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MARKETING AND COMMUNICATIONS
ISSUES IN EPI PROGRAMS

by

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INTRODUCTION

From a social marketing perspective EPI (Expanded Program of Immunization) is "a natural." The product is already well established. Few question the effectiveness of existing immunization technologies to prevent the six major EPI diseases—diptheria, pertussis, tuberculosis, measles, poliomyelitis and smallpox. The behavioral objective is basic—motivate the target audience to receive the requisite number of vaccinations. Experience also has taught us the ease with which national resources can be mobilized in support of "immunization days."

Yet we still have a long way to go before reaching the WHO/UNICEF goal of "universal child immunization by 1990;" or the concomitant "health for all by the year 2000" objective. While a number of countries, (e.g., Brazil, Colombia, El Salvador, Burkina Faso, Nigeria, Uganda, China, India, Indonesia, and the United States) have carried out highly successful "immunization campaigns," few claim to have fully integrated immunization service delivery systems within their national health infrastructure. While several effective models now exist for designing "one shot" or limited outreach efforts, health planners still are grappling with the larger issue of how to create sustained demand, reach dropouts, and vaccinate hard to access populations. Curiously, although the word "campaign" often is associated with EPI, and although EPI efforts frequently draw upon mass media support, a systematic social marketing approach has seldom been used. Such an approach would utilize marketing, communications, and educational tools to support sustainable increases in vaccination coverage, concurrent reductions in the percentage of drop-outs and non-attendees, and changes in knowledge and attitudes vis-a-vis health and health services among target populations.
The REACH project provides technical support to countries interested in utilizing social marketing approaches to improve the impact of EPI programs. The following document analyzes the EPI case study literature and offers lessons learned relevant to addressing priority marketing and communications issues.

Key marketing issues include designing efficient coverage strategies, consumer responsive service delivery systems, and reaching drop-outs and non-attendees. From a communications point of view EPI social marketers need to look at target audience segmentation, traditional belief systems about immunization, health and disease, message design, selection and development of materials, and utilization of appropriate channels of communication.

Each of these issues is analyzed in terms of relevant experience. It should be pointed out that much of the EPI literature is deficient in its own analysis of marketing and communications factors. Until quite recently most planners were not critically aware of the role social marketing can play in public health, and consequently the EPI "campaign" literature often is descriptive rather than analytical.

The paper is meant to help health planners and social marketing specialists develop more effective EPI programs. It consolidates experience to date, and we hope serves as a point of departure for those about to embark on the design of an immunization campaign.

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Communications, as used throughout this paper, refers to the promotional/activational component of social marketing.
SECTION I: MARKETING ISSUES
I. MARKETING ISSUES

2. Coverage

EPI marketing strategies need to be grounded in target audience coverage requirements. A marketing perspective begins with an understanding of the way in which health planners define at-risk populations.

The central strategy of EPI, to date, has been to identify all eligible children and women of childbearing age within reach of health services, and to follow-up with these target groups until completion of an immunization series. Immunization programs also must ensure that children who are recently born into the system will be continuously covered, since the initial impact of a successful mass immunization campaign will fade over the course of time. The essence of sound immunization practice is to ensure that individuals have protective amounts of antibodies at the time they are exposed to the greatest risk of the disease in question—thus, the earlier services are started, the better. The expectation is that EPI will have a significant impact on reducing infant/child mortality and disability, with far-reaching benefits to health status and normal growth and development in communities of the developing world.

Target populations need to be clearly defined, so that individuals can be protected at an age or time of life when immunization is most needed, and most effective. A concept of total coverage might be the ideal goal of many countries, but few governments have the financial or personal resources to immunize all infants, children, and women of childbearing age. A more targeted approach may be less ambitious, but more feasible. Furthermore, although universal immunization may be rare to achieve, a first step in this direction would be to obtain 'herd immunity,' a state of minimum immunization coverage in which the transmission of communicable diseases can be controlled. Studies suggest that herd immunity and the transmission dynamics of infectious agents differ from one disease to another (Nyi 1986). In addition, a relationship has been demonstrated between transmission rates and spatial distribution of hosts. For example, the persistence of measles in rural localities may depend upon the frequent movement of people between rural and urban areas.
His situation implies that a coverage strategy which includes mass immunizations in the urban center, plus vaccination of individuals known to travel from rural to urban areas (i.e., to market), might achieve disease control.

Infants have been targeted as the most vulnerable age group for many diseases and are at especially high risk after loss of maternal antibodies. A significant number of infants will not survive the contact with disease pathogens in their environment; those who do will develop lifelong natural immunity. The World Health Organization has recommended that immunization programs adopt an "under-one" strategy. In contrast to children aged 0 to 4 years, infants under one year represent a small, well-defined target population for which efforts can be concentrated and for which vaccines have less of a chance of being wasted. In terms of cost-effectiveness, the earlier a child can be immunized, the less likely immunizations are to be "wasted" due to naturally-acquired immunity. Benefits for older groups of children are obviously reduced, as they will have already had one or more of the diseases in question.

In practice, however, target age varies with community and disease. In tropical Africa, for instance, the matter of what was the best age group to receive measles vaccine was of great importance. Communities appear to differ in the optimal age, "depending upon level of maternal antibody and age of seroconversion to measles antigen; in turn, these two factors are related to socioeconomic and cultural circumstances of the given community" (Ofosu-Amaah, 1983:547).

Another target population that is considered a public health priority is that of women of childbearing age in countries where there is a high risk of neonatal tetanus. Some programs prefer to identify women who are pregnant, while others decide it is more convenient to vaccinate women of childbearing age who visit the clinic for any health-related matter. In terms of cost/benefit analysis, comparison of two different tetanus immunization strategies showed that mortality reduction per dollar expended was much greater when services were directed to pregnant women (i.e., a specific target group), than when efforts were focused on the general population (i.e., including men) (Burgess 1981).
With respect to geographic targeting, urbanized areas and central regions appear to be given priority for immunization programming over sparsely settled rural areas. Urban areas, in many cases, have had higher rates of infection, made concentrated use of equipment and personnel resources, and made limited demands on stretching the cold chain.

Despite the relative abundance of health facilities in urban areas, fringe areas that surround urban centers are typically poor and often characterized by low immunization coverage. Barriers to coverage in these areas have been identified as friction between new arrivals and established authorities, high migration flow, and lack of social cohesion, factors that can be used to help design of marketing and communications programs. Central Mindanao, the most neglected and the least developed region of the Philippines, had a higher coverage than Metro Manila (38 percent) for DPT2 (Nyi 1986). Similarly, 41 rural provinces in Turkey were shown to have a coverage of 90 percent during a recent campaign; in contrast, Ankara had a 54 percent coverage rate, with Izmir and Istanbul having 60 percent and 71 percent, respectively (ibid).

Special populations for whom vaccination efforts are needed have been identified in the literature, and communications campaigns should be planned with these special-need groups in mind. For example, special efforts may need to be organized to ensure coverage for families who have newly-arrived in a particular region. In Yaounde, Cameroon, long-term residents were more likely to be immunized than new arrivals (Brown et al. 1982).

Surveillance is an important element for determining coverage. One must know what diseases are prevalent enough to warrant action. In addition, surveillance allows the identification of special at-risk groups, whose coverage may be particularly low. However, epidemiological data on the incidence of communicable diseases, particularly those of childhood, may not be available. Surveillance information may also be fragmentary; for instance, data obtained only from large hospitals in urban areas will not reflect the actual situation for the country as a whole, or for rural areas, in particular.
"Channeling" is a recent technique that has proven an effective way to identify target populations for EPI. First developed by the Ministry of Health in Colombia in 1981, "channeling" involves health workers and/or community leaders who conduct household visits to identify unvaccinated children or those with incomplete vaccination schedules and "channel" them to health centers.

