (Lin et al. 1971, Heggenhougen and Clements 1987:20). In **Bangladesh**, temporary migration of the new mother makes her less likely to her child immunized (Rahman et al. (1982). Seasonal or urban migration have been found to have similar deterring effects on childhood immunization elsewhere too (Dick 1985).

In **Iran**, mass immunization campaigns which had begun in 1965 were subsequently replaced by routine immunization in health centers to which people were supposed to bring their children for free vaccinations. But the poor and recent migrants to the city did not come. Fearing new outbreaks of diphtheria, most regions of Iran therefore re-initiated the mass campaign strategy after 1970 (Nazari et al. 1976).

Rural-Urban Differences

It has usually been assumed that the "unreached" are in remote villages. In fact, many of the unreached families live in the cities, in slums and squatter areas. In the **Philippines**, for example, 1983 data showed that, while most of the provinces had attained a two-dosage DPT coverage rate of over 70 percent, Metro Manila had the lowest coverage, at only 38 percent. This was generally true for all vaccines. Likewise during the 1985 immunization campaign in **Turkey**, 41 provinces reached coverage levels of 90 percent or more, while the capital, Ankara, had a much lower coverage of 54 percent.

This pattern of lower coverage rates in the city does not occur everywhere, however. **Bangkok**, for instance, has achieved an overall coverage rate of 90 percent, considerably higher than for **Thailand** as a whole (UNICEF 1987a:29). This pattern--higher coverage rates in the major cities than in the country as a whole--may be the more common pattern. In either case, this dichotomy between city and rural rates indicates an area where casual generalizations should not be made and where further attention to tracing the unreached is needed.

At-Risk Children

Findings from this body of research suggests that the probable at-risk population (children least likely to be taken for immunization) are those in large families of low socioeconomic status in which mothers have a low educational level. It appears that these mothers may also be older. The at-risk child may live in a remote rural village but may also be a recent migrant to the city. Finally, it appears that in some countries female children may be less likely to be taken for vaccination,⁹ and that special attention ought to be directed at efforts to immunize girls (Heggenhougen and Clements 1987:20).

It is important to avoid generalizing or assigning too much value to any single factor, however. In fact, some studies have found few socioeconomic differences between low and high acceptor groups (e.g., Rahman et al. 1982; Heggenhougen and Clements 1987:20).

So What?

To say that low socioeconomic status is the reason (or a reason) many children are not immunized is not enough. We need to go further. What does this mean for project design and implementation?

⁹See Section IV ("Son Preference...") above.

Project managers need to learn:

1. Why people with these certain characteristics do not seek, accept, or continue immunization; and then,
2. Equipped with this understanding, develop strategies to begin overcoming the specific obstacles associated by low socioeconomic status and related characteristics.

Take, for example, maternal education. To say only that mothers who are illiterate are less likely to have their children immunized doesn't set forth a course of action. Project personnel working toward short-term objectives can't do anything about women's formal education. But, knowing this, they can design their approaches to reach out to illiterate and marginally schooled mothers.

Conclusions and Recommendations

At-Risk Children. The probable at-risk population (children least likely to be taken for immunization) are those in large families of low socioeconomic status in which mothers have a low educational level. The at-risk child may live in a remote rural village but may also be a recent migrant to the city or an urban or peri-urban slum-dweller.

Research on socioeconomic correlates of low immunization coverage. Health planners should understand socioeconomic determinants of low immunization acceptance in their specific country. However, rather than launch large sophisticated studies that only produce results after several years, it is important to get this information quickly, and use it for designing approaches to reach the low-acceptance groups.¹⁰

¹⁰Many analyses of socioeconomic determinants of use and non-use of immunization do not give us any understanding of what is really going on in the household, and mind, of the mother who does not take her child to be immunized. One study which affords excellent insights into just what the consequences are of such factors as "low socioeconomic status" is an anthropological (including focus-group) study initiated in 1987 in Haiti (Coreil 1987a). This study is a model that should be adapted in other countries. Phase One of the study sought to: (1) identify characteristics of non-users (and non-completers) of immunization; and (2) determine which factors contributing to non-use could be ameliorated. (The study was supported by A.I.D. through the Rapid Epidemiologic Assessment Program of the BOSTID program of the National Academy of Sciences.)

VI. KNOWLEDGE, ATTITUDES--AND MISPERCEPTIONS

Issues for Project Design and Implementation

- o Is it necessary for mothers and other community members to understand what immunization is and how it works
- o Is it necessary for parents to know what diseases immunization protects against and which vaccination is for what?
- o Does knowledge about immunization influence acceptance rates?
- o Does it influence continuation rates?
- o What do local people know about immunization against the six target diseases?
- o How accurate is their knowledge?
- o What misperceptions do they have?
- o How much variation is there from country to country?
- o How much variation is there within countries?
- o How important is completeness or accuracy of knowledge?

Relative to other child survival measures, very few "knowledge, attitude, and practice" (KAP) studies have been done on immunization. It appears, however, that most people in developing countries do have some knowledge about immunization, but that this knowledge is only partial and quite superficial. Attitudes range from positive to neutral to negative. In many countries the partial and superficial knowledge about immunization has resulted in many misperceptions and negative attitudes that disincline parents to have their children immunized.

At present fewer than 10 vaccines are in general use in developing countries. However, at least 48 additional vaccines are under development with the possibility that 20 new vaccines may be available for use in the next 20 years, including for diarrheal and respiratory diseases (Warren 1986). Taking this into consideration, together with questions currently being raised about the sustainability of gains achieved during the current acceleration campaigns, it becomes important to examine popular perceptions of immunization and the consequences of recent immunization strategies (Nichter 1988:1).

While parental knowledge about immunization appears everywhere to be spotty and superficial, the exact nature of this knowledge and the resulting attitudes and misperceptions vary considerably from country to country. Attitudes and misperceptions also vary considerably among different cultural and socioeconomic groups within a country.

Knowledge

Knowledge about immunization means two things:

1. Knowledge about what immunization does, including (a) how it works to prevent disease, and (b) which specific diseases it prevents; and
2. Knowledge about vaccination schedules (e.g., when and where immunization is being provided and age groups being immunized).

Here we are discussing only the first kind of knowledge--understanding about what immunization is and does.

Parental Knowledge about Immunization. It appears that many parents are never told, or never learn, the names of the vaccinations they are being asked to accept for themselves or their children. Most of the emphasis in communication about immunization is on the "when and where" with very little on the "what is it" (Nichter 1988:43).

As a result, most mothers have a poor understanding of immunization. Many do not know which diseases are prevented by which vaccines or how many doses of each are needed. In **Indonesia**, for example, a study in Yogyakarta province found mothers believing, incorrectly, that only one dose is sufficient against **polio** or for **DPT** (Singarimbun et al. 1986). In central **Haiti**, many mothers are not aware that the red liquid given orally is polio vaccine; most assume it is a vitamin. Mothers generally do not know how many vaccines or doses their child has left, and some say a child needs to be taken to get vaccines every month until five years old (Coreil 1987a).

An AID-funded study in **Honduras** similarly found that very few mothers understood the concept of immunization. Many mothers knew of immunization and had a positive attitude toward immunization, but had not had their children vaccinated. Despite past campaigns and communication from health workers, mothers interviewed totally lacked understanding as to how vaccines work and had received absolutely no information on the subject (Bonilla et al. 1985:445).

Likewise in much of **South Asia** little attempt has been made to explain what vaccinations are, how they function, which illnesses they protect against, and for whom they are or are not intended. In many cases, health workers explain only that "Vaccinations are good for health and prevent disease" (Nichter 1988:32).

A survey in 14 districts in five states of **India** found that high percentages of women do not know what diseases are prevented by immunization. Two-thirds of the women in one district could not name even one disease prevented by immunization (Government of India 1985). In **India's** Karnataka state, ethnographic research revealed that, in over three-quarters of the households surveyed, at least one member had received what was believed to be a vaccination. Household members, however,

were not always sure what kind of injection had been administered to them by health staff. Except for smallpox, only a few of the villagers (11 percent in one district and 28 percent in a second) had been informed as to the illness prevented by the vaccination a family member had received (Nichter 1988:7).

Likewise in **Sri Lanka**, a study in 1984-85 showed that villagers had little idea as to the illnesses prevented by the vaccines they were asked to receive and had been given little information about the vaccinations aside from the general "They are good for the health" (Nichter 1988). A study in southern Sri Lanka revealed that, of 110 lower middle class mothers with children under five, 42 percent did not know what illnesses were prevented by the two **tetanus toxoid** vaccinations they had been asked to take. In the same group, 45 percent did not know the illnesses prevented by "**the triple vaccine**," and 43 percent did not associate **BCG** with any particular illness (Ratnayaka 1985). Even literate rural women, when asked about the purpose of **tetanus toxoid**, gave such answers as: prevent heavy bleeding, reduce body pain during delivery, ease delivery, promote better growth of the baby, blood purification, good for the body, vitamin deficiency, if not taken something bad will happen, and prevent germs attracted to the afterbirth (Nichter 1988).

Health Care Providers' Knowledge about Immunization. Even health professionals responsible for immunization often lack basic knowledge about immunization. For example, when field staff responsible for immunization in Karnataka state in **India** were asked to name the diseases covered by Karnataka's immunization program, less than half of the 30 persons questioned could name all five; a third of the rest could not name even three. Knowledge about immunization among doctors working in rural areas has also been found to be sketchy. In Rajasthan, for example, among 48 rural doctors, fewer than one third could name all six diseases covered by the EPI program (Nichter 1988). In **Guatemala** a study of maternal and child health care providers' knowledge and practices revealed their knowledge about the five EPI vaccines to be very uneven in all ways, with knowledge levels about tetanus toxoid being alarmingly low (Enge and Harrison 1987:29). Likewise in **Bhutan**, and certainly in many other countries, inadequate provider knowledge is a major contributor to "missed opportunities in immunization" (Steinglass et al. 1988).

Misperceptions

1. Misperceptions Related to Prevention

The belief that immunization is curative. Many parents believe that immunization is for curing diseases, not for prevention. This helps explain why, in **Honduras**, many mothers knew of immunization and had a positive attitude toward immunization, but had not had their children vaccinated. Some of these mothers believe immunization has a curative rather than preventive function, and even those who mentioned prevention did not really know what this concept means (Bonilla et al. 1985:445).

The belief that healthy children don't need immunization. In Indonesia's Yogyakarta province a major reason for non-immunization is the belief that, so long as a child appears healthy, there is no reason to approach any health service (Singarimbun et al. 1986). In Nigeria too, some mothers say they do not see why they should expose a healthy child to fever and other complications. "I do not believe in vaccination because it leads to malaria fever and convulsion," explained one mother in Ibadan. This misperception is apparently an extension of traditional Yoruba beliefs in which ideas about prevention of illness run parallel with ideas about cure (Adekunli 1978:356).

2. Beliefs about Contraindications

Belief that a sick child should not be immunized. In all regions of the developing world, many mothers fail to take their child for immunization because they believe a sick child should not be immunized. Many parents in Honduras, for example, say they believe immunization is good but explain the reason their child is not immunized is because the child was too sick. Many mothers do not take even children with mild colds or diarrhea to be immunized (Booth and Mata 1985). Likewise in Sri Lanka many parents do not take a child for immunization who has a cough or diarrhea (Nichter 1988).

Reasons for beliefs about contraindications for immunization are two: folk beliefs and advice from health workers.

Folk beliefs. In many cultures there are folk beliefs about a sick or otherwise weak child not being able to tolerate immunization. In Sri Lanka, for example, many parents believe that their child, if suffering from poor digestion or mandama dosha, a folk illness associated with protein calorie malnutrition, should not be vaccinated (Nichter 1988:28, Ratnayaka 1985). Apparently the problem is even more common in India. The result is that malnourished children, who are at greatest risk for a cycle of infections, are least likely to be vaccinated (Nichter 1988:29).

In central Haiti, some mothers still adhere to the folk belief that it is bad for a child to be vaccinated when the child has a cold, a rash, or is teething. This "contraindication" derives from the traditional "hot and cold" theory which defines foods, medicines, illnesses, and other physical states as intrinsically "hot" or "cold" in nature. Injections are generally considered "hot" and thus may be dangerous to give someone who is already suffering from a "hot" illness (e.g., teething or rash), or may be too strong in opposite tendencies for someone with a cold illness (Coreil 1987a).

Advice from health workers. Current EPI norms explicitly state that the only reason not to vaccinate is "very serious illness" (indicated by the presence of fever over 102 degrees Fahrenheit [38 degrees Celsius]). Previously doctors and other health workers were trained to reject sick children brought for immunization. Although recent international health research has since demonstrated that immunization is effective even if a child is mildly ill, some doctors and other health workers still reject all

sick children brought for immunization. In **Guatemala**, for instance, a KAP study revealed that about one-quarter of physicians and other health personnel interviewed still believe that malnutrition and diarrhea are also reasons for not vaccinating.¹¹

Such beliefs and advice on the part of health workers have caused many parents to believe that no sick child should be immunized. In **Sri Lanka**, as in many other countries, parents receive contradictory messages from health workers concerning vaccination during illness (Nichter 1988). In **Honduras**, for example, under earlier regulations, nurses would not immunize children with a low grade fever and instructed mothers to go home and return at a later date. As a result, many mothers, to avoid an unnecessary journey, stopped bringing in a child with a fever. Honduran health center regulations have been since changed and nurses now immunize sick children, unless they are suffering from a serious illness, but mothers still keep ill children home (Bonilla et al. 1985:445-446). In **Abu Dhabi** too, health professionals have recently been directed to give the new, less restrictive message about contraindications, but many mothers (73 percent in one recent study) do not yet understand or believe this new information (Rifai 1989:62-63).

Belief that a child who is weak cannot withstand vaccination. In Karnataka state, **India**, many people have been told, and believe, that vaccinations are powerful "health injections." Medicines that are powerful are not always thought suitable to when the body is weak. Many parents thus believe that vaccinations are dangerous if taken when a child is weak and that children suffering from weakness are "unable to stand the shock" of a "health injection" (Nichter:1988).

Belief in climatic or seasonal contraindications. Some people believe that there are seasonal or climatic restrictions on immunization. In both **India** and **Sri Lanka**, rainy days (associated with exacerbation of illness and bad digestion) are considered a bad time to receive an immunization. In Sri Lanka, the summer season is also judged an "unhealthy season" or bad time of the year for immunization (e.g., because of the abundance of sour, "heat-producing" fruits which make the blood humorally "unbalanced") (Nichter 1988:31).

Given that children in rural poor households may be sick for one third of the year up to age three, it is likely that a large proportion of children are judged by their parents as unfit to receive immunizations at scheduled clinic times. These beliefs thus mean that many children are not being immunized who otherwise might be. Given the widespread nature of these "contraindication" beliefs, and where curative care is not available alongside immunization, many mothers view taking children to be immunized as placing them at increased risk during times of prevailing vulnerability (Nichter 1988:30).

¹¹See Enge and Harrison (1987:15). This excellent study is one of the few to explore in depth the knowledge, attitudes and practices of providers of immunization. It should be used as a point of departure for provider studies in other countries.

Belief that immunization will lead local gods to inflict misfortune on the household. Where disease is believed to be caused by a god, this belief is the basis for an important "contraindication." In **India** and **Nigeria**, for example, many people are reluctant to use immunization or other "modern" measures against **measles** on the grounds that it is supernaturally caused. Many parents believe that immunization will anger a disease-causing local god (or goddess) who will then cause misfortune to befall the child or the family (Adekunle 1978:356, Mather and John 1972, Odebiyi and Ekong 1982). This is an illustration of why understanding and relating immunization to the local cultural etiology is important.