The channeling strategy proved an effective way to identify those in need of vaccination coverage in Colombia, improve the accessibility of vaccination services (vaccination outposts were set up in communities with a large percentage of unvaccinated children not covered by existing health services), develop organization and discipline within the campaign infrastructure, and promote the active participation of the community in health programs.
I. Designing an Effective Service Delivery Structure

Burgess (1981) pointed out that the most basic marketing decision regarding immunization delivery is whether people will be brought to the immunization site or whether immunization will be taken to the people. There are three main strategies available for immunization delivery: house-to-house immunization, mobile units, or static site immunization. Both mobile unit and static site immunization represent collection-point immunization, in which people are persuaded to come to a given place at a given time to receive vaccination.

The mobile unit approach involves teams of immunization personnel arriving in a particular place at a scheduled time to innoculate the local population (or at least that portion of it targeted by that particular campaign). This approach has the advantage of making it more convenient for the target population to be vaccinated. It reduces the need to walk, or take time-consuming and often expensive public transportation to a distant health center in a place which may be exotic and uncomfortable for them. Such a journey may also be physically demanding, especially in tropical climates. One often cited phenomenon which contributes to an unwillingness to travel any distance to an immunization site is that children of immunizable age are often too young to be able to walk to the site under their own power, but too heavy for the parents to comfortably carry any substantial distance (Henderson 1984, Werin 1983, Ofosu-Ammaah 1983). Burgess (1981) cites a program in Ghana in which 87% coverage was achieved within a one mile radius of the immunization site, a coverage which dropped off to 68% percent for those members of the target population who lived from one to three miles away from the site. He maintains that collection-point strategies rapidly lose their effectiveness beyond a radius of five kilometers.

The mobile approach attempts to alleviate some of these problems by bringing immunization closer to the target population. However, it still requires that people come to where the team has set up to give vaccinations and thus requires some mobility on the part of the target population, as well as a desire to be immunized. Communications in support of a mobile EPI service
Delivery system should provide information about where and when vaccinations will be available, as well as motivate people to participate.

The mobile unit approach is fairly labor intensive, requires some specialized equipment not needed by static sites (such as vehicles, portable cold boxes, etc.) and involves a great deal of logistical support and scheduling, both for the vaccination teams and the publicity teams which usually precede them. The cold chain is more difficult to preserve in a mobile situation, and communication and resupply are often complicated should the team run short of vaccine or other materials. Mobile teams are often subject to vehicular breakdowns and other delays (such as washed out roads or a greater demand for vaccination than was anticipated in a particular location) which can cause the mobile team to fall behind its schedule or not show up at all. Such failures alienate the population and may result in reduced participation (Burgess 1981, Guyer & Atangana 1977). Costs of the mobile approach, because of its greater equipment and personnel requirements, are also higher than those of static centers (Ofosu-Amaah 1983, Burgess 1981).

This is not to say that the mobile team approach has not proved successful in some circumstances. Jarett (in Mandl 1986) attributes the success of the smallpox campaign in West Africa to mobile unit campaigns. One very successful campaign in which the mobile unit approach was used was the Vaccination Commando Campaign in the African nation of Burkina Faso. However, this campaign also depended upon the existence and influence of a network of Committees for the Defense of the Revolution which mobilized the population into cooperating with the mobile vaccination teams. It is doubtful whether Vaccination Commando could have achieved the high coverage it did without the existence of these organizations (Kessler et al 1986, Ministry of Health/UNICEF in Mandl 1986).

The other major approach to immunization delivery is the static site approach. This involves the use of vaccination sites available to the population during the course of the campaign. Such a strategy makes scheduling, resupply, and preservation of the cold chain somewhat easier and less expensive. It also places an even greater demand on the publicity and educational efforts, as people must be motivated to bring themselves or their
children to the sites, a journey which often involves the physical and financial hardships previously described.

A primary marketing issue for the static delivery approach is that of site selection. Although medical centers are obvious choices, these sites are often not convenient for the target population, nor are there enough of them to handle the large numbers of people often turned out by a massive publicity effort. Thus, additional sites must be chosen. Town halls, schools, polling places, churches, mosques, health centers, municipal dispensaries, and community halls are all recommended locations for vaccination, as they are available, their location generally known, and they imply a sense of authority and legitimacy and thus a trust which may lead to participation in the campaign (UNICEF 1986, Bhargava & Sokney 1985, Reid & Smith 1984, Wong 1983, Warekar et al. 1978).

Even campaigns that are primarily static tend to use mobile teams to reach remote areas or special population groups who are not expected to make the effort to get to the immunization sites (UNICEF March 1986, Reid & Smith 1984, Fitzgerald & Glover 1983, Ofosu-Amaah 1983). Bhargava & Sokhy (1985) suggest that static programs also require supplementation by outreach campaigns in schools and by private practitioners, especially in rural areas. Thus, the static and mobile approaches should be viewed as complementary, rather than mutually exclusive, immunization delivery strategies.

Another delivery strategy which has been used in immunization campaigns, although not nearly as often as have the static site and mobile team approaches, is the house-to-house immunization effort in which vaccinators systematically go to every house in the target area and vaccinate all relevant persons within each home visited. Such an effort should not be confused with house-to-house publicity or canvassing efforts which may be used with any delivery system.

A house-to-house approach shares many of the advantages and disadvantages of the mobile team approach. It is even more labor intensive and requires a great deal of scheduling and logistical support (Romero et al. in Mandl 1986, Burgess 1981). Such an approach has been found to be most successful when it
implemented by health care or community personnel who are already familiar to the target families, have easy access to a central vaccine supply, are operating in an area of high population density, and are properly supervised (Burgess 1981).

An extremely successful house-to-house polio vaccination program was conducted in Cuba, although, like Vaccination Commando, it benefited from the existence of highly organized neighborhood committees. It also had the advantage of being able to use an orally administered vaccine, thus eliminating all the problems which accompany the use of syringes and jet injectors, such as sterilization and equipment breakdowns (Cruz 1984). A similar campaign, PolioPlus, was conducted in Paraguay in 1985. This effort, coordinated by the Ministry of Health and in large part financed and managed by Rotary International, used volunteers, as well as maps provided by the National Statistics and Census Office, to first identify, and then administer oral polio vaccine to, all children under age four (Dufour 1986).

A number of very successful house-to-house campaigns have been conducted in the Dominican Republic. These efforts were based upon the information collected by and the organizational strategies developed by the National Demographic and Housing Census of 1982. Over 17,000 volunteer vaccinators were trained by a remarkably effective four hour audio-visual presentation and were used to conduct a number of single antigen campaigns, each of which was preceded by a massive publicity effort.

The immunization delivery system chosen for a particular campaign should be tailored to meet the needs of the relevant at-risk population. Thus, while the mobile campaign may be labor intensive and relatively expensive, it may be of use in reaching those remote areas in which static site centers would be unwarranted due to low population density and those target groups who cannot, will not, make the trip to a central static site. Similarly, the house-to-house approach may be useful in areas in which the population is extremely difficult to motivate or in which an epidemic requires that coverage be established fairly rapidly (Romero et al in Mandl 1986). Experience would seem to imply that a combination of these three approaches (and especially of the static center and mobile team approaches) would tend to produce the most cost-effective program and the highest immunization coverage.
C. Scheduling Variables

As has been discussed, the major scheduling issue is whether immunization should be established as a regular, on-going operation (that is, whether an immunization infrastructure should be created or added to the nation’s health care infrastructure) or should be accomplished by a mass campaign on a particular day, a series of special days, or even a designated week or month during which a massive amount of resources and personnel will be mobilized in an attempt to immunize most of the at-risk population in a relatively short period of time.

Regardless of the position that is taken on the macro-scheduling issue, every program which offers vaccination as a periodic, rather than an on-demand, service has other important scheduling issues to consider. Any kind of on-going program must ensure that its schedule is "regular, frequent, and convenient" for the target population (Brown et al 1982). Multiple-dose vaccines often set their own scheduling imperatives, as not only must a particular number of doses be administered, but they must be properly spaced to ensure uptake (Tomaszunao 1979).

A program needs to take the climate into consideration. A rainy season makes it more difficult (and unpleasant) for people to get to immunization centers. Periods of heavy rainfall often make it extremely difficult for mobile teams to get to remote villages, as the roads and bridges of tropical countries are often rendered impassable by heavy downpours and/or flooding (Kessler et al 1986, Stoeckel in Mandl 1986). Hot weather also makes it more difficult to preserve the cold chain and ensure the potency of vaccines. This was found to be a problem in India in the mid-seventies (Warerkar et al 1978) and subsequent campaigns there have been conducted in the winter months (Bartton 1984, Wong 1983). Similar strategies were adapted in Brazil (Risi 1984) and the Dominican Republic (UNICEF 1986). In fact, Wong (1983) suggests that during:

the long hot summers when keeping vaccines at the right temperatures is so difficult, mounting small-scale mass campaigns for three or four months during the winter period as a regular practice may be preferable to a year-round immunization schedule.
There are other variables which should be considered in scheduling an immunization program. If the targeted disease is seasonal, a campaign should be conducted before that season in order to avoid or reduce the intensity of the next epidemic (Kessler et al 1986). In agrarian societies, people are usually very busy during the planting season. Families may move out of their village homes to be closer to the fields and city dwellers may temporarily move back to rural areas to help with the crops (Stoeckel in Mandl 1986). Thus, campaigns should not be scheduled during the planting season, or other periods of intensive agricultural labor, such as harvests, because many members of the target population may have temporarily moved and be difficult to locate. And those involved in this labor may not have the time to travel to immunization centers (Friede et al 1985, Guerin 1983).

Other types of labor may entail similar constraints. Even factory work has its busy seasons when, in some societies, entire families may temporarily relocate to be nearer the place of work (Wong 1983). Some campaigns have found it advantageous to schedule vaccinations for Saturdays so as not to conflict with people’s work (See, for example, Risi 1984). Yet programs must also be aware of how people spend their leisure time and not schedule immunizations which conflict with holidays, local festivals, or periods when large numbers of people traditionally get married, take vacations, or make family visits. All such conflicts have been found to reduce participation in immunization campaigns (Wong 1983, Warerkar et al 1978).

The time of day that vaccinations are offered also can be an important scheduling issue (Friede et al 1985). In Nigeria, women frequently show up at immunization sites at 5 and 6 AM in order to avoid having immunization conflict with their daily work schedules (Blum & Phillips 1986). If volunteers are going to be used, either as vaccinators or in publicity efforts, variation in their availability must be taken into consideration. The HEML campaign in Ecuador was postponed several weeks because the initial schedule conflicted with the school examination period, when many of the students who were being used as volunteers would be too busy to participate (UNICEF 1986).
Experience has suggested that immunization programs must be flexible in meeting the scheduling needs of their target populations (PAHO/WHO 1981). Burgess (1981), among others, suggests that members of the community be consulted about scheduling as they are more likely to provide insights about local conditions and idiosyncrasies than are outsiders. The World Health Organization (1985) also stresses the importance of allowing adequate lead time for publicity and educational efforts. The mere opportunity for vaccination will not ensure compliance by the target population. One study done in Bangladesh found that only 10 to 15 percent of those people who had vaccination services currently available to them actually used these services (HNI in Mandl 1986). People must be motivated to participate, and then told where and when immunization is being offered. Still, a publicity campaign cannot peak too soon, lest the enthusiasm wear off before actual immunization begins. Adequate lead time is also important so that supplies such as vaccines and vehicles can be gathered, resources mobilized, volunteers and staff trained, and schedules set-up. The program must make sure that it is ready to immunize its target population at the same time that that population is willing to be immunized.
D. Dropout and Nonattendance Problems

A sharp fall-off in the coverage between first and last doses has been noted in studies of immunization coverage in Third World countries. In a discussion of primary health care and immunization issues, Burgess (1981), for example, notes that fewer than half of those starting a series of DPT and polio vaccines may indeed complete it. Since protection through immunization depends upon completion of a vaccination series, it is of utmost importance to identify and address the causes of non-attendance or dropout.

Dropout and nonattendance are two sides of the same problem. "Nonattendance" refers to people who, for one or more reasons, don't participate in an immunization program. "Dropout problems" concern individuals who receive the first dose of a vaccine, but who fail to return for the second or third dosage. Some of the reasons for dropouts are the same as those for nonattendance.

The literature stresses the importance of creating a dialogue and spirit of cooperation between health workers, mothers, and communities as a whole. Health education is emphasized as a prime factor in increasing immunization coverage. Education about immunization may be integrated into more traditional family health care areas—such as nutrition, oral rehydration therapy, and breastfeeding. People often lack an understanding of the concept of "preventive" as opposed to "curative" services; they may not understand the need to bring healthy children back for further doses of vaccine, or may feel that infants are too young or delicate to be immunized. Vaccination coverage surveys have sought information on the extent of mothers' knowledge about immunizations. Inadequate health education does appear to be a major factor in influencing rates of attendance and sustainability of coverage. In India, 30 to 44 percent of those surveyed stated that they were not aware of childhood immunization and thus failed to immunize their own children (Basu 1985). Similarly, noncompletion of immunization schedules in Ondo State, Nigeria, was largely attributed to ineffective health education (Alakija and Tankhu 1983).
Immunization schedules and sites must be convenient for participants, and health workers must understand the importance of adapting the time and place of services to community needs. Seasonal preferences that relate to the necessity of working in the fields are of particular importance in rural localities; immunization planners should also be sensitive to the responsibilities in the home that may govern a woman's free time in which she can seek preventive health care for her children. High dropout rates have also been correlated with the distance mothers must travel from their homes to reach health clinics or vaccination posts. Finally, there may be a need to improve the flow of patients through immunization stations. Parents who return for second or third doses may experience long waits due to overcrowding, or even discover that there was an insufficient supply of vaccine available. As the response to the program in Yaounde, Cameroon increased, the size of vaccination sessions reached the upper limit of 350 to 400 children per day—and women sometimes waited three to four hours without reaching the front of the crowd (Guyer and Atangana 1977). Lengthy wait times may discourage mothers from returning for further doses.

Several strategies for action have been devised for increasing immunization coverage and for addressing dropout follow-up. In the Colombian vaccination Crusade, dropouts were visited at least three times to motivate them to use the service. If failure to attend persisted, supervisors were informed so appropriate steps could be taken (Romero et al. 1986). Successful tracking of dropouts or nonattendants is also dependent upon well-planned systems of recordkeeping. Some centers keep separate books for each vaccine, making identification of children who fail to complete various series difficult (Blum and Phillips 1986). Standardized follow-up of dropouts should be formulated in collaboration with local staff members. Volunteers can be used to conduct surveys that address low participation rates by interviewing parents about their reasons for failing to complete immunization series. A survey of 191 mothers in Ogun State, Nigeria, revealed that lack of motivation was not the reason for failure to return for vaccinations; rather, the principal barriers identified were lack of information and logistical problems related to bringing a child to a vaccination center (Blum and Phillips 1986).
Another strategy that has been discussed as a means for sustaining immunization levels is that of working through primary school systems, particularly in countries where primary education reaches a sizable percentage of the population (Nyi 1986). Properly completed vaccination cards could, for instance, be a requirement for school admission. However, in countries where enrollment is still low, those most in need may still not be reached—as they are often those who are bypassed by the educational system.