Belief a woman should not be immunized while pregnant. Some women fear that their having an immunization will harm the fetus. This is one reason in **Bangladesh** for low **tetanus toxoid** coverage (Rahman et al. 1982).

Many health workers fail to recognize the extent of parents' worries over these "folk contraindications." In **Haiti**, for example, a 1987 study found that health workers' and community members' views as to barriers to increasing immunization use were quite consistent in all but a few areas. One is contraindications. Health workers do not regard local beliefs about contraindications for vaccines as a matter for concern while, in fact, they worry many mothers and are the reason that some do not have their children immunized (Coreil 1987a).

3. Belief That Immunization Is Not Effective

Beliefs due to ineffective vaccines. Whenever children have been immunized against a disease (or are believed to have been immunized against a disease) and then later contract it anyway, community confidence in immunization is shaken. From **Africa**, for example, come reports of "bad stories" circulating about children who contracted **measles** after receiving the measles vaccine. The vaccine was ineffective because of careless handling. In one case in the **Cameroon**, only 40 percent of the vaccinated children developed antibodies against measles, a fact that led many parents thereafter to conclude, and repeat to others, that measles vaccine is not effective (Brown et al. 1982).

Beliefs due to over-attribution and false expectations. In some communities where people have a general awareness that immunization protects against some disease, a "spill-over effect" occurs: people expect protection from a wider range of diseases than is actually afforded. A recent study in **India**, for example, found that many people of diverse backgrounds believe that immunization protects the child from diarrhea, dysentery, vomiting, fever, pneumonia, malaria, and even coughs and colds (Indian Market Research Bureau 1987).

In **India**, and in **Sri Lanka**, a significant proportion of the populace who have received vaccinations do not perceive them to be efficacious. The reason lies with the promotion of immunization through overly-simplistic messages such as "Vaccinations are good for health." In the absence of further information, such messages have

created false expectations among parents who now tend to attribute far more preventive power to immunizations than they have.

As a result, in both **India** and **Sri Lanka**, many mothers think vaccinations are for a child's general health and serve as protection against coughs, colds, fever, skin ailments, and diarrhea. In India's Karnataka state, for instance, many parents, rural and urban alike, state that vaccinations are to prevent rashes, coughs, fevers, and diarrhea. Even mothers familiar with the purpose of "the triple vaccine" (**DPT**) still believe that vaccinations protect against these other ailments too. Some semi-educated people believe vaccinations protect against all serious infectious illnesses. Other Indian mothers, when asked why they had their children immunized, responded "We heard that the injection prevents sickness," but were at a loss as to just which diseases were prevented by these "injections" (UNICEF 1984, Nichter 1988).

Nevertheless, these same parents observe that children who have been immunized are no healthier than children who have not been immunized, as they still have fevers, colds and diarrhea. Because they believe immunization is supposed to protect against these ailments too, they conclude immunization is not effective. In the absence of governmental pressure, it is likely that many of these parents would not take their children to be immunized.

In South **India**, some people who questioned the efficacy of the vaccines speculated that the after-effects were caused by adulteration. Several reasons account for this. First, given the common false expectations that vaccinations are good for general health, coughs, malaria, rashes, and so on, it is understandable that the effectiveness of the vaccines would be questioned. A second reason is that many government doctors, especially those in private practice, downplay the quality of government medicine (in some cases asking patients to buy better medicines from them directly, or to bring medicines from a pharmacy). This fosters the already existing idea that anything free is of dubious quality (Nichter 1988).

The belief that immunization bolsters resistance to illness in general is illustrated dramatically by an incident in **Haiti**. There, in a community where immunization acceptance was generally low, an epidemic broke out in 1977 of cutaneous anthrax, an acute bacterial disease (traced to eating beef from an infected cow). Initial symptoms--blackish pustules--are dramatic and within a week, 27 cases had been diagnosed, 13 among children, 7 of whom died. A surprising consequence was an unprecedented increase of more than 400 percent in the number of children brought to the weekly vaccination clinic for **DPT**, despite the fact that **DPT** provides no protection whatsoever against anthrax. At the height of the epidemic, the turnout for vaccinations escalated from an average of about 50 children per week to over 230. This response revealed that most villagers held the inaccurate view that immunization provides a generalized resistance to all forms of infection, rather than a disease-specific immunity. The **DPT** immunization, they thought, would strengthen their children's resistance to any infection, anthrax included (Coreil 1980).

In summary, it appears that many parents do not have their children immunized because they do not think immunization is very effective. To begin with, they do not understand what specific diseases immunization protects against. Rather they think immunization is good for the health in general and offers some protection against a wide variety of illnesses. In other words, they think immunization provides a strengthened resistance to illness in general rather than disease-specific immunity. But many children who have been immunized later come down with these illnesses anyway, which is taken as proof that immunization is not so effective.

Confusion of immunization with other injections. In at least some countries where injections have become common and popular, parents confuse immunization with other injections (of antibiotic, vitamins, or tonics). In central **Haiti**, for instance, many mothers believe the red liquid given orally is (**polio vaccine**) is a vitamin (Coreil 1987a). In **India**, about one-third of mothers in the Karnataka study said they had received a government health injection during a previous pregnancy. Presumably this was **tetanus toxoid**, although this is uncertain as in some cases a doctor had told the women the injection was a vitamin or tonic injection.

4. Other Misperceptions

About the power of Western medicine. In **India**, some people state that vaccinations are given to small children to help them "become accustomed to" allopathic (or "Western") medicines. Once three doses are received, a child would be capable of "taking to" allopathic medicine when it was needed later in life (Nichter 1988).

Family planning. In **Turkey, Indonesia, and India**, some people associate vaccinations with family planning activities. In south **India** some villagers explained that, while vaccinations offer children good health while young, they reduce their ability to have more than one or two children when they grow older (Nichter 1988).

Perceptions about the relationship to other health services. In Karnataka state in **India**, some women refuse **tetanus toxoid** immunization during pregnancy, associating it either with hospital births or covert attempts by the government to introduce family planning. Some women express the fear that these "tonic injections" will cause them to have big babies and therefore difficult deliveries (Nichter and Nichter 1983).

Knowledge vs. Compliance

In some countries, approaches to immunization relying on social control and government coercion have led to negative attitudes as well as false expectations that undermine public confidence in immunization and related public health programs. In these contexts, personnel employing the "compliance" approach have tended to assume that people do not need to understand what immunization is for what disease-

-just get parents to come and give the vaccine. Compliance is gained more by power relationships than through understanding, felt need, or perceptions of efficacy (Nichter 1988:2).

South India and Sri Lanka are cases in point. In both countries many people receive vaccinations because of coercion and prodding. Family health workers put pressure on households to accept immunizations because the government requires them. To a lesser extent immunizations are sought by citizens because they are a felt need or because the populace knows what illnesses they protect against. It is not surprising therefore that many South Indian and Sri Lankan villagers have come to view immunization as "injections that government health workers tell people it is their duty to receive" or "injections provided by the government for which the people do not have to pay." Villagers have told researchers that government health workers are very anxious to find children and mothers to vaccinate because they, the health workers, receive some cash benefit from the government for each case. It has also been the villagers' impression that the health workers are scolded if their case number is too low. Some villagers have said that health workers are so concerned about meeting their targets that they even ask children to receive vaccinations "at times that are dangerous for children to be vaccinated" (Nichter 1988).

Sri Lanka offers a particularly interesting case. Regardless of a lack of knowledge about what diseases are prevented by immunization, Sri Lanka has achieved a remarkable increase in immunization coverage over the last decade. This is attributable to several factors, including political commitment, an active media campaign, improved record-keeping, and improvements in immunization scheduling. Is this an unqualified success? To answer this we must look beyond coverage to the distribution of knowledge about immunization, says anthropologist Mark Nichter, one of the few researchers to have studied immunization-related beliefs or behavior in detail.

"Thinking about vaccination programs in militaristic terms" leads health workers to allocate high priority to meeting targets at the expense of community education about immunization, states Nichter (1988:4). Without meaningful education, efforts to achieve immunization compliance may lead to long-term ambivalence about vaccination and other public health programs. An immunization program may achieve coverage without a population gaining understanding of the purpose of vaccines, but at a cost. Households and the community assume little responsibility for their health; health field staff come to be viewed in terms of social control; false expectations lead the public to question the value of immunization during crises; and records based on self-report are of questionable reliability (Nichter 1988:27-28).

The Importance of Knowledge about Immunization

Does knowledge about immunization make a difference? Are mothers who understand more about immunization more likely to have their children immunized? The answer appears to be yes.

In central **Haiti**, for example, acceptors and non-acceptors alike have little knowledge of which diseases are prevented by which vaccines or how many doses of each are needed. Nevertheless, acceptors of immunizations do appear to have more knowledge about vaccines, including the diseases protected against, the age vaccines should begin, the names of vaccines, and the number of doses required (Coreil 1987b).

There are exceptions, however--circumstances under which high coverage rates have been achieved despite low levels of parental knowledge about and understanding of immunization. One exception appears to occur in communities where cultural tradition has instilled in the public a deep respect for the authority of local leaders. This may be the case in parts of **Indonesia** and **Bhutan** where many parents take their children to be vaccinated largely, it appears, because local leaders tell them to do so (Singarimbun et al. 1986).¹²

A second and very important exception depends on the quality of health workers. From many countries there is evidence that, where health workers treat their clientele with respect and have developed with them a high level of trust, vaccination coverage is higher; parents take their children for immunization on the advice of those health workers, trusting them that immunization will be beneficial without necessarily understanding much about it. In **Bolivia**, for example, research indicates that where people have confidence in the health workers, they also have positive perceptions of vaccinations (Bastien 1988:19). In **Bangladesh** the success of **tetanus toxoid** vaccination has been found to depend very much on the provision of dependable services by health workers who are trusted by the community (Blanchet 1989:17).

A third exception is imitation, when people who lack knowledge and understanding of immunization imitate the immunization-seeking behavior of others. For example, in **Bangladesh** some poor servant women take their children for immunization, understanding little about it, simply because their employer immunizes her children and recommends it (Blanchet 1989). Imitation of relatives is also a reason, as in **Bolivia** (Bastien 1988:25).

Finally, there are exceptions, as in the **United States** and other developed countries, where mothers lack knowledge of the specific diseases but immunize their children nevertheless. Here the circumstance is one in which well-educated parents understand the value of prevention and the principles of immunization, even though they rarely encounter and lack personal knowledge of the specific diseases.

¹²Finding from Bhutan provided by Robert Steinglass, (personal communication). See also Steinglass et al. (1988).

Parental knowledge is thus not the only factor, and often is not the most immediate factor, influencing immunization acceptance rates.¹³ Where immunization services are relatively good and accessible, superficial knowledge about immunization may not be a major problem. However, where immunization services are poor or not very accessible, spotty, superficial knowledge often results in: (1) misperceptions and (2) unfavorable attitudes, both of which contribute to low motivation for immunization and, consequently, low acceptance rates. In many other countries, "no knowledge" or "incorrect knowledge" is also a major reason for "drop outs," or non-completion of an immunization series.

Finally, the accuracy of provider knowledge about immunization is a very important factor. This includes: general knowledge about immunization; knowledge about cold chain management; and knowledge about vaccine administration.

Conclusions and Recommendation

Health care workers must themselves have an accurate understanding of immunization and then need to focus more on educating the community about what immunization is and why it is important. Incomplete and superficial knowledge on the part of parents results in: (1) misperceptions and (2) unfavorable attitudes, both of which contribute to low acceptance and high drop-out rates. More detailed and more accurate knowledge about immunization on the part of both fathers and mothers will be necessary for increasing and maintaining acceptance levels. This does not require a thorough, sophisticated knowledge but, in most countries, certainly more understanding than is common today.

¹³Numerous researchers have discussed the "health belief model" for immunization, (see Heggenhougen and Clements 1987). This model does not seem very useful for practical purposes. It hypothesizes that people most likely to accept immunization services are those who believe that: (1) their children's susceptibility to the disease is high; (2) if the disease is acquired, it could be serious; (3) immunization is effective in preventing the disease; and (4) there are no serious barriers to immunization. This model does not seem so useful because of the big if of number four. Points 1,2, and 3 can be boiled down to say that people are more likely to accept immunization if they have accurate knowledge about its purpose and value. This is appropriate. Where the model falls short is in minimizing other barriers to immunization which, for many mothers, are very serious constraints.

VII. COSTS, CONSTRAINTS, AND COMPETING PRIORITIES

Issues for Project Design and Implementation

- o Are costs of immunization a deterring factor?
- o What other constraints do parents face?
- o What could possibly be higher priority than health care?
- o Is time really a factor when immunization requires so little time?

Women in poor families simply have far greater demands and constraints on their time than health planners sitting in distant urban offices usually comprehend. Women in families that live on the margin, depending on day-to-day subsistence activities, have no surplus time for activities that are not essential for daily life. In the perception of many mothers, immunization is one of those activities that would be good to do but is simply not essential for daily life.

Who Takes The Child for Immunization? Use of the term "mother" above indicates the reality. As the burden of responsibility for child care usually falls on the mother, so too do visits for immunization. In **Indonesia** it is sometimes the mother-in-law who takes the child to the clinic (Singarimbun 1986:14).

Fathers may occasionally take a child for vaccination, but more likely than not their involvement is within the household at the level of pronouncing whether immunization is needed or not for a particular child. Often he does not understand immunization, and prevents it. In **Honduras**, for example, fathers are known to protest a wife's taking their child for a vaccination. Her absence from the home for a whole day in the case of a distant immunization site may leave him with no one to prepare meals. He might also argue that he himself had never been immunized and was nevertheless perfectly healthy (Bonilla et al. 1985). In **Bangladesh** some lower class men who earn well but have little education forbid their wives to take their children to be vaccinated, arguing that, unlike the poor, if their child is ill they have enough money to go to a doctor and get good treatment (Blanchet 1989:10). In one recent study in Bangladesh, 60 percent of mothers reported that their husbands made the decisions about whether or not to vaccinate the children (Worldview International Foundation 1989).

Time Costs

In many countries immunization is now provided by the government free of charge. Often the accompanying assumption is that, since services are free, there is no (or little) cost to the client. This is not true. Costs borne by the parents, including

time and opportunity costs, are often significant--and constitute significant deterrents to full immunization.¹

In **Haiti**, for example, one of the assumptions has been that cost has been minimized as a deterrent since vaccines are provided free and "rally posts" are located within walking distance of all villages. However, the opportunity cost of maternal time, as well as the social and psychological costs of obtaining services may be even more important components of "cost" than strictly monetary cost (Coreil 1987b).

In **Honduras** likewise, vaccines are provided free of charge by the Ministry of Health, but there is nevertheless a considerable cost to the mother in time spent walking to the clinic and waiting to receive the vaccine (Booth and Mata 1985).

Many mothers do also incur some monetary costs, even when vaccines are free. These include fees for transport and, when the child is perceived ill as a result of immunization, costs for seeking curative care. By far the major cost for most women, however, is time.

Time allocation studies have consistently found that women in developing countries face severe time constraints. Not only do low-income women generally work longer hours than low-income men, but mothers of pre-school children must balance the competing demands of market work, household production, and child care (Leslie 1987).

The time costs to women of taking their child to be immunized differ from country and locale to another.² Time expended depends on how far women have to travel to get to a clinic or a mobile immunization site and how long they have to wait once there. Exactly how much time is spent is not clear. A review of cost-benefit and cost-effectiveness analyses of immunization programs in developing countries found only one that included estimates of private costs (Haaga 1986). This study, of **measles** vaccination in the **Cameroon** (Makinen 1979), included the cost of bus transportation to the immunization site. It found that private costs--time spent and bus fare--conservatively calculated, were greater than the variable costs per vaccination incurred by the government (Leslie 1987).

The time costs and constraints of the journey are especially onerous in the rainy season. In **West Africa**, for example, the rainy season lasts two to five months during which roads, many of which are unsurfaced tracks, may be flooded making it difficult

¹As noted in the Introduction, although the costs of immunization programs have been well studied by economists, their analyses have often overlooked opportunity costs and other costs to parents.

²"Time Costs and Time Savings to Women of the Child Survival Revolution" (Leslie 1987) is the most comprehensive analysis available on this subject and should be read by anyone concerned about costs in child survival and primary health care programs.

for mothers to reach health centers and for vaccination teams to reach villages (Stoeckel 1985). Similarly in **Bangladesh, Nepal,** and elsewhere in monsoon Asia, roads are often washed out and foot travel precarious for more than a quarter of the year.

The Competing Priorities

Daily subsistence. By far the greatest barrier to child immunization for many poor women are the competing priorities of everyday life--acquiring and preparing food, working in the garden, doing household chores, tending to children's immediate needs, and many other necessities that are considered more compelling in a mother's busy schedule than immunization. Subsistence needs clearly affect poorer people more directly, as poorer families tend to depend on day-by-day acquisition of food supplies and cannot afford to spend half a day at a health center at the expense of providing the day's main meal. In Central **Haiti**, for example, market activities also compete heavily for women's time and are a major reason that some mothers do not immunize their children (Coreil 1987a).

Similar constraints also prevail in Ibadan, **Nigeria**, where many urban women are petty traders who depend for their living on being at their stalls in the market. One mother of six said: "My children got immunization against smallpox because the man who vaccinated them came to the market. I cannot go to the hospital to vaccinate my children against other diseases because I cannot leave my trade. There is nobody to look after them for me. Please help us tell the government to bring vaccination to us in the market." "I do not have much time to waste lining up in the hospital for child immunization," explained another Nigeria mother (Adekunle 1978:356). In **Ghana** too, difficulty in taking time off from work is a major constraint (Belcher et al. 1978).

Family problems and competing demands. Another competing priority are family problems. These often involve major illness. In **Haiti**, for example, Some women explain the reason they haven't taken their children for all their shots is because their husbands have had expensive surgery that depleted their finances and required the wives to devote large amounts of time to convalescent care. Other family problems include the mother's own ill health, relatives needing help, and marital discord. Haitian women were asked why, despite such worries, they couldn't find time to go to the "rally post" (health center) just one day a month. Their responses indicated that the other problems created a sort of psychic overload that prevented them from even thinking about non-essential things--which, in their perception, include immunization (Coreil 1987a).

Likewise, in **Nigeria**, many mothers say they do not have time to take children for immunization because of the obligation to attend family ceremonies (usually outside the town) that take precedence. One woman explained: "I could not complete the dose because we had to go to Abeokuta, my husband's home town, for his uncle's burial, for six weeks. By the time I came back, I have forgotten about the

immunization" (Adekunle 1978:356). In developing countries where the extended family remains important (and the social security system for many people), there are many such relatives and thus many such time-consuming obligations which are considered higher priority than immunizing a child against some future possibility.

Socioeconomic constraints. Even when all vaccines and other preventive services are provided free of charge, poverty remains an obstacle to use in other ways. Most importantly, it places many families at the edge of survival, such that daily subsistence takes priority. Poverty also makes some mothers embarrassed to go to the health post. In rural Haiti, some mothers stay away because their children do not have shoes or because they lack proper or clean clothes, either because their garments are too old or worn, or because the mother cannot buy soap to wash them (Coreil 1987a).

Other children restrict mobility. Other socioeconomic constraints include the presence of older children who must be cared for or taken along. In many countries it is not unusual for a woman to have three children of preschool age. If she must walk a long distance, and especially if the road is steep, rocky, or slippery, toddlers and other young children greatly restrict mobility. Also, keeping watch over two or more children while at the health facility, especially if one is a nursing infant, is difficult and often nerve-wracking for the mother. The alternatives -- finding child care for the older children or someone to take the infant for her -- are not easily accomplished either. Many women do not have friends or relatives to call on for such purposes and organized child care, of course, is not available (Coreil 1987a).

Conclusions and Recommendation

Project planners and managers must factor into their calculations the limited time and competing priorities of poor, developing country women. Women in families that live on the margin, depending on day-to-day subsistence activities, have little surplus time for activities that are not essential for daily life. In many mothers' perception, immunization is one such activity. Despite a positive attitude toward immunization, many lack the time to act upon it.

Immunization programs should attempt to provide services close to women's homes or places of work. Many women are sufficiently positively inclined toward immunization to seek it out if long travel and waiting time is not involved. If a major time investment is required, the cost is too great for many.

VIII. SIDE EFFECTS, FEARS, AND LOW MOTIVATION

Issues for Project Design and Implementation

- o Are side effects really a problem?
- o What other fears inhibit acceptance of immunization?
- o What other factors cause parents to lack motivation to immunize their children?

Attitudes toward immunization range from positive to negative, as already noted above. Negative attitudes relate chiefly to side effects or compliance approaches. For many parents, given their incomplete knowledge of immunization and the real, practical constraints they face, not even strategies such as "social mobilization" have been compelling enough to change all attitudes from neutral to positive and to overcome low motivation and fears.³

Fears

Parents fear numerous things related to immunization. They fear side effects from the vaccines and from careless or unskilled vaccinators, they fear criticism and unsupportive comments from others and, in some countries, they fear pressure from health workers and other consequences related to family planning. Not surprisingly, these fears are more acute in less educated mothers. They also pose greater barriers to immunization for poorer mothers who face severe poverty-imposed constraints and they also pose greater barriers to mothers for whom immunization services are not conveniently accessible.

1. Fears of vaccine Side Effects

Vaccines have some undesirable side effects. Side effects are of two types: common, relatively mild side effects; and rare but severe side effects. Most experts believe that the benefits of vaccines far outweigh the risk of side effects. Severe reactions occur far less frequently than death or serious side effects from the disease itself in unimmunized children.

³See UNICEF (1985g) as well as case studies presented in: Bertan and Reid (1985), Burkina Faso and UNICEF (1985), Stoeckel (1985), Argueta and Jaramillo (1985), Government of Colombia (1985), and UNICEF (1984a, 1985a, 1985b, 1985c, 1985d, 1986b, and 1986c).

Nevertheless, health professionals appear to have underestimated the adverse impact of side effects on immunization acceptability. The severe side effects are so rare that little has been written about their impact in developing countries on community attitudes toward immunization. It is rather the ordinary milder side effects that cause many parents to stay away from immunization, or to discontinue the sequence. In **Haiti**, for example, researchers found that health workers' and mothers' views as to barriers to increasing immunization use were similar in all but a few areas. The greatest difference concerned how the community perceives the vaccines. Health workers do not regard vaccine side effects as a matter for concern while, in fact, they worry many mothers and are the reason that at some do not have their children immunized (Coreil 1987a).

The common side effects are as follows:

- o **BCG** causes a small sore to develop at the vaccination site. This usually lasts one to two months and then disappears.
- o **DPT** frequently produces fever and redness, swelling, and pain at the injection site.
- o **Measles** vaccination produces a mild fever and a rash which may occur 8 to 12 days after vaccination. The fever can be controlled by aspirin.

In nearly all developing countries, fears about harmful side effects are a major reason for lower-than-desired immunization coverage (Heggenhougen and Clements 1987). Case studies from **Honduras** (Booth and Mata 1985), **Botswana** (Ulin and Ulin 1981), **Ghana** (Belcher et al. 1978), and **Haiti** (Coreil 1987a) illustrate the problem. Many parents are afraid the vaccines will even cause the disease itself. Stories circulate about children dying after having been immunized (Coreil 1987a).

Many mothers become angry about side effects and distrustful for this reason of the health services. In one **Botswana** community, a household study found that more than half of 620 women interviewed (53 percent) regarded immunization as potentially dangerous. This group was divided between those who claim it is either worthless or dangerous but allow it because they believe it is the law, and those who say they would do anything to protect their children from the imminent danger of government immunization. The most common explanation for the widespread fear of immunization is the mothers' observation of fever, malaise, and a skin eruption that follow immunization. As one irate mother exclaimed: "They said the immunization would make my child strong and healthy, but it only made her sick. Then I had to take her to the clinic and pay forty cents." Another common response reflects the conflict between the fear of immunizations and fear of authorities. As one woman explained: "I hate mekento (immunization injections) and see no good in them, but we have to obey the law. We have no choice" (Ulin and Ulin 1981).

In each country and culture, community members have developed their own particular explanation for the side effects of immunization. For example, in parts of **India**, vaccination side effects are often regarded as "the power of the injection shocking the body." Some Indians regard the fever and pain following vaccinations as an unfortunate but necessary set of responses the body must go through "to become habituated to the powerful Western (allopathic) medicine" (Nichter 1988). Here, as in most Asian countries, this perception relates to the general view that Western medicines are more powerful than traditional Asian medicine, but have strong side effects as a consequence.

This is clearly an area that health communicators have ignored, or to which they have given very little attention. In contrast to family planning, very little appears in the immunization literature about counseling on side effects. Nevertheless:

- o In **Honduras**, radio messages explained to mothers that reactions to some vaccinations are natural and indicate that the child needed the vaccination. (Radio also taught mothers that mildly ill children could be immunized. If the child was too sick to receive an immunization, she needed medical treatment anyway) (Booth and Mata 1985:120).

- o In **India's** Karnataka state, researchers found that vaccination side effects could be transformed from having negative to positive associations if health staff make the point that the side effects are evidence of the worth of the vaccination (Nichter:1988:15).

2. Fears of Side Effects from Poor Injection Techniques

More common than side effects of the vaccines themselves are the negative consequences of poor injection procedures, especially infections and abscesses caused by contaminated needles and syringes (WFPHA 1984:11).

In Karnataka state in South **India**, over 40 percent of people surveyed said they do not trust primary health care health center staff to administer injections. Caste consciousness about purity and pollution, and inter-caste concern about needles polluting higher caste persons was not voiced as a concern. Rather the concern was the technical competence of the person administering the vaccination--and the extent to which that person is known to have good "aim."

Villagers believe that "aim" is an important determinant of the effectiveness of a vaccination. In the villagers' perception, if the person giving the injection has good "aim," then the medicine enters the mainstream of the blood and moves quickly through the body. But if the health worker's "aim" is poor, then the medicine does not enter the mainstream but rather some small tributary, with the result that its effect, just like a tablet, takes more time. Villagers speak of private doctors taking the time to take good aim, because their popularity, and thus their fees, depend on a good reputation. In contrast, it is said, since the public pays no fees for government vaccinations,

government health workers do not exercise care in giving them. Many villagers fear that the vaccinator might hit a nerve, causing permanent damage, and some cite cases of paralysis following vaccination. It is not clear whether paralysis actually occurred as a result of immunization, but the fact that villagers say it did has a deterring effect on immunization acceptance in such a community.

Furthermore, these same villagers ask, if health center staff giving vaccinations were really well-trained, why are they not routinely allowed to administer all injections? The opinion is that vaccinators have "uncertain aim" and therefore can only administer free medicine, not costly medicine, for fear that they might waste it (Nichter 1988).

3. Other Fears, and Mistrust, Related to Health Workers

Fear that government workers will immunize a child who is too sick or weak for immunization. This is a fear especially in countries where workers are given immunization targets and incentive payments for meeting them. Parents fear the health workers will be more motivated by the incentive or pressure on them than by concern for the child's health.

Fears related to family planning. Such fears inhibit some mothers in **India, Indonesia, Turkey**, and perhaps other countries where health workers also have responsibility for promoting family planning (Nichter 1988, Singarimbun et al. 1986, UNICEF 1985c). Most simply, as in **Indonesia**, some mothers fear that health workers will pressure them to use family planning. Others fear that immunization is actually a covert form of family planning or that it might result in sterilization, as in **Bolivia** (Bastien 1988:1-2, 12). Likewise in **Bangladesh** some women believe the needle might contain a contraceptive (Blanchet 1989:16-17). In south **India**, some women also express the fear that, if they do not take the vaccinations health workers ask them to receive, then they will be offered only poor government health services should they require them. Several women viewed involvement with government midwives as requiring reciprocity: if the auxiliary nurse midwife assisted a woman during delivery, then the woman's family would be in the midwife's debt and be asked by the midwife to receive immunizations, or go for family planning, to help the midwife fill her quota. Some women are reported to deliver their babies alone at home for this reason, rather than call on a nearby government midwife (Nichter:1988:10-11).

Fears of criticism or embarrassment related to the child's nutritional status. Malnutrition is often a sensitive issue. For a mother who tries her hardest to provide for her children, to be told her child is weighing low is discouraging news. For this to happen repeatedly may be crushing, especially when the health post is so small that privacy is impossible. In **Haiti**, as elsewhere, some health workers who do the weighing tend to come across as scolding in their instructions. This can greatly embarrass the mother in front of other women and be the reason she does not bring her baby back for immunization (Coreil 1987a).

Low Motivation for Immunization

Many parents simply aren't very motivated to have their children immunized. Some become motivated through the "social mobilization" activities of an immunization campaign, but lose motivation after the campaign is over. Reasons for low motivation depend a great deal on education, poverty, and on other circumstances and constraints (see following section) of the individual mother. Among reasons for low motivation are the following.

1. **Health is a relatively low value.** Some families accord low value to health in general, and tend to neglect seeking even curative care. Others who value curative care may still be **unconvinced of the importance or efficacy of immunization.**

2. **Discouragement over the health of the child.** Some mothers do not complete the full vaccine series because they become discouraged after their infant fails to show adequate growth, despite what they perceive as their best efforts. Rather than face disappointment, and mild criticism, they avoid returning for the remaining immunizations. In **Haiti**, and other especially poor countries, many parents are **fatalistic about child survival.** Some parents say they do not consider it worthwhile to take preventive measures "because so many children die anyway" (Coreil 1987a).

3. **Maternal "negligence" (too many children or child is a girl).** This is mentioned by many mothers and health workers alike as a reason for underutilization of health services, including immunization. It is said that there are "some people who just don't care," that are lazy, that "cannot be bothered," or that simply lack concern for the health of their children (Coreil 1987a). Maternal negligence, benign neglect, and selective neglect of less-favored children are particularly common in very poor households where mothers lack resources and supportive networks. In many countries, and especially in **South Asia**, parents are more likely to neglect immunizing a female child than a son, particularly if she is one of several daughters in the family.⁴

4. **Fears of public embarrassment or criticism.** Some women are shy about being in public and put off going to a health post where immunization is provided because of timidity. In northwest **Ethiopia** immunization has been provided free of charge, but at an emotional cost. To qualify for free care, patients had to go to an administrative office which required long waiting time and caused the mothers a great deal of embarrassment, especially as they were required to produce three witnesses to testify about their poverty (Dagne 1984).

In **Haiti** some mothers are put on the defensive by neighbors' teasing remarks that they are seeking handouts from the health post. Conversely, having friends and neighbors who encourage and give positive support for getting immunizations is a big incentive. Social support is an important positive reinforcement. The task is eased in

⁴See Section IV above ("Son Preference and Discrimination Against Daughters").

those neighborhoods in which groups of women walk together to the health post, then watch each other's children while they take turns getting served (Coreil 1987a).