The use of medical terminology in health education sessions may also affect attendance and dropout rates, since language of this sort may intimidate or confuse, rather than explain. Various diseases or symptoms may not have a direct translation in the local language; for example, the lameness attributed to polio may not be distinguished in the local language from lameness in general (Burgess 1981). Immunization teams should make an effort to use local words for the names of diseases, but they must also be able to adapt materials to situations in which there is either no direct translation of terms or where inclusion of particular information could be problematic.

Lack of information about the potential side effects of vaccines, along with the fear of complications, are two other areas that should be addressed in immunization education programming. Noneducational strategies may, in some cases, be devised to counteract pre-immunization fears or post-immunization reactions. For example, in Bidar and Delhi, India, children were provided with paracetamol tablets to be used in case of fever following vaccination (Haston 1984). Furthermore, a decision was made to give BCG only in the third mop-up round, to prevent dropouts that might have occurred due to complications. The crying of children or the need for mothers to take time from work to care for children who experience side effects, can also serve to make immunization programs unpleasant experiences. Thus, program planning for increased immunization coverage must address a wide range of logistical, psychological, informational, and physical barriers to service utilization.
5. Pros and Cons of Mass Mobilization Campaigns

Mobilization campaigns, a recent phenomena, occur when massive amounts of resources are mobilized over a relatively short period of time during which an attempt is made to vaccinate a very high percentage of the at-risk population in a specific geographic area, be it a city, a district, or an entire country.

Most of the literature maintains that the goal of EPI programs should be that immunization become a standard health care measure which is accepted (and demanded) by every parent. The central strategy of the EPI, since its inception, was "to deliver immunization in consonance with other health services, particularly those directed toward mothers or children" (EPI 1985, see also PAHO/WHO 1981). Attempts at such infrastructure building and MCH integration can be seen in many EPI programs. In India, for instance, the EPI and MCH services share a common management (Bhargava & Sokhy 1985). An integration of MCH and EPI services is also part of EPI strategy in the People's Republic of China (Qing et al in Mandl 1986) and a lack of such integration was identified as a failing of early EPI efforts in Nigeria (Jlaadu 1983).

However, in many parts of the developing world, the health infrastructure is itself underdeveloped. EPI planners found that initial immunization efforts in the mid-1970s did not achieve anticipated coverage, and began to search for ways to improve these programs. The most successful technique found to raise coverage in developing countries was the mass immunization or social mobilization campaign. Such campaigns were first used to "accelerate" EPI programs in the mid-1980s, with spectacular results, and are now being used by an increasing number of countries (Joseph 1985).

Mass mobilization campaigns draw intensively on the resources of the public and private sectors, and often international development organizations. The campaigns generate a large amount of publicity, through every channel available, in an attempt to motivate a large percentage of the at-risk population to make itself available for immunization. Immunizations may be offered on a "national vaccination day," or a number of such days, or during the course of a fairly short period ranging from a week to a month. Although
expressing caution about the sustainability of such efforts, the EPI (1985) found such acceleration to be very successful and noted that "few alternative approaches have yet appeared which are as powerful in being able to catapult low national coverage rates to acceptable levels in the course of a year or two" (EPI 1985). Mass mobilization campaigns were instituted (successfully) in counties such as Colombia, Ecuador, and Burkina Faso after EPI programs concluded that adequate coverage would not be obtainable in any other way (UNICEF March 1986, Kessler et al 1986).

Such acceleration of immunization programs, with the greater coverage of the at-risk population, allows a country more time to develop health infrastructure and change basic attitudes towards immunization and health care. Thus, the Pan American Health Organization and UNICEF recommend the national immunization day strategy in countries classified as "high risk," that is, in which immunization coverage is fairly low and the target disease is endemic. However, they also state that "this tactic should be used as an ad hoc measure, to be gradually replaced by regular immunization services performed routinely by health services" (PAHO/UNICEF 1985).

Such campaigns have been found to be very successful at establishing high coverage in a short period of time and to be able to reach the people that the normal health services do not (UNICEF 1986). The Vaccination Commando campaign in the African nation of Burkina Faso (formerly Upper Volta) saw over a million children vaccinated against measles, yellow fever, and meningitis in three weeks, raising the infant and child coverage for these disease from 19% to 77% (Kessler et al 1985). The results of other campaigns have been just as remarkable. In India, districts have raised coverage rates from 20% to 80% in about a year. In China, an area with a population of 90 million raised coverage from 40% to 90% in 18 months. During three national immunization days in El Salvador, two-thirds of the 400,000 previously unvaccinated children were immunized against five major infectious diseases. A September 1985 campaign in Turkey reached three million children. The Dominican Republic has instituted national vaccination days as yearly events and expects full childhood immunization for the four major childhood diseases by mid-1986. Brazil, a country in which polio was rampant, virtually eliminated the disease by immunizing 20 million children on each of two national vaccination days.
held each year over the past five years. A 1984 campaign in Columbia established 75% coverage (a total of 800,000 children) for five vaccine-preventable diseases. Bolivia, using a three dose orally administered polio vaccine, established 70% coverage among children in rural areas, and 90% coverage in the towns and cities during late 1983 and early 1984. Similar successful campaigns have taken place in Sri Lanka, Vietnam, Nigeria, Tanzania, the Sudan, Ethiopia, Somalia, Syria, Surinam, Oman, Afghanistan, and Pakistan (UNICEF 1986).

There are drawbacks to mass mobilization campaigns. Because they depend upon such a vast mobilization of resources, they are extremely costly (Ofosu-Ammah 1983). Thus, they often depend upon the fiscal and in-kind subsidies by the private sector and/or international development organizations. Also, because such efforts often involve the facilities and personnel of what health care infrastructure there is (from the national to the community level), they are often extremely disruptive of the normal operations of health care services.

The larger question which is often asked about mass mobilization efforts is "whether such campaigns are merely a substitute for the more patient and less spectacular work of building comprehensive and permanent structures of primary health care" (Grant in Mandl 1986). A key factor in this question is "sustainability." As Sen (1966) pointed out, although a disease such as smallpox can be eradicated because humans are its only known hosts, other vaccine-preventable diseases can easily re-establish themselves if coverage falls after the enthusiasm (and herd immunity) of a mass campaign falls off. Thus, each new generation must be protected. As Risi (1984) among others points out, the advantage of routine immunization (that is, immunization of children as they come of age) is that it prevents the breakdown of herd immunity (and the resurgence of the disease) that can occur between mass immunization campaigns.

It has been suggested that while the publicity, enthusiasm, and opportunity generated by a mass mobilization campaign may motivate people to be immunized within the course of a campaign, unless proper education is also transmitted to the target population during the course of the campaign, the
attitude changes necessary to make immunization a regular, sought after
component of personal health care will not arise (UNICEF Jakara in Mandl
1986). And it is not just the patient’s enthusiasm that may diminish. A
change in government, the replacement of the health minister, or even a
falling off in the interest of the media can all be fatal to an immunization
program based on periodic mass campaigns (Grant in Mandl 1986). Although at
least in one instance, that of the Dominican Republic, a successful
immunization program based on yearly mass campaigns has been established,
(UNICEF 1986), it is generally agreed upon in the literature that:

although campaigns or similar mobilizations are
essential to galvanize interest and support, only
established systems can ensure long-term sustainability.
If these systems are not yet in existence at the time of
accelerated efforts, opportunities to establish them
should be explored during that period (Nyi in Mandl
1986).

Despite their focus on the necessity of infrastructure building, many
concerned with immunization, including the EPI-participant organizations,
strongly support the at least temporary use of the mobilization campaign
strategy. (See, for example, the editorial by Mandl in Mandl 1986.) Such
efforts are supported on both pragmatic and humanitarian grounds, a synthesis

After twenty years of vaccine availability, the denial of
its protection to two-thirds of the developing world’s
children demands that something new must now be tried.