5. Esteemed community leaders did not advise parents to immunize children. In traditional communities where local leaders still have great authority, this is also an important factor. Thus in **Indonesia** the village headman is often a key person who can motivate mothers to use immunization services. Many mothers who have not had their children immunized say the reason is that the village headman had not told them to do so (Singarimbun et al. 1986). In some communities, village leaders have actually deterred villagers from having their children immunized (Heggenhougen and Clements 1987). Traditional social structures do indeed have consequences for acceptance of immunization.

6. Poor follow-up and non-accountability by health staff. Staff organizing vaccination camps or providing mobile services are often outsiders unknown to and not accountable to the community. Government health workers assigned to a health center from outside the community are often transferred every few years. These are reasons cited in **Indonesia**, **India**, and elsewhere as lessening villagers' faith in immunization programs (Singarimbun 1986, Nichter 1988). In **India's** Karnataka province, one parent explained:

"Strangers come and give injections to our children without first doing tapas (diagnosis of their state of health). Can we trust them with so many children to see? And then they disappear and we are left with children having fever. These people do not inquire about the health of our children on the days following the vaccination, nor do they give medicines! Later the government sends people to ask if our children have taken vaccinations two times or three times. Our son has taken once and was ill for three days. This is a sign the medicine was not good for his body. So when these government people come I say 'Yes, my son has taken three government injections: two here and one at the village of my mother last year'" (Nichter 1988).⁵

7. No curative care provided. Many parents are not highly enough motivated for immunization as to make their way to a health facility for this reason alone, but say they would go if curative care were also provided. Mothers in **Haiti** express this clearly

⁵As in many countries, immunization statistics are very unreliable in **India**. In one area, the coverage rates reported by field staff were as much as double those reported by villagers. This is probably due both to inflated figures being turned in to the state by the field staff and to the lack of knowledge by mothers that an immunization (as opposed to a curative injection) had been received (Nichter 1988:45). This illustrates why immunization knowledge and popularity cannot be accurately judged by measures such as coverage rates. Ethnographic research in **Sri Lanka**, a country with high immunization coverage, also indicates that coverage rates do not always correspond directly to knowledge about immunizations or felt need, but rather compliance enforcement and "public policing efforts" (Nichter 1988:3).

(Coreil 1987a). Elsewhere too many mothers say they would be more eager to take a child for immunization if medicines were also available, including for other family members.

Conclusions and Recommendations

Fears. Planners must develop better communication approaches to overcome parental fears. Parents fear numerous things related to immunization: side effects from the vaccines and from the poor technique or careless or unskilled vaccinators and, in some countries, criticism and pressure from health workers. These fears are more acute in less educated mothers. They also pose greater barriers for poorer mothers and for mothers for whom immunization services are not conveniently accessible.

Low Motivation for Immunization. Planners must also work with local leaders and provide community members with a better understanding of immunization in order to raise motivational levels. Many parents simply aren't very motivated to have their children immunized. Some become motivated through "social mobilization" activities of an immunization campaign, but lose motivation after the campaign is over. Reasons for low motivation depend a great deal on education, poverty, and on other circumstances and constraints of the individual mother.

IX. DROP OUTS

Issues for Project Design and Implementation

- o Why do mothers start an immunization series but then discontinue?
- o How can continuation rates be increased?

Complete immunization coverage for a child requires several repeat visits to the clinic, health center, or other locale where immunization is being provided. Both **DPT** and **polio vaccine** require multiple (three) doses. The universally-recognized schedule means five visits, or contacts, within the first year of life.¹

WHO-Recommended Course of Child Immunization:

BCG	At birth or soon after
DPT-I and polio	6-12 weeks of age
DPT-II and polio	At least 4 weeks later
DPT-III and polio	At least 4 weeks later
Measles	After 9 months of age

High Drop-Out Rates for Multiple-Dose Immunization

Unfortunately, in all countries, it is very common that many mothers, and especially illiterate mothers, do not return for the follow-up doses of **DPT** and **polio** vaccines, without which the earlier dose is ineffective. The average drop-out rate between DPT-I and III has been estimated at around 24 percent. Over one third of the 94 countries on which data are available have drop-out rates over 30 percent and 14 countries have rates over 40 percent (Kessler and Blair 1987:6).

The DPT drop-out rate in the **Cameroon** was not long ago estimated to be about 65 percent, and one clinic in Accra, **Ghana**, reported giving only 2 percent as many third doses of polio vaccine (Agudzi 1979, cited in Leslie 1987). In **West Africa** as a whole as many as 20 to 30 percent of children may drop out between one session and the next (Stoeckel 1985). Even the highly successful campaign in **Syria** had a 12 percent drop out between DPT I and III. If drop outs in **Bangladesh** could be covered with second and third doses, full coverage of under-fours in Mymensingh district, for instance, would be 92 percent--instead of 6 percent (Kessler & Blair 1985).

¹This schedule has been reduced to two sessions in some places (e.g., parts of West Africa), but the wisdom of this reduction is debated (see Stoeckel 1985).

If mothers could be motivated to return for second and third doses, coverage rates would rise by a sizeable 15 to 20 percentage points (Kessler and Blair 1987). This would be a significant gain indeed.

Reasons for Drop Outs

There are many reasons for the drop-off in completion of immunization series. Many of these are similar to reasons discussed above for general non-acceptance of immunization. Some are chiefly "user reasons" and others chiefly "health system reasons," although there is considerable overlap.²

User reasons:

- o Many mothers believe that one dose is enough;
- o Many mothers simply forget the date on which they are to return;
- o Mothers may know when they are to return, but the child is sick and the mother believes a sick child should not be immunized;
- o The mother has lost the child's record and doesn't know if the child needs another injection;
- o The family may move, either seasonally or for a longer duration; and
- o The child's crying or side effects of previous immunization may alarm parents.

Health system reasons:

- o Health staff often fail to give the parent a specific date for return;
- o The health clinic or office may lose records and not know who needs injections;
- o The parent may return but the clinic may be too crowded, lines too long, or the vaccine not available;
- o The parent may return but the health worker may resist opening a new vial of vaccine for just one child;
- o Previous encounters with the clinic (or mobile team staff) may have been so unpleasant that the mother does not want or dare to return; and
- o Initial immunization may have been during an intensified campaign that was not followed up with promotional activities (e.g., community involvement, media messages) of similar intensity.

²Based on a similar listing in World Federation of Public Health Associations (1984:22).

Mothers generally do not know how many vaccines or doses their child has left. In **Haiti** mothers explain that the nurse never tells them which ones she is giving or which ones are left (Coreil 1987a). In **Indonesia**, and many other countries, "no knowledge" or "incorrect knowledge" is also a major reason for non-completion of immunization (Singarimbun et al. 1986). In many countries, **Nepal**, **Bangladesh**, and others, such records are often destroyed by humidity, insects, or children in play (Blanchet 1989).

In **Honduras** some mothers do not realize that, if they fail to take the child for immunization on the day they have been told, it is possible to go back on a different day. Some believe the vaccines are not effective unless administered on fixed dates. Others stay away because they are afraid of being scolded by health center staff for missing the specified date (Bonilla et al. 1985:446).

Clearly a remedy to this problem is desperately needed. Mothers who come for the first dose are already sufficiently motivated. Their failure to return should be preventable. Unfortunately, not many programs seem to have invested energy in seeking a solution.

One Solution: Improved Vaccination Cards

Issues for Project Design and Implementation

- o Do vaccination cards make a difference?
- o What do mothers do with them?
- o Do they influence initial acceptance of immunization?
- o Do they influence continuation rates?
- o Can better-designed vaccination cards help reduce drop-out rates?
- o What characteristics should a vaccination card have?

In the United States, a child's vaccination record is generally maintained by the pediatrician or clinic. In developing countries, however, health staff usually give mothers a vaccination card for their infants on which are recorded dates when the child has had an immunization; the mother is expected to keep this card at home and bring it back at the time of the next immunization. Although different formats exist, usually this card is somewhat similar to yellow "International Certificate of Vaccination" used by the U.S. Public Health Service for persons traveling internationally in that it contains text and boxes in which vaccinators makes notations, but it is not graphically attractive and certainly is not comprehensible by illiterate or semi-literate persons.

There are several consequences of this type of vaccination card. First and foremost, it is not understood by illiterate or semi-literate persons. This means it fails in meeting one of its chief purposes: telling the mother when to return for the next dose or immunization.

In Honduras, for instance, it was found that not only illiterate but also literate mothers could not understand the vaccination card being used by the Ministry of Health. The script was too small, the graphics looked like a complex crossword puzzle, and some of the nurses had used roman numerals to write the dates. Even literate mothers looking at the card could not tell the name or number of doses of each vaccine that had been given to their own child or that needed to be given to complete the vaccination series (Booth and Mata 1985:128). This card is shown in the drawing below.

NOMBRE		EDAD			
DIRECCION					
PERSONA RESPONSABLE					
VACUNA	D O S I S				
	PRIMERA	SEGUNDA	TERCERA	REPUESTO	
	FECHA	FECHA	FECHA	FECHA	
Poliomielitis					
D. P. T. (Difteria, Tosteringa y Tetanos)					
Saramon					
B. C. G. (Bacterias)					
Toxide Tetánico (embarazadas)					
OTRAS (indicar)					

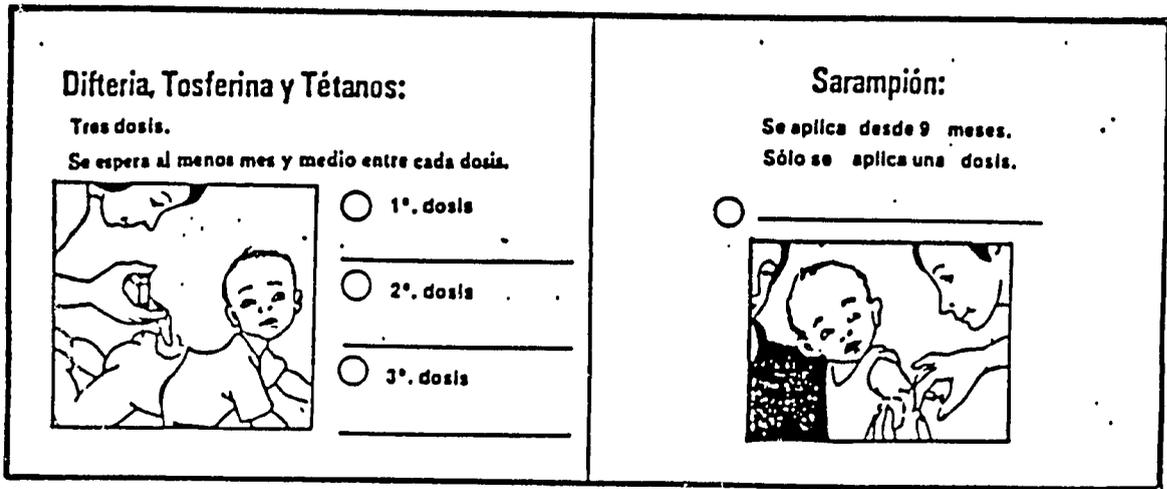
Thus in 1982 when the Honduran MOH launched a new strategy of semi-annual "Immunization Week" campaigns, it was decided that this old vaccination card should be replaced. Questions to answer in designing the new card were:

1. How to represent the kind of immunization needed?
2. How to represent the number of doses needed?
3. How to indicate when a dose had been received?
4. How to indicate the date to return?
5. What size should the card be?

Participant observation in rural clinics and in-depth interviews with mothers helped planners understand that mothers identified the vaccine by the way it is given:

- o If given orally, it is against polio.
- o If a deep shot in the arm, it is against measles.
- o If a superficial shot in the arm, it is against TB.
- o If a shot in the hip, it is for tetanus. (Of the three diseases DPT prevents, tetanus is the one most of these mothers remember.)

A new easy-to-understand six-page card was designed with illustrations of each immunization and the number of doses for each. The pages for DPT and measles appear as shown here:



On the line next to the illustration, the nurse now fills in with ink the date a dose is received and prints in with pencil the date the mother should return.

To determine the optimal size, vaccination cards were collected from public institutions--the Ministry of Health and Social Security--and private institutions such as pediatric clinics and laboratories. The vaccination cards used by private institutions were four times larger than the card used by the MOH--about 5" x 5", versus 2" by 2". The reason given was to avoid loss of the card. To decide what size was best, the project planners (following social marketing principles) turned to the consumer, mothers.

Three different models were prepared for pre-testing by rural women. Both illiterate and literate mothers understood the new design, whereas only a few of the literate mothers understood the old MOH card. The mothers overwhelmingly preferred the smaller size, however, as it is easier to carry while also being easy to comprehend. (Rural women in Honduras, as in many countries, carry money and valuables in a plastic bag in their brassiere where they feel it is safe.) They also preferred the smaller card because it presented only one (rather than two) vaccines on a single page.

After re-design of the vaccination card, coverage of under-fives for DPT III and polio increased in two years from about 55 percent to an impressive 78 percent. The new graphics of the vaccination card are believed to have contributed significantly to this increase (Booth and Mata 1985:122).

Optimal characteristics of a vaccination card. This experience suggests the following guidelines for vaccination cards elsewhere.

1. **The card must be able to stand on its own.** Even if health staff have time to do a good job of explaining it at the time of vaccination (and often they don't), the mother must be able to comprehend it once she has returned home and time has passed.

2. **The card should show clearly four types of information:**

- a. Which vaccines are needed,
- b. The necessary number of doses for each vaccine,
- c. How many of these doses have been received, and
- d. When to return for the next immunization.

3. **The card should be attractive.** Illustrations make the card both more attractive and help it communicate the information in point 2 above.

4. **The card should be culture-specific.** It should be in the local language and illustrations, if used, should look like local people and adhere to cultural standards (e.g., avoid faces of mothers in certain Arab countries).

5. **The size should be neither too small nor too large:** large enough to comprehend easily but small enough to carry easily.

Conclusions and Recommendations

Country-specific KAP studies should be conducted to determine why, in the individual country, mothers initially attracted to immunization, don't return for the follow-up doses. Changes should then be made to attract them back. The average drop-out rate between DPT-I and III has been estimated at about 25 percent (very high). Reasons are generally known but need to be clearly understood in each country. If mothers could be motivated to return for second and third doses, coverage rates would rise by a sizeable 15 to 20 percentage points.

Vaccination cards should be designed so that mothers can tell easily by looking at them when to return for the remaining doses. Many cards in use today are not easily comprehended even by literate mothers. This is one major or at least contributing reason for drop outs--especially among mothers who are not highly motivated or who face major constraints. A model for improving vaccination cards exists.

X. COMMUNITY PARTICIPATION

Issues for Project Design and Implementation

- o What is meant by "community participation" or "community involvement" in the context of immunization?
- o Does community participation matter?
If so, how and to what extent?
- o Is there evidence that community participation has actually made a difference in progressing toward EPI goals (or is it just rhetoric)?

"Community involvement remains more a slogan than a reality for the majority of immunization programmes, and much remains to be done in this area."

This is not an assertion from some idealist social-scientist or left-leaning activist who sees community participation as an important goal chiefly for equity (or community empowerment) reasons, but a statement by the director of WHO's Expanded Programme on Immunization (R.H. Henderson 1984b:29).

On the other hand, one eminent UNICEF official recently commented somewhat cynically: "Community participation? That's passe'. Nobody cares about that any more."

The reality is that community participation is essential to reach the high coverage rates that are the goals of current EPI and UCI programs. Coverage rates of 30, 40, and perhaps even 50 percent have been relatively easy to achieve in some developing countries, even without a great deal of attention to community participation in the traditional PHC sense. But even the best conventional immunization programs reach a plateau at around 70 percent coverage, as seen in Thailand (UNICEF 1987a:29).

The Meaning of Community Participation

"Community participation" has two different meanings in the context of immunization. They are actually very different and it is important to distinguish between them (WFPHA 1984:28).

1. Active participation of community members in the provision of services (including project design, implementation, and evaluation)--participation which involves self-help and the mobilization of village resources.

2. Acceptance of immunization services by individual community members--that is, the willingness of parents to "participate" in receiving immunizations for their children and tetanus toxoid for the woman.

It is the first active participation meaning with which we are concerned in this section.

Active Participation of Community Members

Studies and evaluations show that the benefits of active community participation are many. These include the following.

1. Communication from respected local leaders and neighbors is better understood and more influential than posters or radio messages delivered by outsiders.
2. Community members and leaders are much more likely than outsiders to know the most convenient times and locations for clinic sessions; they are also more likely to know who are the drop-outs and the unvaccinated.
3. Community volunteers can help manage clinic sessions, remind mothers of upcoming immunization dates, and follow up on those who miss a date. If acceptance rates are low, they can help find the reason.
4. Community members can do their own survey of immunization coverage; schoolchildren can be taught about immunization and then given a small number of families to contact regarding missed immunizations.
5. In cultures where men control the movement of women outside the home, the men's approval and even enthusiasm are essential.
6. Community members can provide an early warning system when rumors develop that can threaten the program.
7. Community members can support surveillance systems by reporting disease outbreaks.

In practice, effective community participation is not easy to achieve. Project planners and implementors usually do not allocate sufficient time, personnel, or resources to communicate with and enlist the cooperation of village-level workers, receive input from community members, or organize community groups (WFPHA

1984:29).³ Nevertheless, numerous projects and programs have successfully involved community members in promoting and providing immunization and, as a result, raised acceptance levels.

For example, in a well-designed **polio** immunization campaign in Dewas District, **India**, district authorities, block officials, elected village leaders, health workers, school teachers, and village watchmen were all informed about the campaign and asked to generate public enthusiasm. This they did. They produced a booklet on polio in the local language, had a polio song book written and taped, posters designed, and a photo exhibit prepared. Plays about polio were performed on market days. Village watchmen went up and down the lanes beating their drums and spreading the message. Village children led processions, singing songs. Walls were painted with slogans and large banners displayed outside immunization centers. Extension workers and local volunteers made door-to-door visits to encourage attendance. Vaccination sessions were held at accessible village locations. Cold boxes and the cooperation of a local ice factory helped solve the cold chain problem (Wong 1983).

In several countries, schools and school children have been enlisted to promote immunization. For example, in the **Ivory Coast**, a school health education program has been initiated to improve public participation in immunization activities. This consists of a simple lesson plan that is distributed to school teachers to use in teaching pupils the need for their younger siblings and neighborhood infants to be immunized. After completing the lesson plan, the pupils carry it home, together with appointment slips to have the target children immunized. Demand for immunization has increased dramatically in two areas where this has been carried out (WHO:198 :

In a sparsely settled area of the Machakos District in **Kenya**, the immunization strategy included studying the structure of the community in order to plan for community participation, and then using schoolchildren to disseminate information about immunization, which was provided by mobile teams at local schools (WHO 1977). Clearly, a special study of community social structure is not affordable and possible everywhere. In many places, however, such information may already have been collected for other purposes. This should be used for building community participation in immunization activities.

The Danfa project in **Ghana** provides another example of the important supportive role of villagers. There village volunteers were recruited and given brief training. They returned to their villages to tell community members about the coming services, the diseases to be prevented, the age groups to be vaccinated, the benefits to the children, and expected side effects. They aided in selecting immunization sites, reminded fellow villagers of coming dates, helped organize lines of flow, and tallied

³See also Barbara Pillsbury, David Nicholas, and Arthur Goldsmith, Community Organization (Washington D.C.: University Research Corporation, Primary Health Care Operations Research (PRICOR) Monograph No. 3, 1985).

numbers vaccinated--and clearly contributed significantly to increased immunization acceptance (Belcher et al. 1978).

In most communities, despite some inevitable conservative traditionalists, many people are very interested in and receptive to new ideas. They may also have high expectations regarding project or program benefits. Problems arise, however, when expectations are disappointed or rumors develop and spread before they can be stopped. If programs wait until this point to involve the community, public disillusionment may make it hard to recover lost ground (WFPHA 1984:29).

Community Participation and Campaigns

The most dramatic examples of community participation successfully contributing to increased immunization acceptance relate, not surprisingly, to short-term campaigns. Building community participation that is sustained over time is a slow, long-term process. All too often, campaigns achieve high results when first introduced, but by the time second and third doses are needed, participation has waned significantly. If the process moves too quickly and does not become part of the new conceptualization of village people, then it is questionable whether improvement in health status, let alone community participation, has really materialized (Rifkin 1980:7).

The campaign in India's Dewas District, described above, illustrates this point, that it is easier to generate a high level of community participation for short-term campaigns than ongoing activities. Unfortunately, despite the initial success in Dewas District, it proved difficult to maintain community participation and enthusiasm over time and immunization acceptance after the first round decreased. In part this was due to the staff's multiple and competing responsibilities and in part it was due to the lack of follow-up publicity to motivate the community (Wong 1983).

Community Leaders

In many countries, local community leaders continue to be highly respected--or at least their authority respected if not feared (Henderson et al. 1973, Singaribum and Streatfield 1986). The role played by powerful or esteemed community leaders should be understood and appropriately built upon for motivating community members both to accept immunization and to participate in the provision of services.

Conclusions and Recommendations

Along with measures to impart fuller knowledge and understanding of immunization, health workers and project personnel should use whatever means are available to increase community participation. Despite sentiments that "community participation is passe", and although effective community participation is not easy to achieve, community participation is essential to reach the high coverage rates that are the goals of EPI and UCI programs.

Traditional health practitioners should be part of the focus of health education efforts in countries where the public frequently consult them. Traditional practitioners are not necessarily opposed to "modern" medicine and may be useful allies as they are often the first specialist consulted by community members.

XI. COMMUNICATION AND LANGUAGE

Issues for Project Design and Implementation

- o Are there names in all languages for the six vaccine-preventable diseases? For the vaccines?
- o Are these direct equivalents to the scientific names?
- o Which names do health workers and immunization messages presently use for the diseases and vaccines?
- o What is the consequence of this usage?
- o What names should be used?

There is relatively little in the literature about efforts to communicate effectively to the public about immunization. Many of the health education and social marketing approaches and methodologies that have been developed during the 1980s for promoting other child survival interventions (especially ORT) could be adapted quite easily for use in popularizing and communicating about immunization.⁴

Communication for Acceleration

In the social mobilization and acceleration strategies employed during the last five years, communication has been aimed more at promoting the idea of immunization than at communicating details and addressing fears. Communication has been more at the level of a country's president or well-known entertainment personality endorsing immunization over television or the radio, or has been in the form of posters, dramatizations, and other catchy techniques. This has been an effective strategy for informing the public about the existence and importance of immunization.

As we have seen above, people in developing countries now generally know of immunization. But many do not understand it well enough to be motivated to make all the necessary visits to the clinic or other immunization site. This will require more substantive communication tailored to local beliefs and expressed in local concepts.

⁴For example, A.I.D.'s HEALTHCOM Project, implemented by the Academy for Educational Development, has focused much more of its communication efforts on ORT but could easily apply this body of experience and expertise to increasing immunization acceptance.

Using Local Terms and Concepts

Experience in primary health care has shown clearly the importance of using local languages and linking health messages to local concepts and terminology. Immunization planners must recognize that medical language often obscures, intimidates, and confuses. Initials and acronyms that roll so easily off the tongues of Western health professionals--BCG and DPT among them--are meaningless to most developing country people, including many (or most) community-level health workers. Local terms must be sought for the diseases targeted for immunization.

Several problems arise, however, with regard to local names. In many languages, there is no single term that is exactly equivalent to the biomedically-defined disease name (e.g., measles, diphtheria, tuberculosis).

Instead, local illness terms often encompass several diseases, or syndromes, that share similar symptoms and other features as the target disease. In this case, the community's judgment as to the efficacy of the vaccination depends on the vaccination preventing all illnesses and syndromes encompassed by the local term.

In south **India**, for example, **neonatal tetanus** is often referred to by the same terms as other conditions involving fits and inability to suck milk (Nichter 1988). Likewise in **Bangladesh**, where three Bengali terms are used to describe **tetanus** (alga, dhanostinkar, and takuria), these terms are also used for other neonatal illnesses or syndromes that resemble tetanus. In one Bangladesh community, people came to believe that tetanus toxoid vaccine is only 50 percent effective in preventing these three illnesses (Chen 1986)--which means they were judging tetanus toxoid to be far less effective than it actually is. Similarly, in the **Cameroon**, it appears that stories about unsuccessful **measles** vaccine may have originated with people who were immunized against measles but subsequently developed an illness that, while not clinically measles, is known locally by the same native term that includes measles (Brown 1983).

In some cultures the lameness caused by **polio** is not distinguished in the local language from the word for lameness in general (WFPHA 1984:30). Similarly, the childhood form of TB is often not perceived as the same disease as the adult form--and different words are used locally for the two conditions.

Considerable care must be used in understanding how local illness terms are used in the local context and for what range of health problems. Biomedical disease names cannot simply and directly be translated into native illness categories. Explanations and terms for the illness for which a vaccination provides protection must be based on a carefully planned strategy and a considerable degree of specificity. This is obviously more difficult for diseases involving symptoms like diarrhea than for diseases like **whooping cough** that have more distinctive features.

It may be possible, however, to identify a subtype of an illness (as locally defined) which corresponds more precisely to the vaccine-preventable disease. In fact, native healers often specify subtypes of illness categories for which they do and do not claim expertise (Nichter 1988).

For example, villagers in Karnataka state in South India are familiar with **tetanus** and **whooping cough** and have local names they use for each. Researchers found, however, that health staff administering immunizations and recruiting community members to attend an immunization clinic used neither the formal names nor the local names by which the villagers know these diseases. As a result, some villagers thought the **DPT** immunization being offered was against malaria, about which they had little concern, and so didn't take their infants to be immunized. When these villagers later learned that the vaccine prevents whooping cough, some felt cheated. Living close together, these villagers knew well the cries of children coughing night after night with whooping cough (called locally nayi kemmu, "dog cough") and complained that, had they known there was an immunization against nayi kemmu they would have taken their children to get it (Nichter 1988).

The explanation given by the health workers was that the local people were uneducated and could not understand vaccinations. Furthermore, the health workers said, they had not been instructed to use local terms or tell about vaccinations. Rather, it was the people's duty to receive vaccinations because the government asked this of them. And, in fact, no instruction had been given to the health workers in interpersonal communication concerning vaccination. Emphasis was placed on vaccination timing and little else (Nichter 1988).

Conclusions and Recommendations

Traditional health beliefs. Health education should build on traditional beliefs and practices whenever possible. Health workers are usually more successful if they build on, rather than discount, preexisting beliefs about disease causation.

Research methodologies and health education approaches developed for other child survival interventions should be adapted for learning how to communicate about and for popularizing immunization. This includes social marketing approaches (used carefully), short-timeframe ethnographic studies, and methodologies developed in the fields of ORT and growth monitoring.⁵

⁵See, for example, Marcia Griffiths, "Using Monitoring Results for Family Education." In Growth Monitoring Information for Action Issues Paper. Washington D.C.: World Federation of Public Health Associations, 1985.

Counseling guidelines developed for family planning should be used to develop generic guidelines for counseling on immunization side-effects and benefits. Currently little counseling on side-effects occurs. Much more has been developed in this area in family planning which could easily be built upon.⁶

⁶See, for example, "Counseling Makes A Difference." Population Reports Series J, No. 35, November 1987 (Baltimore, MD: Johns Hopkins University, Population Information Program).

BIBLIOGRAPHY

Immunization: The Behavioral Issues¹

- Aaby, Peter, Jette Bukh, Ida Maria Lisse, and Arjon Smits
1983 "Measles Mortality, State of Nutrition and Family Structure: A Community Study from Guinea-Bissau." Journal of Infectious Diseases 147(4):693-701.
- 1984a "Measles Vaccination and Reduction in Child Mortality: A Community Study from Guinea Bissau." Journal of Infection 8:13-21.
- 1984b "Overcrowding and Intensive Exposure as Determinants of Measles Mortality" [Guinea-Bissau]. American Journal of Epidemiology 120(1):49-63.
- 1985 "Introduction of Measles into a Highly Immunised West African Community: The Role of Health Care Institutions" [Guinea-Bissau]. Journal of Epidemiology and Community Health 39:113-116.
- Academy for Educational Development
1988 "Behavioral Observations in An Immunization Program: Ecuador." Washington D.C.: HealthCom Project. (Draft). *
- Adekunle, Lola
1978 "Child Immunization - What are the Impediments for Reaching Desired Goals in a Transitional Society?" [Nigeria] Social Science and Medicine 12:353-57.
- Agency for International Development (A.I.D.)
1986 "Immunization: Strategy." Washington D.C.: A.I.D. Office of Health. *
- 1988 Child Survival: A Third Report to Congress on the USAID Program. Washington D.C.: A.I.D. Office of Health. *
- 1989 Child Survival: A Fourth Report to Congress on the USAID Program. Washington D.C.: A.I.D. Office of Health. *
- Akesode, F.A.
1982 "Factors Affecting the Use of Primary Health Care Clinics for Children." Journal of Epidemiology and Community Health 36:310-14.

¹This main section of the bibliography includes all references cited in the text which contain some discussion of behavioral issues in immunization. In the attempt to be comprehensive, it also includes other documents, potentially related to behavioral issues in immunization, that were not acquired or analyzed for this review and that are not cited in the text. In the attempt to keep this bibliography focused as specifically as possible on behavioral aspects of immunization, most references cited that do not deal directly with behavioral aspects of immunization appear in the section below, "Other References Cited."

Key to Codes Used in This Bibliography:

[Country name] = Document concerns the country indicated although its name does not appear in the title.

* = Study funded, partially or in full, by A.I.D. (although it has not been possible to identify all AID-funded reports).