It would of course be preferable if there were enough
fuel and roads and refrigerators and clinics and schools
and health workers so that every parent knew all about
immunization, lived within easy reach of permanent
immunization services, received computerized reminders
in the mail, and brought his or her children to be
vaccinated at exactly the right time for each individual
child. But that is to say nothing more than that it
would be preferable if developing countries were not
developing countries. And the sentence that universal
immunization must await economic development and the
coming of a permanent health clinic to every village is
simply a sentence of unnecessary death and disability
for many millions of today’s children and for even more
millions of those who are still to be born.
If immunization remains at today's levels then polio, to take one example, will paralyze for life approximately 2.5 million children over the next ten years. In addition to the personal suffering, the process of economic development itself will thereby be deprived of the contribution of most of those children and of most of those upon whom they become and remain dependent. When a cheap and simple technology to prevent polio is already in our hands, it is therefore neither humane nor economic to allow the disease to continue crippling over a quarter of a million children a year (UNICEF 1986).
SECTION II: TARGET AUDIENCE SEGMENTATION
II. TARGET AUDIENCE SEGMENTATION

Segmenting the audience is a focal point of departure for social marketers. The target population is analyzed for characteristics relevant to the product or service that is needed or being provided. Very often the audience is disaggregated into smaller units or segments according to their relationship to a particular marketing communications variable—e.g., income: high, middle, low, etc. Specific products, services, and motivational messages are then designed for those segments that need to be reached. Audience segmentation is a useful tool for both the product/service design and communication components of social marketing.

It is difficult to arrive at meaningful audience segmentation categories without a particular context. EPI segmentation strategies will depend upon existing disease prevalencies, prevailing immunization technology, primary health care infrastructure, socio-economic characteristics of the region, community knowledge, attitudes, and behavior, etc. One of the first tasks in social marketing is to determine what are the key factors related to either the nature of the product/service or the nature of the target population that should be used to segment the audience. The following table is an illustrative list of prototypical social marketing segmentation categories as applied to EPI. Segmentation categories are cross-referenced with vaccination coverage requirements, service delivery and communications needs.
<table>
<thead>
<tr>
<th>Category/Segment</th>
<th>Coverage</th>
<th>Service Delivery Design</th>
<th>Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: infant</td>
<td>Priorities</td>
<td>Systems with easy access for mothers and children</td>
<td>messages that appeal to families to protect their child's health</td>
</tr>
<tr>
<td>pre-school</td>
<td>- 0-4 (with emphasis on under 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>school age</td>
<td>- women or child-bearing age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>adult</td>
<td>- herd immunity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- existing disease-specific prevalencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex: male</td>
<td>same as above</td>
<td>same as above</td>
<td></td>
</tr>
<tr>
<td>female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location: urban</td>
<td>establish relationships between transmission rates and spatial distribution of hosts</td>
<td>helps determine delivery system structure: e.g., static, mobile, house-to-house etc.</td>
<td>print and electronic media often more prevalent in urban area</td>
</tr>
<tr>
<td>rural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residence: permanent</td>
<td>same as above</td>
<td>same as above</td>
<td></td>
</tr>
<tr>
<td>nomadic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literary Level: literate</td>
<td>at-risk populations tend to be associated with populations who are low income and illiterate</td>
<td>service providers can be trained to care for non-literate populations</td>
<td>emphasis on pictoral record keeping and/or electronic media if population is illiterate</td>
</tr>
<tr>
<td>illiterate</td>
<td></td>
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</tr>
</tbody>
</table>
### PROTOTYPE TARGET AUDIENCE SEGMENTATION
CATEGORIES FOR EPI PROGRAMS
(Continued)

<table>
<thead>
<tr>
<th>Category/Segment</th>
<th>Coverage</th>
<th>Service Delivery Design</th>
<th>Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income Level/Employment Status:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>at risk populations tend to be associated with low-income population</td>
<td>need to know existing work patterns in order to design EPI services that are convenient</td>
<td>motivational problems greater for unemployed</td>
</tr>
<tr>
<td>Middle</td>
<td>hard to identify and reach unemployed populations</td>
<td>to the target population</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ethnic/Linguistic Affiliation</strong></td>
<td>different health practices/disease prevalences often associated with ethnic/linguistic affiliations</td>
<td>service providers need to accommodate language/socio-cultural needs of client</td>
<td>messages and materials often need adaptation to differing ethnic/religious linguistic groups</td>
</tr>
<tr>
<td><strong>Relationship to Health Services:</strong></td>
<td>Repeated visits to communities necessary to identify up-to-date needs</td>
<td>community based house-to-house approach best suited for reaching drop-outs</td>
<td>problem of promoting sustained demand and creating motivational messages for drop-outs</td>
</tr>
<tr>
<td>regular client</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>occasional participant drop-out</td>
<td></td>
<td></td>
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</tbody>
</table>
SECTION III: COMMUNICATION ISSUES
Community Knowledge, Attitudes, and Practices

An understanding of community knowledge, attitudes, and practices vis-a-vis immunization, health, and disease is the foundation for building an effective EPI communications strategy. Meaningful messages and materials address knowledge gaps and misperceptions and promote improved health practices.

Misperceptions about the purpose and practice of immunization have led to fears about vaccines, reluctance to receive injections, and nonattendance/ dropout behavior patterns. Early EPI efforts tended to have a low profile, and thus mothers in rural areas continued to be unaware of the significance of immunization and the importance of preventive measures. A survey of mothers in Honduras, for instance, revealed the belief that vaccinations serve a curative rather than preventative function; in addition, those who mentioned prevention did not know what that concept really meant (Bonilla et al. 1986). Wittachi (1986:28) points out, "Prevention, being less spectacular than cure, demands repeated experiential proof of its efficacy before it is commonly deemed useful."

The concept of immunization, itself, is difficult to understand—as the experience with "modern" European populations demonstrated in the case of smallpox vaccine. People in many Third World communities have been reluctant to accept the idea that infecting a healthy body with a disease now, in order to protect it from being overwhelmed by the same disease later, is indeed more rational than placing faith in spirits or supernatural forces that have traditionally been held accountable for matters of health, disease, and death. Misperceptions about the significance of missed immunization dates have also been a problem. Some people have believed, for example, that vaccines are not effective unless administered on fixed dates; thus, inability to bring a child to the clinic on the specified day may lead to a decision that it is pointless to show up again (Bonilla et al. 1986).

Other common misperceptions relate to the side effects of vaccines, and to local beliefs about disease symptoms. For example, fever may be viewed as a sign of serious illness that, if left untreated, could become a life-
threatening situation (Bonilla et al. 1986; O’Dea 1986) Thus, if a child’s reaction to immunization takes the form of a fever, anxiety will be generated about the supposed “disease symptom,” and the response might be protective behavior (i.e., failing to return for the next dose.) Side effects of vaccination are a source of parental anxiety because they represent potential economic disruption: attending to a child’s illness may translate into a loss of work time for a family member. In such cases, communications can be used to help make parents aware of potential reactions associated with various vaccines and to reassure them that such reactions are indeed normal.

Misconceptions about the relationship between immunization and age are also prevalent. A survey of Honduran mothers revealed a lack of knowledge about the age at which children should be immunized (Bonilla et al. 1986). Mothers who were unaware of the correct age expressed the belief that two- or three-month old infants were too delicate or small to be immunized; others felt upset about vaccinating children who had general weaknesses or were suffering from malnutrition—since they had observed that some of these children present strong post-immunization reactions.

In some communities, parents’ views of “childhood diseases” differ from the definitions created by Western health models. In some regions in tropical Africa, measles, along with other childhood diseases, is designated by a single expression (Ofosu-Amaah 1983). Similarly, the childhood form of tuberculosis may not be perceived as the same disease as the adult form of tuberculosis (Burgess 1981). This lack of precision, in local languages, about disease names or symptoms can lead to confusion.