- Akin, John, Charles Griffin, David Guilkey, and Barry Popkin
1986 "The Demand for Primary Health Care Services in the Bicol Region of the Philippines." Economic Development and Cultural Change 34(4):755-782. *
- Al-Hadi, A.H.
1981 "Factors Affecting Non-Participation in EPI Services in Y.A.R. (Yemen Arab Republic)." M.Sc. Dissertation, Institute of Child Health, University of London.
- Aly, M.
1971 "The Problem of Tetanus in Dakahlia Governate, Egypt (a survey of public acceptance to immunization against tetanus)." Journal of the Egyptian Medical Association 55:683-691.
- American Public Health Association
1981 Primary Health Care Issues: Immunizations. (Edward Sabin and Wayne Stinson, principal authors). Washington D.C.: APHA International Health Program. *
- Anhed, Z.
1979 "Factors Affecting Community Participation in an Immunization Campaign in Gondar, Ethiopia." Ethiopian Medical Journal, April: 33-36.
- Applied Communication Technology
1985a "Final Report on the Evaluation of the PROCOSI II Diarrhea and Immunization Campaigns" [Honduras]. Menlo Park, Calif. *
1985b "Final Report on the Evaluation of the PROCOSI II Tuberculosis Campaign" [Honduras]. Menlo Park, Calif: . *
- Argueta, Rolando Hernández, and Hernán Jaramillo
1985 "The National Immunization Campaign of El Salvador--Against the Odds." Assignment Children 69/72:397-414.
- Assignment Children
1985 Universal Child Immunization by 1990. Vol. 69/72. P.-E. Mandl, ed. Geneva and New York: UNICEF.
- Bachani, D., M.P. Singh, S. Yadav, and R.G. Pawar
1983 "Utilisation of Preventive Services - An Elaborative Study of Vaccine Acceptors." Indian Journal of Preventive and Social Medicine 14(1-2):35-41.
- Bamisaiye, Anne
1984 "Selected Factors Influencing the Coverage of an MCH Clinic in Lagos, Nigeria." Journal of Tropical Pediatrics 30:256-261.
- Bangladesh Rural Advancement Committee (BRAC)
1988 "Perceptions of Immunizable Diseases in Rural Bangladesh." Dhaka: BRAC Research and Evaluation Division.
- Barnabas, G.
1982 "Popcorn and Fairies in the Management of Measles in Ethiopia." Lancet i:450-451.
- Bastien, Joseph W.
1988 "Cultural Perceptions of Neonatal Tetanus and Programming Implications, Bolivia." Arlington, VA: John Snow, Inc., Resources for Child Health Project for USAID/La Paz. *

- Belcher, D.W., D.D. Nicholas, S. Ofori-Amaah, and F.K. Wurapa
1978 "A Mass Immunization Campaign in Rural Ghana - Factors Affecting Participation." Public Health Reports 93(2):170-76.
- Bender, Deborah and Rose Macauley
1989 "Immunization Drop-Outs and Maternal Behavior: Evaluation of Reasons Given and Strategies for Maintaining Gains in the National Vaccination Campaign in Liberia." International Quarterly of Community Health Education 9(4):283-298.
- Berggren, G.G., W. Berggren, A. Verly, et al.
1983 "Traditional Midwives, Tetanus Immunization, and Infant Mortality in Rural Haiti." Tropical Doctor 13:79-87.
- Berggren, W.L., D.C. Ewbank, and G.G. Berggren
1981 "Reduction of Mortality in Rural Haiti Through a Primary Health Care Program." New England Journal of Medicine 304:1324-1330.
- Berggren, W.L.
1971 "Changing Incidence of Fatal Tetanus of the Newborn." American Journal of Tropical Medicine 20 (May):492-494.
- Bertan, Münewer, and Richard S. Reid
1985 "The National Immunization Campaign in Turkey." Assignment Children 69/72:265-300.
- Bhakoo, O.
1976 "Socio-epidemiological Study of Neonatal Tetanus." Indian Pediatrics, July, pp. 545-552.
- Bhuiya, Abbas, Bogdan Wojtyniak, Stan D'Souza, Lutfun Nahar, and Kashem Shaikh
1987 "Measles Case Fatality Among the Under-Fives: a Multivariate Analysis of Risk Factors in a Rural Area of Bangladesh." Social Science and Medicine 24(5):439-43.
- Blanchet, Therese
1989 "Perceptions of Childhood Diseases and Attitudes Towards Immunization among Slum Dwellers -- Dhaka, Bangladesh." Arlington, VA: John Snow, Inc., Resources for Child Health Project. (Draft.) *
- Bonilla, Jose Enrique Zelaya, Jose Ignacio Mata Gamarra, and Elizabeth Booth Mills
1985 "Bridging the Communication Gap: How Mothers in Honduras Perceive Immunization." Assignment Children 69/72: 443:455.
- Booth, Elizabeth Mills, Edward C. Green, and Dale Huntington
1985 "Ethnographic Research: A Bridge Between Traditional and Modern Health Delivery Systems." Field Notes, pp. 114-118. Washington D.C.: Academy for Educational Development, HealthCom Project. *
- Booth, Elizabeth Mills and Jose Ignacia Mata
1985 "EPI and the Four P's: Applying Social Marketing to Immunization Programs" [Honduras]. Field Notes, pp. 119-129. Washington D.C.: Academy for Educational Development, HealthCom Project. *
- Brown, Judith E.
1983 "Low Immunization Coverage in Yaounde, Cameroon: Finding the Problems." Medical Anthropology 7(2):9-18.

- Brown, Judith E., P. Djoydom, K. Murphy, G. Kesseng, and D. Heymann
 1982 "Identifying the Reasons for Low Immunization Coverage - A Case Study of Yaounde (Cameroon)." Revue d'Epidémiologie et de Santé Publique 30:35-47.
- Buchanan, N. and R. Spencer
 1981 "Immunization Non-Compliance - Time for Action." Medical Journal of Australia 2:361-362.
- Burkina Faso, Ministry of Health of, and UNICEF/Ouagadougou
 1985 "Vaccination Commando in Burkina Faso--The Spearhead for Accelerated EPI and PHC." Assignment Children 69/72:301-328.
- Caldwell, J.C.
 1981 "Maternal Education as a Factor in Child Mortality." World Health Forum 2(1):75-78.
- Centers for Disease Control (CDC), U.S. Public Health Service
 1982 "Country Assessment: Combatting Childhood Communicable Diseases Project, Zaire." Atlanta: Centers for Disease Control. *
- 1983 An Evaluation for Health Education Programs in Immunization. Atlanta, Georgia: CDC Center for Health Promotion and Education.
- 1986a Immunization: Survey of Recent Research Number 5. Atlanta, HHS Publication (CDC) 87-8391.
- 1986b List of K.A.P. Surveys Carried Out by the CCCD Project in Africa. Prepared by F. Dabis and R. Steketee. January 23, 1986. Atlanta, GA.
- 1986(?)e "Guidelines for A Survey of Health Practices." Combatting Childhood Communicable Diseases Program.
- 1987 "Guidelines for An Educational Diagnosis in the Combatting Childhood Communicable Diseases Project." Quarterly Progress Report - November 21-February 21, 1987. Atlanta, GA.
- Central African Republic, Government of
 1985 "Enquête Connaissances-Attitudes-Pratiques/ Mères et Couverture Vaccinale/Bangui." Ministry of Public Health and Social Affairs. With review by F. Dabis and R. Steketee, CDC Combatting Childhood Communicable Diseases Project. *
- Central African Republic, Government of
 1985(?) "Rapport de Mission, Enquête Connaissances-Attitudes-Pratiques, Mères et Personnel Sanitaire/Bambari." Ministry of Public Health and Social Affairs (and CDC Combatting Childhood Communicable Diseases Project). *
- Chen, Lincoln C.
 1986 "Primary Health Care in Developing Countries: Overcoming Operational, Technical, and Social Barriers." Lancet Nov. 29: 1260-1265.
- Chen, P.C.
 1976 "The Traditional Birth Attendant and Neonatal Tetanus: The Malaysian Experience." Journal of Tropical Pediatrics, December, pp. 263-264.

- Christensen-Szalanski, Jay J.J. and Gregory Northcraft
 1985 "Patient Compliance Behavior: The Effect of Time on Patients' Values of Treatment Regimens." Social Science and Medicine 21(3):263-73.
- Claquin, Pierre
 n.d. "Dissemination of New Research Findings and Technologier in the Field." Arlington: John Snow, Inc., Resources for Child Health Project.
- Clark, K.S.
 1983 "Factors Influencing the Success of Immunization Programmes: Some Lessons from the Expanded Program on Immunization." M.A. Dissertation in Public Administration, Seattle University.
- Cliff, J.
 1985 "Neo-natal Tetanus in Maputo, Mozambique. Part 1: Hospital Incidence and Childbirth Practices." Central African Journal of Medicine 1:9-12.
- Colombia, Government of
 1985 "National Vaccination Crusade: A Summary of the Experience, Achievements, and Perspectives." Bogota: Ministry of Health.
- Colombia, Republic of
 1985 "National Vaccination Crusade--1984." Bogota: Ministry of Health. With PAHO/WHO, UNDP and UNICEF.
- Combatting Childhood Communicable Diseases Project, Guinea
 1986 "A Community Based Survey of Practices Concerning Vaccination and Treatment of Diarrhea and Fever in Children in Conakry, Guinea." Conakry: Ministry of Health and Social Affairs; and Atlanta: Centers for Disease Control (July). *
- Combatting Childhood Communicable Diseases Project, Central African Republic (see Central African Republic)
- Combatting Childhood Communicable Diseases Project, Togo
 1984 "A Study of Infant (0-11 Months) and Juvenile Mortality (1-4 Years), Incidence Rates of Diarrheal Disease and Fever Episodes, Their Treatment and Certain Maternal Characteristics." Republic of Togo, Plateaux Region. November. *
- Combatting Childhood Communicable Diseases Project, Rwanda
 1986 "Rapport de l'Enquête sur les Croyances des Mères sur la Rougeole." (Report of the Study [focus group] on Beliefs of Mothers' Beliefs about Measles). Rwanda. (August.) *
- Combatting Childhood Communicable Diseases Project, Rwanda
 (see also Ntilivamunda et al.)
- Coreil, Jeannine
 1986 "Traditional and Western Responses to an Anthrax Epidemic in Rural Haiti." Medical Anthropology 4(1):79-105.
- 1983 "Allocation of Family Resources for Health Care in Rural Haiti." Social Science and Medicine 17(11):709-719.
- (with assistance of Antoine Augustine)
 1987a "Maternal Factors in the Use of Preventive Health Services in Haiti: A Qualitative Assessment of the Characteristics of Users and Non-Users of Immunizations." Washington D.C.: National

Academy of Sciences, Board on Science and Technology for International Development, Program in Rapid Epidemiologic Assessment for Health Planning and Decision Making. *

1987b "Identifying Families at Risk for Underutilization of Immunizations in Haiti." Paper presented at American Anthropological Association Annual Meeting. November.

Coreil, Antoine Augustin, Neal Halsey, and Elizabeth Holt

1989 "The Use of Ethnographic Research for Instrument Development and a Case Control Study of Immunization Use in Haiti." International Journal of Epidemiology 18(4):901-905.

Crane, Elizabeth

1987 "An Anthropological Critique of WHO's Expanded Programme on Immunization." Paper presented at American Anthropological Association Annual Meeting. November.

Dagneu, Maleke-Berhan

1984 "Pattern of Health Care Utilisation in a Small Rural Ethiopian Town." Ethiopian Medical Journal 22:173-77.

Dalphinis, J.

1986 "Do Immunization Defaulters Know Enough about Immunization?" Health Visitor 59: 342-344.

Dibjosubroto, S.

1978 "Attitudes and Knowledge of the Parents of Neonates Admitted with Tetanus Neonatorum." Pediatrics-Indonesia, March, pp. 67-74.

Dick, Bruce

1985 "Issues in Immunization in Developing Countries: An Overview." London: London School of Hygiene and Tropical Medicine, Evaluation and Planning Centre for Health Care, EPC Publication No. 7.

Ekunwe, Ebum O.

1984 "Expanding Immunization Coverage Through Improved Clinic Procedures." World Health Forum 5:351-63.

Eng, Eugenia, John Briscoe, and Anne Cunningham

1987 "Community Participation in Water Supply Projects as a Stimulus to Primary Health Care: Lessons Learned from AID-Supported and Other Projects in Indonesia and Togo." Washington D.C.: Water and Sanitation for Health, Technical Report No. 44. *

Enge, Kjell I., and Polly F. Harrison et al.

1987 Maternal-Child Health Providers in Guatemala: Knowledge, Attitudes, and Practices: Research Findings and Suggestions for Application. Arlington, Virginia: Management Sciences for Health, PRITECH Project. *

Feachem, R.G., and M.A. Koblinsk,

1983 "Interventions for the Control of Diarrhoeal Diseases among Young Children: Measles Immunization." Bulletin of the World Health Organization 61(4):641-652.

Foreit, Karen G. and Bruno Lesevic

1987 "Costs and Benefits of Implementing Child Survival Services at a Private Mining Clinic in Peru." (Draft). Columbia MD: John Short & Associates. *

Friede, Andrew, Christine Wateraux, Bernard Guyer, Antonio de Jesus, and Laura Filipp

1985 "An Epidemiological Assessment of Immunization Programme Participation in the Philippines." International Journal of Epidemiology 14(1):135-41.

- Galazka, A.M., B.A. Lauer, R.H. Henderson, and J. Keja
1984 "Should Sick Infants Be Vaccinated?" World Health Forum 5(3):269-272.
- Galazka, Arthur and George Stroh
1986 "Neonatal Tetanus: Guidelines on the Community-Based Survey on Neonatal Tetanus Mortality." Geneva: World Health Organization.
- Garfield, R.M. and E. Taboada
1984 "Health Service Reforms in Revolutionary Nicaragua." American Journal of Public Health 74:1138-44.
- Gatef, C.
1985 "Le Programme Elargi de Vaccination, Une Enterprise qui Concerne Tous!" Médecine d'Afrique Noire 32:55-56.
- Gelfand, Michael
1980 "African Customs in Relation to Preventive Medicine." Central African Journal of Medicine 27(1):1-8.
- Green, Edward C.
1985 "Traditional Healers, Mothers and Childhood Diarrheal Disease in Swaziland: The Interface of Anthropology and Health Education." Social Science and Medicine 20(3): 277-285.
- Greenwood B., A. Greenwood, A. Bradley, S. Tulloch, R. Hayes, and S. Oldfield
1987 "Deaths in Infancy and Early Childhood in a Well-Vaccinated, Rural, West African Population." Annals of Tropical Paediatrics 7:2:91-99.
- Gupta, M. and K.N. Agarwal
1972 "Importance of Parental Education and Socioeconomic Status in Family Planning and on Immunization Status." Indian Pediatrics 8:147.
- Gupta, S.D., R. Sharma, A. Zafar, et al
1985 "Immunisation of Children: An Alternate Strategy." Indian Pediatrics 22(3):225-28.
- Haaga, John
1986 "Cost-Effectiveness and Cost-Benefit Analyses of Immunization Programmes in Developing Countries." In D.B. Jelliffe and E.F.P. Jelliffe, eds., Advances in International Maternal and Child Health, pp. 195-220. Oxford: Clarendon Press.
- Hamid, E.
1985 "Tetanus Neonatorum in Babies Delivered by Traditional Birth Attendants in Medan, Indonesia." Pediatrics Indonesia, September, pp. 167-174.
- Hanks, L.M., J.R. Hanks et al.
1955 "Diphtheria Immunization in a Thai Community." In B. Paul ed., Health, Culture, and Community. New York: Russell Sage Foundation.
- Hassouna, W. A.
1983 "Reaching the People: A Three Country Study of Health Systems" [Bahrain, Egypt, Yemen Arab Republic]. World Health Forum 4:57-62.
- Haxton, David
1984 "Pilot Projects and Nation-Wide Immunization in India." Assignment Children 65/68:207-223.

- Heggenhougen, H.K. and L. Shore
 1986 "Cultural Components of Behavioural Epidemiology: Implications for Primary Health Care." Social Science and Medicine 22(11):1235-45.
- Heggenhougen, H.K. and C.J. Clements
 1987 Acceptability of Childhood Immunization: Social Science Perspectives. Prepared for WHO, Expanded Programme on Immunization. London: London School of Hygiene and Tropical Medicine, Evaluation and Planning Centre for Health Care, EPC Publication No. 7.
- Henderson, R.H. and T. Sundaresan
 1982 "Cluster Sampling to Assess Immunization Coverage: A Review of Experience with a Simplified Sampling Method." Bulletin of the World Health Organization 60:253-260.
- Henderson, R.H.
 1984a "Vaccine Preventable Diseases of Children: The Problem." In Protecting the World's Children: Vaccines and Immunization within Primary Health Care. Report of Bellagio Conference, March 13-15, 1984. Pp. 1-13. New York: Rockefeller Foundation.
- 1984b "Providing Immunization: The State of the Art." In Protecting the World's Children: Vaccines and Immunization within Primary Health Care. Report of Bellagio Conference, March 13-15, 1984. Pp. 17-37. New York: Rockefeller Foundation.
- 1986 "Improvement of Immunization Services in Urban Areas." Paper presented at workshop for managers of the Expanded Programme on Immunization." Manila, August 1986. Geneva: World Health Organization. WPR/EPI/86.14.
- Henderson, Donald
 1984 "Childhood Immunization as an Impetus to Primary Health Care." In Protecting the World's Children: Vaccines and Immunization within Primary Health Care. Report of Bellagio Conference, March 13-15, 1984. Pp. 67-81. New York: Rockefeller Foundation.
- Henderson, R.H., H. Davis, D. Eddins, and W. Foegen
 1973 "Assessment of Vaccination Coverage, Vaccination Scar Rates and Smallpox Scarring in Five Areas of West Africa." Bulletin of the World Health Organization 84:183-94.
- Hingson, Ralph
 1974a "The Impact of Health Beliefs on Behavior During an Immunization Program in Rural Haiti." Health Education Monographs 2:505-07.
- 1974b "Obtaining Optimal Attendance at Mass Immunization Programs." Health Services Reports 89(1):53-64.
- Hingson, Ralph, N. Lin, and R.A. Hingson
 1976 "Achieving Higher Immunization Receptivity." Public Health Reviews 6(1-2):93-117.
- Hopkins, D.
 1983 Princes and Peasants: Smallpox in History. Chicago: University of Chicago Press.
- Hornick, Robert
 1988 "What Are We Learning from the Evaluation of the Communication for Child Survival Project?" Philadelphia: University of Pennsylvania, Annenberg School of Communications, Health Communication Evaluation Research Group, Working Paper No. 122.*
- Howard, G.R.
 1978 "Socio-Economic Factors Affecting Utilization of a Rural Indian Hospital." Tropical Doctor 8:210-19.

Hsu, F.R.

1955 "A Cholera Epidemic in a Chinese Town." In: Health, Culture and Community. B. Paul, ed. Pp. 135-53. N.Y.: Russell Sage Foundation.

Hull, D.

1987 "Why Children Are Not Immunised." Journal of the Royal College of Physicians of London 21(1):28-31.

Imperato, P.J.

1974 "Nomads of the Sahel and Delivery of Health Services." Social Science and Medicine 8:443-457.

India, Government of

1985 "Monitoring Communication Needs for Health and Family Welfare: An Executive Summary of Five State Reports." New Delhi: Ministry of Health and Family.

Indian Market Research Bureau

1987 "Immunization: A Summary Report on Knowledge, Attitudes and Practices - Mothers." UNICEF/New Delhi.

Islam, M.S., M. Mujibur Rahaman, K.M.S. Aziz, M.H. Munshi, Mizanur Rahman, and Yakub Patwarl

1982 "Birth Care Practice and Neonatal Tetanus in a Rural Area of Bangladesh." Journal of Tropical Pediatrics 28(6):299-302.

Janowitz, Barbara, Sylvia Wallace, Galba Araujo and Lorena Araujo

1985 "Referrals by Traditional Birth Attendants in Northeast Brazil." American Journal of Public Health 75(7):745-48.

John Snow, Inc.

1989 "Knowledge, Attitude and Practice Regarding EPI in Municipal Areas--A Baseline KAP Survey Conducted in Dhaka and Jessore." Dhaka: VHSS, and Arlington, VA: John Snow, Resources for Child Health Project *

1989b EPI Essentials: A Guide for Program Officers. Arlington, VA: John Snow, Resources for Child Health (REACH) Project.*

John Snow International

1987 "Child Survival Evaluation Project, Bara District." Kathmandu: JSI/Nepal. September. *

Kaartinen, Leena

1982 "Ethiopia: Measles Epidemic." Lancet I(8367):39.

Kasongo Project Team (W. Van Lerberghe et al.)

1981 "Influence of Measles Vaccine on Survival Pattern of 7-35 Month Old Children in Kasongo, Zaire." Lancet 1: 764-767.

Keja, K., C. Chan, G. Hayden, and R. Henderson

1988 "Expanded Programme on Immunization." World Health Statistical Quarterly 41(2):59-63.

Kessler, Susi, and Patricia Blair

1987 "Accelerated Immunization: An Assessment." Report prepared for UNICEF. Washington D.C.: American Public Health Association. October.

- Khanom, K. and A.K.M. Salahuddin
1983 "A Study on Impact of an Educational Programme on Immunization Behaviour of Parents." Bangladesh Medical Research Council Bulletin 9(1):18-24.
- Kumar, Ramesh, K. Kalra, and R.S. Dayal
1978 "A Survey on the Immunization Status and Breast Feeding Practices of Infants of Agra." Indian Pediatrics 15(2):107-115.
- Lancet
1984 "Measles and Primary Health Care." Lancet I(8389):1275-1276.
- Leslie, Joanne
1987 "Time Costs and Time Savings to Women of the Child Survival Revolution." Washington D.C.: International Center for Research on Women. July.
- Madkour, M. and A. Khalifa
1977 "A Critical Review of BCG Vaccination Programme in Egypt." Journal of Tropical Medicine and Hygiene 80:144-146.
- Magongo, Bongani and Vicki Freimuth
1987 "Radio Boosts Immunization Campaign in Swaziland." Development Communication Report 1987/3(58):11-12. *
- Maida, Carl A.
1985 "Social Support and Learning in Preventive Health Care." Social Science and Medicine 21(3):335-39.
- Makinen, W.M.
1979 "A Benefit Cost Analysis of Measles Vaccinations in Yaounde, Cameroon." University of Michigan, unpublished dissertation.
- Malison, M.D., P. Sekeito, P.L. Henderson, R.V. Hawkins, S.I. Okware, and T.S. Jones
1987 "Estimating Health Service Utilization, Immunization Coverage, and Childhood Mortality: A New Approach in Uganda." Bulletin of the World Health Organization 65(3):325-330.
- Mandi, P.-E.
1983 "Growth Charts, Oral Rehydration Therapy, Breast-feeding, and Immunization on a Wider Scale." Assignment Children 61/62:11-18.

1984 "Achieving Nation-Wide Programme-Coverage: Innovative Strategies and Methods." Assignment Children 65/66:iii-xiv.
- Mangay-Maglacas, A. and J. Simons, eds.
1986 The Potential of the Traditional Birth Attendant. WHO Offset Publication No. 95, Geneva.
- Mather, R.J. and T.J. John
1972 "Popular Beliefs about Smallpox and Other Common Infectious Diseases in South India." Tropical and Geographical Medicine 25:190-96.
- Miller, Barbara
1985 "Prenatal and Postnatal Sex-Selection in India: The Patriarchal Context, Ethnical Questions and Public Policy." Michigan State University, Women in Development Program, Working Paper No. 107.

- Monteith, Richard S., Charles W. Warren, Egberto Stanziola, Ricardo Lopez Urzua, and Mark W. Oberle
1987 "Use of Maternal and Child Health Services and Immunization Coverage in Panama and Guatemala." Bulletin of the Pan American Health Organization 21(1):1-15.
- Morgan, Robert
1969 "Attitudes Towards Smallpox and Measles in Nigeria." International Journal of Health Education 12:77-85.
- Mosley, W.H.
1984 "Child Survival: Research and Policy." Population and Development Review 10 (Supplement):3-23.
- Muhimbili Medical Centre
1980 "Evaluation of the Young Child Protection Programme In Tanzania: A Preliminary Report Focusing on Measles Vaccination." Dar-es-Salaam.
- Nairobi Medical Research Centre
n.d. "Agents Effecting Health of Mother and Child in a Rural Area of Kenya." Nairobi, Machakos Project Studies 1-20.
- Nazari, F. et al
1976 "A Model for Developing Countries of Mass Serological Survey of Children Vaccinated against Diphtheria and Tetanus." Journal of Biological Standardization 4:329-333.
- Nichter, Mark and Mimi Nichter
1983 "The Ethnophysiology and Folk Dietetics of Pregnancy: A Case Study from South India" [Sri Lanka]. Human Organization 42(3):235-246.
- Nichter, Mark
1987 "Cultural Dimensions of Hot, Cold and Sema in Sinhalese Health Culture" [Sri Lanka]. Social Science and Medicine 25(4):377-387.
- 1988 "Vaccinations in South Asia: False Expectations and Commanding Metaphors" [India, Sri Lanka]. In J Coreil and D. Mull, eds., Anthropology and Primary Health Care (forthcoming).
- 1989 ARI Knowledge and Practice: Methodology Project, Oriental Mindoro Philippines, Vol. 1. Report prepared for Acute Respiratory Illness Unit, World Health Organization, Geneva.
- Nttilvamunda, Augustin, Michael Deming, and Maryanne Neill
1985 "Enquêtes Nationales sur le Traitement de la Fièvre et de la Diarrhée chez les Enfants de Moins de 5 Ans a Domicile et Dans les Formations Sanitaires". Final Report. November. *
- O'Dea, Pauline
1985 "Immunizing with Knowledge - The Epistemology of Traditional Health Theories: A Neglected Dimension in Development." In Assignment Children 69/72:417-428.
- Odebiyi, A.I. and S.C. Ekong
1982 "Mothers' Concepts of Measles and Attitudes Towards Measles Vaccine In Ile-Ife, Nigeria." Journal of Epidemiology and Community Health 36(3):209-213.
- Odumosu, M.
1982 "Mass Media and Immunization Awareness of Pregnant Women in a Nigerian Community." Canadian Journal of Public Health 73: 105-108.

- Ofosu-Amaah, S.
1983 "The Control of Measles In Tropical Africa: A Review of Past and Present Efforts." Reviews of Infectious Diseases 5(3):546-553.
- Ogionowo, W.
1973 "Socio-Psychological Factors in Health Behaviour." International Journal of Health Education 16:1-16 (Supplement).
- Olugbile, A.O.
1974 "A Study of Preventive Health Services in Ibaden with Special Reference to Immunization of Pre-School Children." Nigerian Medicine Journal 5.21:98-102.
- Onuoha, G.B.
1981 "Factors Responsible for Underutilization of Available Health Services by the Rural People in Nigeria." East African Medical Journal 38(11):859-11.
- Pan American Health Organization
1981 Immunization and Primary Health Care: Problems and Solutions. Washington D.C. PAHO Scientific Publication No. 417.
1983 Recent Advances in Immunization: A Bibliographic Review. N.A. Halsey and C.A. DeQuadros, eds. Washington D.C. PAHO Scientific Publication No. 451.
1984 "Attaining Higher Coverage: Obstacles to Overcome." EPI Newsletter 6(6):1-2.
- Perier, H. and J.A. Husser
1979 "Is the Appearance of the 1st Tooth a Good Indicator for the Choice of When to Vaccinate for Measles?" Medicin Tropical 39:559-563.
- Pollack, Marjorie
1986 "Immunization Coverage Analysis: USAID/Ecuador." Arlington: John Snow, Inc., Resources for Child Health Project. *
- Popkin, Barry M. et al.
1987 "Executive Summary: Philippine Health, Population, and Nutrition Survey Research Project." Chapel Hill, N.C.: University of North Carolina, Carolina Population Center. *
- Population Information Program
1986 "Immunizing the World's Children." Population Reports series L(5):L153-L-192. Baltimore, MD: Johns Hopkins University, Center for Communication Programs.
- Puffer, Ruth
1985 "Mortality in Infancy and Childhood in India." Boston: Management Sciences for Health. *
- Radford, Anthony J.
1987 "Tetanus Toxoid Immunization: The Neglected Component of EPI." Health Policy and Planning 2(1):90-93.
- Rahman, Shafiqur
1982 "The Effect of Traditional Birth Attendants and Tetanus Toxoid In Reduction of Neonatal Mortality." Journal of Tropical Pediatrics 28:163-65.
- Rahman, M., L.C. Chen, J. Chakraborty, M. Yanus, A.S.G. Faruque and A.I. Chowdhury
1982 "Use of Tetanus Toxoid for the Prevention of Neonatal Tetanus. 2. Immunization Acceptance among Pregnant Women in Rural Bangladesh." Bulletin of the World Health Organization 60(2):269-77.

Ramalingaswami, V.

1986 "The Art of the Possible." Social Science and Medicine 22(11):1097-1103.

Rana, Indi

1986 "Immunization in India: How Comic Books Can Teach Children What They Need to Know." World Health Forum 7:279-280.

1987 "Comics -- for Health." Development Communication Report 1987/4(59):1-3. *

Ratnayake, L.

1985 "Lay Perceptions of Immunization and the Immunization Behavior of Mothers." Unpublished field report. Colombo, Sri Lanka: Post Graduate School of Medicine.

Ray, S.K., M.M. Ganguly, and B.B. Mukhopadhyay

1983 "Some Aspects of Common Immunisation Services in A Rural Area." Indian Journal of Preventive and Social Medicine 14(1-2):19-22.

Riddiough, Michael, Jane Willems, Claudia Sanders, and Kerry Kemp

1981 "Factors Affecting the Use of Vaccines: Considerations for Immunization Program Planners." Public Health Reports 96(6):528-35.

Rifai, Fatima

1989 "Factors Influencing Immunization Compliance in Abu Dhabi - U.A.E." M.S. thesis, Case Western Reserve University, School of Nursing.

Rifkin, Susan and Gill Walt

1986 "Why Health Improves: Defining the Issues Concerning 'Comprehensive Primary Health Care' and 'Selective Primary Health Care'." Social Science and Medicine 23(6):559-566.

Risi, Joao Baptista Jr., Roberto Becker, and Ivanildo Franzosi

1985 "Immunization Programmes in Brazil." Assignment Children 69/72:381-396.

Robbins, Katy

1988 "Undoing the Curse of Neo-natal Tetanus." Child Survival Action News 9:2-3.

Rockefeller Foundation

1984 Protecting the World's Children: Vaccines and Immunization within Primary Health Care. Report of Bellagio Conference, March 13-15, 1984. June. New York.

Ross, D.A.

1986a "The Trained Traditional Birth Attendant and Neonatal Tetanus." In A. Mangay-Maglacas and J. Simons, eds., The Potential of the Traditional Birth Attendant. Geneva: WHO Offset Publication No. 95.

1986b "Does Training TBAs Prevent Neonatal Tetanus?" Health Policy and Planning 1(2): 89-98.

Roy, A.K., K.K. Das, and Deodhar

1984 "Alternative Approach for Optimum Utilization of Health Care Services Provided by a Health Team to Urban Community in Relation to Population Coverage." Indian Journal of Medical Research 80: 601-606.

Salkever, David

1976 "Accessibility and The Demand for Preventive Care." Social Science and Medicine 10:469-475.