Cultural beliefs about health, illness, and medicine can hinder acceptance of an immunization program. The disease in question may not be perceived as an important disease, or it may be thought to be inevitable (Burgess 1981). Some groups in tropical Africa, for example, believe that measles is a natural part of growing up (Ofosu-Amaah 1983). These types of beliefs contradict the teachings about potential dangers of EPI targeted diseases.

Traditional beliefs can also be used to increase participation in vaccination programs. Several cultures already recognize that certain
Communicable diseases can be prevented. Variolation, a practice in China that goes back in time several centuries, refers to inoculating persons with smallpox (generally of the mild variola minor strain) to protect against the variola major strain that is life-threatening (Jarrett 1986). Data from a village in Mali demonstrates the "case fatality rate was nil compared to 12 percent in those left unvariolated" (ibid:244).

Numerous surveys have indicated that parents lack information about vaccination, and it has been argued that health education sessions should be a component of immunization programs, so that parents may be better informed about these matters. Health personnel have often assumed that through the process of education, parents will automatically come to appreciate the benefits of vaccination.

Brown and others raise the issue that technical health lessons may simply add to mothers' confusion, whereas having parents concentrate on a single message (such as the total number of vaccines a child needs), might prove to be more helpful. A message could, for instance, tell parents: "In the first year of life, bring your baby to us four times. He needs five injections and three drops in his mouth" (Brown et al. 1982:44).

Health workers, themselves, may harbor misconceptions about traditional beliefs and health practices. Health personnel may perceive certain behaviors conflicting with their recommendations, and may display frustration with parents whose response, for example, to secondary symptoms such as fever, is to bring the child to a traditional healer. In Yaounde, Cameroon, traditional beliefs that attributed tetanus and tuberculosis to bad magic, sorcery, and poisons did not replace faith in Western medicine and injections. Rather than rejecting vaccinations as useless, parents made use of both traditional and modern means to prevent illness (Brown et al. 1982).

From the point of view of improved public health in Third World communities, it seems important to examine and understand the range of knowledge and beliefs, health-promoting roles, and health behaviors that are part of daily health management of all members. Social marketing community-based research techniques should be used at the outset of a campaign to
establish such an understanding and pave the way for the design of effective messages and materials.
Message Design Considerations

Educational and motivational messages can be developed to promote improved practices and address information needs and attitudinal barriers which impede participation in EPI programs. Quite often the best messages come from the community itself, whose participation in the message design process is generally deemed desirable by social marketers.

A broad spectrum of message themes can be used to support EPI programs. The choice of theme depends upon local need. In Honduras, EPI messages sought to dispel popular misconceptions about vaccination and to publicize the concept of immunization in the hopes of improving coverage (Bonilla et al. 1986). In the nationwide polio immunization program in Brazil, messages were intended to mobilize parents and guardians of children ages 0 to 4 years of age, rather than to necessarily educate the target audience (Risi 1984). In the Dominican Republic, messages and channels were designed to create an atmosphere of credibility, so that people did not view immunization campaigns as merely "poor man's medicine" (Meza 1986). In addition to endorsements by respected personalities, the Minister of Health promoted the fact that the same vaccinations largely used by private physicians would be provided.

Messages have been designed to emphasize operational rather than educational aspects of immunization services—for example, specific dates, times, locations, and directions for vaccination sessions. Messages can also serve a public awareness function that motivates health workers to do a better job vaccinating children. In Ondo State, Nigeria, a ceremony was held by the health Commissioner for a health worker who played a major role in obtaining increased coverage (Reid and Smith 1984). Such messages raise public consciousness about the importance of health worker contributions and help build morale among campaign workers.
Selection of Channels of Communication and Development of Materials

Messages need to be packaged in appropriate material formats and transmitted through channels of communication that ensure the greatest reach and frequency of contact with the target audience. Media surveys and qualitative research studies of the way in which health information gets transferred in a community help social marketers effectively package and transmit their messages.

A wide range of programming can be scheduled through the mass media. In Burkina Faso, radio played a major role in the immunization campaign by broadcasting information and announcements for the provinces; reporting news features in national languages, interviews with health authorities, and school broadcasts; and playing the popular children’s theme song for the campaign (Ministry of Health and UNICEF, Ouagadougou 1986). In Brazil, where the traditional means of mass communication in many villages and towns included public address systems in supermarkets and shopping centers, government messages on polio immunization were allotted time for transmission (Rizi 1986). In addition, during prime time over the 15 days preceding the campaign, 8-second radio spots and 30-second television spots were broadcast—with 20 insertions per day on radio and 12 insertions per day on television.

Mass media alone is usually not a sufficient source of information about family health issues. If the expectation is for behavioral change in child care, parents will need to be convinced from several respected sources. Although mass media can be used to provide basic information, messages often need to be sanctioned by religious or political figures, reinforced by health personnel, and approved by parents-in-law or peer groups. In Turkey, campaign planners acknowledged the fact that public awareness of immunization would need to be reinforced on the local level, in order to “create a felt need among mothers” (Bertran and Reid 1986:277). Media messages were repeated and amplified by community leaders and advisors—such as village heads, imams, and teachers. In Ecuador, Columbia, Brazil, and El Salvador, the Catholic Church undertook an advocacy role in favor of the campaigns. In Ecuador, for example, a pastoral letter and set of instructions were sent to all Dioceses,
sermons on the benefits of PREMI were preached, and church bells across the
country were rung to invite parents to immunization posts at the opening of
the campaign (UNICEF Mar. 1986). In Sri Lanka and Burma, Buddhist priests lent
credibility and helped bring knowledge about vaccination protection to parents
in villages; in Indonesia, Oman, and the Phillipines, imams and Muslim leaders
served as trusted community resources (UNICEF 1986).

Political, as well as religious channels, give active support and moral
strength to the health messages that are conveyed during immunization cam­
paigns. In Cuba, Committees for the Defense of the Revolution (CDRs) that
were already operating on the grassroots level in every block of the country,
were entrusted with the implementation of the polio vaccination campaign.
In turn, provided contact with the most remote areas of the country,
within a relatively short period of time (Cruz 1984). In Burkina Faso, the
importance of an intensive, coordinated approach to activities was acknow­
ledged at the outset of the Vaccination Commando Campaign. Villages were
dispersed and not easily accessible by road, press, or radio; populations
identified were largely illiterate. A communications strategy was designed to
include local, person-to-person contact, in addition to the use of diverse
media. CDRs were charged with conducting local communications activities,
fundraising, and distribution of vaccination cards. They were also the most
frequent source of information cited (55 percent) by those surveyed, followed
by health workers (34 percent) and radio (16 percent), respectively (Mandel

Printed reminders that are mailed or displayed are other examples of
communication channels that have proven to be effective in immunization
programs. The business community in Madras, India, supported and funded
several reminder efforts in the polio campaign: The pay packets of employees
contained notices about vaccination, and appealed for donations as well as the
need to spread the word (UNICEF 1986). The outgoing mail from hundreds of
commercial offices was rubberstamped with immunization advertisements, and
telephone handsets in hundreds of restaurants and hotels contained vaccination
stickers (UNICEF 1986). In the Dominican Republic, leaflets were distributed
at bus stations, and banners were hung in major road intersections in cities
and towns (Meza 1986). And in several cities in Thailand, the following
approach achieved 100 percent improvement in the number of children fully immunized:

when birth certificates (were) sent to parents, there (was) an accompanying letter from the major congratulating them. In addition, information (was) included about the national immunization program. Parents (were) then sent reminder letters before their appointments, and another one if they (failed) to attend (Dick and Kisselev 1986:164).

School systems may also participate in education or community mobilization efforts by adopting health curricula and encouraging the participation of students and teachers in campaigns. Primary schools may be an important resource in countries where education reaches a large percentage of the population. For instance, a requirement could be instituted for school missions that involves the proper completion of a child’s immunization card. It is important to note, however, that the impact of communication efforts within educational systems will be limited in countries where primary school enrollments are low.

The instruction of school children about measles immunization led, in the Ivory Coast, to a ten-fold increase in the number of vaccinations in Pend-Bassam and a six-fold increase in a section of Abidjan (Ofosu-Amaah 1983). In Bombay, India, lists of infants in the community under one year of age were compiled by schoolchildren. In addition, children acted as agents of change within their own families by informing their parents about places and times for immunization (UNICEF 1986). In Ecuador, the National Program for Infant Mortality Reduction (PREMI) provided an "operational focus" for knowledge that had been acquired through health education courses in the curricula (UNICEF Mar. 1986). In addition, 150,000 high school students, teachers, and supervisors participated in a one-week training program on child survival interventions, promoted the program by going house-to-house, and played various roles in vaccination posts during immunization days. In the National Immunization Campaign of Turkey, teachers reported early for duty at the beginning of the school year, participated in in-service training programs given by health personnel, and subsequently organized parent meetings to diffuse the message about protection through immunization (Bertan and Reid
Over two-thirds of the country’s vaccination posts were intentionally located on school sites during the actual vaccination days.

Vaccination records can be used as educational materials to increase knowledge of and compliance with immunization procedures. The design of patient-held records that both motivate and inform should be a major concern of EPI program planners.

Patient-held records have been advocated as an important means of increasing knowledge about vaccinations, as well as compliance with health care processes. The relationship between patient-held immunization records and the completion of recommended immunizations for the first year was examined in a study by McCormick et al. (1981). Completion rates were found to be higher for those infants for whom immunization records were available, than for those without such records. One explanation given for this result is that maternal reporting, in the absence of a record, is more likely to underestimate the number of immunizations that children have in fact received. This can have significant consequences for surveillance studies that rely on information newly derived from mothers. Thus, recording and record-keeping systems would be important components of an immunization campaign from the outset.

One concern about patient-held records that has been expressed by health personnel is that families may not safeguard health records and thus be able to furnish them again upon request. This concern has been refuted by several program reviewers; Guerin, in particular, argues that experience has demonstrated that when families are properly informed, they do safeguard documents. He observes that "when the health team holds health documents to be valuable, the value attributed to them by families is greatly multiplied, and frequently vaccination certificates are locked up in the family safe with other official papers" (1983:141-142).

A patient-held record may be designed to serve an educational as well as a medical reference function. The individual vaccination card is one type of record that informs patients about the date of the next dose for each child, as well as the general status of the child’s immunization. A generalized child health record, such as a Road to Health Card, is another document that
can be kept by parents; this may constitute a complete record of the child’s health. In Turkey, a child health passport was a pocket-sized, two-color, six-panel document providing the mother with a comprehensive health record of the child’s vaccination history and other major health events in the first five years of its life (Bertan and Reid 1986). Health cards also can contain a growth chart and messages on oral rehydration therapy, breastfeeding, and feeding.

One of the major problems in immunization campaigns has been that of getting the immunization message across to illiterate as well as literate others. Vaccination cards must serve a dual purpose: they should be understandable, as well as self-explanatory (i.e., nurses should not be expected to find the time to explain this information in detail to each other). In the immunization campaign in Honduras, the vaccination card was selected as the best means for explaining to mothers how many doses of each vaccine are required to ensure full immunity and against which diseases children should be immunized (Bonilla et al. 1986). Vaccination cards were considered a more appropriate medium for this information than radio, since the cards contain details about the child’s immunization history and could be consulted whenever necessary. Observations at health centers and interviews with mothers revealed that vaccinations were recognized by the manner in which they were administered: polio vaccine, for example, was identified as given by mouth in the form of drops; and tetanus or pertussis vaccine was recognized by mothers as an injection into the hip. Visual codes that reflected the methods by which vaccines were administered were then designed and illustrated by the Division of Education of the Ministry of Health for the new vaccination cards.

Designs for patient-held records must be sensitive to the cultural, social, and educational backgrounds of users. Pictorial codes that are easily recognized and understandable by illiterate mothers is only one issue that needs to be addressed in planning record-keeping systems; a second decision that needs to be made is that of card size. In Honduras, for example, private institutions had assumed that larger vaccination cards were less likely to be lost; however, immunization program planners found that smaller cards had the advantage that mothers could more easily bring them on their trips to the
health centers (Bonilla et al 1986). This was particularly important for
Jonduran women in rural areas, who typically carry their personal documents in
plastic bags placed inside brassieres.
We have treated marketing and communications as separate streams in EPI program design. In reality each reinforces the other, and both flow toward the same objective—increasing the percentage of fully immunized members of the at-risk population. The marketing side of EPI is directed at making services more easily accessible and responsive to the needs of the consumer. The communications stream addresses informational, motivational, and perceptual issues that influence individual decisions about whether or not to be immunized.

Figure 1 illustrates how marketing and communications elements converge within the context of EPI. A well planned immunization campaign will evolve complementary marketing and communications strategies. It will ensure that, once fully motivated, community members need not go far to access user-friendly EPI services.
FIGURE 1. ELEMENTS IN AN EPI SOCIAL MARKETING STRATEGY

- Media Messages
- EPI Stations (Static or Mobile)
- Health Care Infrastructure
- Decision to Be Immunized
- Special Programs for Dropouts
- National Mobilization Efforts
- Road-to-Health Immunization Cards
- Communication Stream
- Community Knowledge, Attitudes, Practices
APPENDIX: CHRONOLOGY OF MAJOR EPI CAMPAIGNS

1962 - Present (Twice each year, usually in Feb and April)
Cuba
Target Population: Various age groups (children)
Vaccines/Diseases: Polio - oral, two doses
Approach: House to House

1977 (Four Months)
Pilot Project
Solapur City, India
Pilot Project
Target Population: All unprotected children
Vaccines/Diseases: Smallpox, BCG, Triple, Polio

1980 - present (3 weekends a year between Jan and June)
Nicaragua
Vaccines/Diseases: Polio and Measles

1980 - Present (two vaccination days each year in June and August)
Poliomyelitis Control Action Programme
Brazil
Target Population: Under-fives
Vaccines/Diseases: Polio
Coverage Achieved: 90% (Over 20 million under-fives, dramatic decrease in the incidence of polio achieved)

1982/3 (Winter)
Pilot Project
Dewas, India (rural district)
Vaccines/Diseases: Polio (oral)
Coverage Achieved: 76%

1983 (June 18-19)
Dominican Republic
Vaccine/Diseases: Polio
Target Population: Under-threes
Coverage Achieved: 95.5% (550,607 children)
Approach: House To House

1983 (August 13-14)
Dominican Republic
Vaccine/Diseases: Polio (second dose)
Target Population: Underthrees
Coverage Achieved: 95.4% (557,233 children)
Approach: House to House

1983/4 (August 15 - August 15)
Nigeria
Vaccines/Diseases: 6 EPI diseases
Coverage Achieved: 83% (16,000 of 19,000 eligible children)
Approach: Static, with some mobile outreach. Full schedule implied five visits to vaccination center per child.
1983/4 (Winter)  
Pilot Project  
Bidar, India (rural district)  
Vaccines/Diseases: DPT, BCG, and Polio  
Coverage Achieved: 95% of target population

1983/4 (Winter)  
Pilot Project  
Delhi City, India (sections)  
Vaccines/Diseases: DPT and Polio  
Coverage Achieved: 85%