- Santosham, Mathuram and Diana Sillimperi et al.
1986 "Measles Immunization and Oral Rehydration Therapy in Maharashtra, Gujarat, and Himachal Pradesh, India." Boston: Management Sciences for Health. *
- Sathe, P.V. and Usha Shah
1965 "Parental Participation in Polio Vaccination Programme." Indian Journal of Public Health 9(3):107-110.
- Sevagram Medico Friend Circle
1983 "Health is Not the Villager's Chief Priority." World Health Forum 4(4):365-367.
- Shariff, Abusaleh
1987 "Child Survival: A Village-Level Investigation of Some Cultural Factors Associated with Morbidity and Mortality in South India." Human Organization 46(4):348-355.
- Sharma, P.D. and M. Sharma
1984 "Impact of Alternate Immunisation Strategies on Tetanus Neonatorum in India." Indian Pediatrics 21(11):839-52.
- Shattock, F.M.
1976 "Workload v. Community Good: The Concept of the Protected Child." Environmental Child Health (August):179-183.
- Singarimbun, Masri, Kim Streatfield, and Ira Singarimbun
1986 "Some Factors Affecting Use of Childhood Immunization" [Indonesia]. Canberra: Australian National University, International Population Dynamics Program, Child Survival Research Note 7CS.
- Stanfield, J.P.
1981 "Immunization: Current Major Issues." In D.B. Jelliffe and E.F. Jelliffe, eds., Advances in International Maternal and Child Health, Vol.1, pp. 1-23. New York: Oxford University Press.
- Steinglass, Robert, Jigmi Singay, Jigme Norbu, A.V.K.V. De Silva, and Alan Schnur
1988 "Missed Opportunities for Measles Immunization: A Review of Methods and Findings in the Kingdom of Bhutan." Arlington, VA: John Snow, Inc., Resources for Child Health Project. *
- Stoeckel, Philippe
1985 "Simplifying Immunization Schedules in West Africa." Assignment Children 69/72:329-344.
- Streatfield, Kim, Masri Singarimbun and Ida Singarimbun
1986 "The Impact of Maternal Education on the Use of Child Immunization and Other Health Services" [Indonesia]. Canberra: Australian National University, International Population Dynamics Program, Child Survival Research Note 8CS.
- Streefland, Pieter
1989 "The Continuity of Vaccination Programs: Reflections and A Case from Gujarat, India." Social Science and Medicine 29(9):1091-1098.
- Sweetser, Anne
1988 "Beliefs and Behaviors Relevant to Tetanus Immunization Programs in Non-Western Countries." Newton, Mass.: Educational Development Center.
- Task Force for Child Survival and The Rockefeller Foundation
1986 "Protecting the World's Children: Bellagio II at Cartagena, Colombia, October 1985." N.Y. and Decatur, GA.

Tata Economic Consultancy Service

1984 "Evaluation of Six UNICEF-Assisted Projects: An Overview." Bombay.

Tomaszunus, S.

1979 "A Challenge to South East Asia: The Expanded Programme on Immunization." WHO Chronicle 33:209-213.

Ulin, Priscilla R. and Richard O. Ulin

1981 "The Use and Non-Use of Preventive Health Services in a Southern African Village." International Journal of Health Education 24(1):45-53.

United Arab Emirates, Government of, and UNICEF

1987 Summary Report of Findings of the Research on Knowledge, Attitudes and Practices Related to Mother and Child Health in the United Arab Emirates. U.A.E.: Ministry of Health.

United Nations Children's Fund (UNICEF)

1984a "The Colombian Vaccination Crusade: Intensive Project Analysis." New York.

1984b "Immunizing More Children: Towards Greater Community Participation." New Delhi.

1984c "Enhancing Child Survival: A Case Study on Mass Immunization in Bihar." New Delhi.

1985a "An Assessment of the Expanded Programme on Immunization in Nigeria. Lessons Learned" (by Deborah Blum and Margaret Phillips). N.Y.: UNICEF Evaluation Publication No. 1

1985b "Rapid Assessment: Vaccination Commando Burkina Faso. Lessons Learned" (by S. Kessler, F. Falaha, G. le Gonidec, and D. Parker). N.Y.: UNICEF Evaluation Publication No. 2.

1985c "Rapid Assessment: Turkish National Immunization Campaign of 1985. Lessons Learned" (by S. Kessler, J. Keja, S. Tayyarah, A. Fairbank, and G. Gleason). Evaluation Publication No. 3.

1985d "El Salvador Immunization Campaign, February-April 1985, Achieving Success in an Adverse Environment" (by Yves Pelle). New York.

1985e "The National Immunization Programme, Iraq, 1 July - 23 December 1985." Assignment Report (by Allan G. Bass) Baghdad: UNICEF. December.

1985f "Towards Universal Child Immunization: Lessons Learned and Questions Raised since the Bellagio Conference of 1984." New York.

1985g "CPI and Social Mobilization in CSDR." Report of a UNICEF Seminar. Bogota, Colombia, 17-23 October.

1985h "Tetanus Toxoid Immunization Campaign in West Nusa Tenggara, Indonesia." Assignment Children 69/72:369-380.

1986a "Framework for Improving the Monitoring and Evaluation of Child Survival and Development Activities." CF/PD/PRO/1986-001. New York.

1986b "House to House Immunization: The Dominican Republic Experience. Rapid Assessment" (by Juan Luis Meza, Oscar Castillo, Diego Echeverria, and Twig Johnson). UNICEF Regional Office for Latin America and the Caribbean.

1986c "National Programme for Infant Mortality Reduction in Ecuador-PREMI. Rapid Assessment." UNICEF Regional Office for Latin America and the Caribbean.

- 1986d "Protecting Nigeria's Children: The Vaccine Cold Chain." Lagos. April. UNICEF/Nigeria.
- 1986(?) "Change in Mothers' KAP as the Result of Influence of TBAs." Iraq.
- 1986(?) "KAP Survey on the Distribution of ORS, Immunization, Breastfeeding, and Growth Monitoring." Ecuador.
- 1986(?) "Kampala KAP Immunization Study." Uganda.
- 1987a "Developments and Analysis of Experience: Immunization." In Progress Review of the Child Survival and Development Revolution 1983-1986. Assignment Children 1987-1:13-30.
- 1987 Summary Report of Findings of the Research on Knowledge, Attitudes, and Practices Related to Mother and Child Health in the United Arab Emirates. UNICEF and UAE Ministry of Health.
- 1988 The State of the World's Children 1988. New York: Oxford University Press (for UNICEF).
- United Nations Children's Fund and World Health Organization
- 1985 "Global Review of Progress of Implementation of 'Child Survival and Development' as Part of Primary Health Care." Geneva, JC25/UNICEF-WHO/85.3.
- 1987 "Knowledge, Attitudes and Practices Survey, Audience Research and Media Habits Related to Immunization in Syria." Summarized in Universal Childhood Immunization 1990, How to Accelerate EPI. Training Package (Session 10) Developed by United Nations Children's Fund and World Health Organization. July.
- Walsh, Julia A.
- 1987 "Immunisation: A Question of Priorities." In Richard Cas'ly, Gerald Keusch, and Joel Lamstein, eds. Child Health and Survival: The UNICEF GOBI-FFF Program, pp. 63-74. London and Wolfeboro, N.H.: Croon Helm.
- Walsh, Julia A., and Kenneth S. Warren
- 1979 "Selective Primary Health Care: An Interim Strategy for Disease Control in Developing Countries." New England Journal of Medicine 301(18):967-974.
- Ware, H.
- 1984 "Effect of Maternal Education, Women's Roles, and Child Care on Child Mortality. In W. Mosley and L. Chen, eds., Population and Development Review 10 (Supplement):191-211.
- Were, Miriam K.
- 1985 "Communicating on Immunization to Mothers and Community Groups." Assignment Children (Special issue: Universal Child Immunization by 1990) 69/72:429-442.
- Wiese, H.J.C.
- 1976 "Maternal Nutrition and Traditional Food Behavior in Haiti." Human Organization 35:193-200.
- 1974 "Tuberculosis in Rural Haiti." Social Science and Medicine 8:359-362.
- Wong, Wah
- 1983 "An Immunization Programme in Dewas District, India: Successes and Difficulties." Assignment Children 61/62:281-291.
- Woodruff, A.
- 1984 "Neonatal Tetanus: Mode of Infections, Prevalence, and Prevention in Southern Sudan." Lancet, Feb. 18, pp. 378-379.

World Federation of Public Health Associations (WFPHA)

- 1984 Information for Action Issue Paper: Immunizations. (Michael Favin, principal author.)
Washington D.C. (Update of American Public Health Association 1981.)

World Health Forum

- 1987 "WHO in Action: Primary Health Care in Practice." 8:56-66.

World Health Organization (WHO)

- 1977 "Expanded Programme on Immunization: Study of Feasibility, Coverage, and Cost of Maintenance Immunization for Children by District Mobile Teams in Kenya." Weekly Epidemiological Record 52:197-204.
- 1982 "The Expanded Programme on Immunization: The Use of Survey Data to Supplement Disease Surveillance." Weekly Epidemiological Record 57(47):361-362.
- 1985 "Planning Principles for Accelerated Immunization Activities." Geneva: Expanded Programme on Immunization.
- 1986a "Expanded Programme on Immunization: Evaluation and Monitoring in National Immunization Programmes." Geneva, WHO/EPI/GEN/86/4 Rev.1.
- 1986b "Evaluation and Monitoring in National Immunization Programmes." Geneva, WHO/EPI/GEN/86/6.
- 1987 "Research and Development in the Expanded Programme on Immunization." Geneva: WHO, Expanded Programme on Immunization (Feb.).
- 1988 "Phase 1: Development and Field Testing of Anthropologically-Based Methods for Assessing the Acceptability of Immunization." Geneva: Expanded Programme on Immunization.

Worldview International Foundation

- 1989 "Communicating Immunization: A Study Report." Dhaka.

Wyatt, H.V.

- 1984 "The Popularity of Injections in the Third World: Origins and Consequences for Poliomyelitis." Social Science and Medicine 19(9):911-915.

Zielinski, C.

- 1986 "Publishing for the Grass Roots - A Comic Book on Immunization." World Health Forum 7:273-277.

Zubkoff, Michael and David Dunlop

- 1974 "Consumer Behavior in Preventive Health Services." In Selma Mushkin, ed., Consumer Incentives for Health Care. New York: Prodist, for Milbank Memorial Fund.

Other References Cited²

Akin, John, David Guilkey, and Charles Griffin

1985 The Demand for Primary Health Services in the Third World. Totowa, New Jersey: Rowman & Allanheld Publishing Co.

Bannerman, R.H., John Burton, and Ch'en Wen-chieh, eds.

1983 Traditional Medicine and Health Care Coverage. Geneva: World Health Organization.

Bell, David E.

1987 "Child Survival: The Role of UNICEF." In Richard Cash, Gerald Keusch, and Joel Lamstein, eds. Child Health and Survival: The UNICEF GOBI-FFF Program, pp. 251-253. London and Wolfeboro, N.H.: Croom Helm.

Betran, Ricardo

1990 "Supply-Demand Microcomputer Model." Washington D.C. and Arlington VA: World Bank and John Snow Inc., REACH Project (forthcoming).

Bhatia, Shushum

1983 "Traditional Practices Affecting Female Health and Survival: Evidence from Countries of South Asia." In A.D. Lopex and L.T. Ruzicka, eds., Sex Differentials in Mortality: Trends, Determinants and Consequences, pp. 165-177. Canberra: Australian National University, Department of Geography, Misc. Series No. 4.

1989 "Patterns and Causes of Neonatal and Postnatal Mortality in Rural Bangladesh." Studies in Family Planning 20(3):136-146.

Brenzel, Logan

1988 "Comparison of Cost and Cost Effectiveness Studies of the EPI: Immunization Sustainability Study, Volume One." Arlington VA: John Snow Inc., REACH Project.

Brownlee, Ann

1989 Breastfeeding, Weaning, and Nutrition: Expanded Bibliography. Malibu, Calif.: International Health & Development Associates, Behavioral Issues in Child Survival Programs, Public. No. 5.*

Burt, Ronald

1973 "Differential Impact of Social Integration on Participation in the Diffusion of Innovations." Social Science Research 2:1-20.

Cassidy, C.

1980 "Benign Neglect and Toddler Malnutrition." In Social and Biological Predictors of Nutritional Status, Physical Growth, and Neurological Development. L.S. Greene and F. Johnson, eds. Pp. 109-139. N.Y.: Academic Press.

Das Gupta, Monica

1987 "Selective Discrimination against Female Children in Rural Punjab, India." Population and Development Review 13(1):77-100.

²References in this section have been cited in the text, usually in footnotes, but do not specifically discuss behavioral aspects of immunization.

- Ghosh, Shanti
1986 "Discrimination Begins at Birth." Indian Pediatrics 23:9-15.
- Griffiths, Marcia
1985 "Using Monitoring Results for Family Education." In Growth Monitoring Information for Action Issues Paper. Washington D.C.: World Federation of Public Health Associations.
- Hatem, Mervat
1987 "Toward the Study of Psychodynamics of Mothering and Gender in Egyptian Families." International Journal of Middle East Studies 19:287-306.
- Hopkins, D.
1983 Princes and Peasants: Smallpox in History. Chicago: University of Chicago Press.
- Korbin, Jill E. ed.
1981 Child Abuse and Neglect: Cross-Cultural Perspectives. Berkeley, Calif.: University of California Press.
- Makinson, C.
1985 "Sex Differentials among Children Admitted to a Cairo Oral Rehydration Center." Cairo: American University in Cairo, Social Research Center.
- McKee, Lauris, ed.
1984 Child Survival and Sex Differentials in the Treatment of Children. Medical Anthropology 8(2) special issue.
- Miller, Barbara
1981 The Endangered Sex: Neglect of Female Children in North India. Ithaca: Cornell University Press.

1989 "Changing Patterns of Juvenile Sex Ratios in Rural India, 1961 to 1971." Economic and Political Weekly June 3, pp. 1229-1236.
- National Council for International Health
1986 Immunization and the Developing World: The Role of the Private Sector. Graeme Frelick, ed. Washington D.C. *
- Pillsbury, Barbara, David Nicholas, and Arthur Goldsmith
1985 Community Organization. Washington D.C.: University Research Corporation, Primary Health Care Operations Research (PRICOR) Monograph No. 3.
- Population Information Program
1987 "Counseling Makes A Difference." Population Reports Series J, No. 35. Baltimore, MD: Johns Hopkins University, Center for Communication Programs.
- Prough, D. and R. Harlow
1966 "Masked Deprivation in Infants and Young Children." In Deprivation of Maternal Care. M. Ainsworth, ed. Pp. 205-225. N.Y.: Schocken.
- Ravindran, Sundari
1986 Health Implications of Sex Discrimination in Childhood: A Review Paper and An Annotated Bibliography. Geneva: World Health Organization, WHO/UNICEF/FHE 86.2.

- Rosenzweig, Mark R. and T. Paul Schultz
 1982 "Market Opportunities, Genetic Endowments, and Intrafamily Resource Distribution: Child Survival in Rural India." The American Economic Review 72(4):803-815.
- Scheper-Hughes, Nancy
 1984 "Infant Mortality and Infant Care: Cultural and Economic Constraints on Nurturing in Northeast Brazil." Social Science and Medicine 19(5):535-546.
- 1987 "Culture, Scarcity, and Maternal Thinking: Mother Love and Child Death in Northeast Brazil." In Child Survival: Anthropological Perspectives on the Treatment and Maltreatment of Children, pp. 187-208. Boston: D. Reidel Publishing Co.
- , ed.
 1987 Child Survival: Anthropological Perspectives on the Treatment and Maltreatment of Children. Boston: D. Reidel Publishing Co.
- Stewart, Kathryn J.
 1988[?] "Cost Effectiveness of Child Survival Initiatives: A Literature Review." Prepared for the Office of Health, Agency for International Development, Washington D.C. *
- Sukkary-Stolba, Soheir
 1989 Oral Rehydration Therapy: Expanded Bibliography. Malibu, Calif.: International Health & Development Associates, Behavioral Issues in Child Survival Programs, Monograph No. 2. *
- United Nations Children's Fund (UNICEF)
 1987b Children and Women of Nepal: A Situation Analysis. New York and Kathmandu.
- Warren, Kenneth S.
 1986 "New Scientific Opportunities and Old Obstacles in Vaccine Development." Proceedings of the National Academy of Science 83:9275-9277.