1984 (Jan 28-29)  
Dominican Republic  
Vaccines/Disease: Antiparasite  
Target Population: Older than 9 months  
Coverage Achieved: 92.4% (5,404,795 people)  
Approach: House To House

1984 (June 9-10)  
Dominican Republic  
Vaccines/Diseases: Polio  
Target Population: Under-threes  
Coverage Achieved: 88.9% (525,759 children)  
Approach: House to House

1984 (Sept 1-2)  
Dominican Republic  
Vaccines/Diseases: Polio (Second dose)  
Target Population: Under-threes  
Coverage Achieved: 84.8% (507,877 children)

Late 1983/Early 1984  
Bolivia  
Vaccines/Diseases: Polio (oral, three doses)  
Coverage Achieved: 70% children rural, 90% urban

1984 (April 8, launched)  
Bolivia  
Vaccines/Diseases: Measles  
Coverage Achieved: One-half million children

1984 - (June 23, July 28, Aug 25)  
National Vaccination Day Crusade  
Columbia  
Target Population: Increase coverage of under-fours by 50%  
Vaccines/Diseases: Diphtheria, Polio, Tetanus, Pertussis, Measles  
Coverage Achieved: Target achieved  
Approach: Static  
Cooperating Agencies: UNICEF, PAHO/WHO, UNDP
1984 (Nov 25 - Dec 10)
Vaccination Commando - 1984 (Nov 25-Dec 10)
Burkina Faso
Target Population: Unimmunized children
Vaccines/Diseases: Measles (9 months - six years), Yellow Fever and Meningitis
(1 year - 14 years)
Coverage Achieved: 79% of target (730,000/measles, 1.7 million/yellow fever and meningitis)
Approach: Predominantly mobile
Cooperating agencies: UNICEF, Red Cross, PRC, Republic of Korea

1985 (Jan)
Hargeisa, Somalia (city)
Vaccines/Diseases: Measles, first doses for polio, diptheria, whooping cough, tetanus
Coverage Achieved: 100% of under-fives (15,000 children)

1985 (Jan-April)
West Nusa Tenggara, Indonesia
Target Population: Women of child-bearing age
Vaccines/Diseases: Tetanus
Coverage Achieved: 93% for two doses (126,000 women)

1985 (Feb 3, March 3, April 25)
Days of Tranquility
El Salvador
Target Population: 80% of 400,000 unimmunized children
Vaccines/Diseases: DPT, Polio, Measles
Coverage Achieved: 69% DPT, 60% Polio, 70% measles.
Also in April: 40,000 women given tetanus shots

1985 (Launched Feb 13, 8 month campaign)
Ethiopia
Target Population: 100% of under-fives (89,000 children), 100% of women (36,000)
Vaccines/Diseases: Children: Six major diseases,
Women: Tetanus
Coverage Achieved: 50% of children by end of September

1985 (March 10, launched)
Bolivia
Vaccines/Diseases: DPT (Diptheria, pertussis, tetanus)
Coverage Achieved: 85% of under-fives

1985 (May 3-4-5)
Dominican Republic
Vaccines/Diseases: Antimalarial
Target Population: All residents in endemic zones
Coverage Achieved: 51.1% (413,590 people)
Approach: House To House
1985 (May 18-19)
Dominican Republic
Vaccines/Diseases: Antiparasite
Target Population: All population except under one year old and pregnant women
Coverage Achieved: 3,621,079
Approach: House to House

1985 (May 18-19)
Dominican Republic
Vaccines/Diseases: DPT
Target Population: 2 months under 2 years.
Coverage Achieved: 48.5% (158,634 children)
Approach: House to House

1985 (May-June)
Pilot Project
Madras City, India
Vaccines/Diseases: Polio
Coverage Achieved: 72% of children

1985 (June 29-30)
Dominican Republic
Vaccines/Diseases: Polio
Target Population: Under-twos
Coverage Achieved: 81.8% (291,821 children)
Approach: House to House

1985 (July 3)
Mogadishu, Somalia (capital city)
Target Population: 65,000 children
Coverage Achieved: 55,000 children (after first round)
Approach: Static

1985 (Sept 28 and Nov 16)
PolioPlus
Paraguay
Target Population: 100% of under-fives
Vaccines/Diseases: Polio
Approach: House to House
Cooperating agencies: Rotary International, Rotary, UNICEF, PAHO

1985 (10 day periods in Sept, Oct, and Nov)
Turkey
Target Population: 80% coverage of under-fives (5.1 million children)
Vaccines/Diseases: Measles, Diphtheria, Pertussis, Tetanus, Polio
Coverage Achieved: 91.7% of children immunized as appropriate to their age group, including 80% coverage of under-ones for Measles.
Approach: Static
Cooperating Agencies: Rotary, Red Crescent
1985 (Oct 19-20)
Dominican Republic
Vaccines/Diseases: Polio (second dose)
Target Population: Under-threes
Coverage Achieved: 100% (414,627 children)
Approach: House to House

1985 (Oct 19-20)
Dominican Republic
Vaccines/Diseases: Measles
Target Population: Over nine months, under 5 years
Coverage Achieved: 95.3% (615,187 children)
Approach: House to House

1985 (Oct 26-27-28)
National Vaccination Campaign
Ecuador
Target Population: 80% of under-ones, 95% of those aged one to five
Vaccines/Diseases: Six major vaccine preventable diseases

1985 (Dec 14-15)
Dominican Republic
Vaccines/Diseases: Tetanus Toxoid
Target Population: Women 10-44 years of age
Coverage Achieved: 92.4% (1,198,876 women)
Approach: House to house

1986 (Jan 25-26-27-28)
National Vaccination Campaign - Second Round
Ecuador
Target Population: 80% of underones, 95% of those aged one to five
Coverage Achieved: 80% after second round
Bibliography


A review of an EPI program initiated in 1978. Factors hindering effective implementation were identified, including a shortage of trained health workers, administrative failures, and a lack of proper health education directed at the target population.


A report on the EPI in India. The drop-out rate for multi-shot vaccine schedules was high, largely due to a lack of understanding by parents of the necessity of bringing children back for more shots, and the distances that people had to travel to get to the health centers.


An analysis of the swine flu program which attributes its failure to hasty decision-making and a failure to consider the social and political aspects of the program.


A review of the EPI in India where the program is integrated with the efforts of the Mother and Child Health Program. Focus is on logistics, the training of workers, and surveillance, all of which are considered essential to an effective immunization program.


An evaluation of a program providing health education on protection against rubella to women attending a family planning clinic found that it failed to make any significant contribution to the women's willingness to be immunized.


A description and evaluation of an ongoing EPI with an emphasis on how the marketing strategies and experiences of a pilot program can be refined and then executed on a national basis.

The reasons for low coverage in an EPI program in Yaounde, United Republic of Cameroon were identified using a checklist developed for this purpose. Solutions to each of these problems are proposed.


Immunization of children, when left solely to parental initiative, is often not accomplished. It is necessary to provide information concerning immunization to parents, general practitioners, clinical medical officers, pediatricians, and health visitors in order to increase coverage.


Analysis of data from a survey of children and their parents found only 15% of the children to be adequately immunized. The authors concluded that a major education campaign on immunization was needed.


A description of the Cuban mass polio program. The success of these campaigns is attributed to the use of grassroots block organizations, the Committees for the Defense of the Revolution, and to the post-campaign quality-control surveys which allowed each campaign to improve upon the experience of the past ones.


An analysis of the psychosocial factors which played a significant role in decisions concerning swine flu inoculation, including behavioral intentions, experience with past flu shots, social influences, perceived susceptibility to swine flu, perceived efficacy of vaccination, socioeconomic status, and physician's recommendation.


Permission slips for immunization against rubella were distributed to all school children in a county in Alabama. Follow-up calls and house visits were made to parents who failed to return the
slip. The most common reason for failure to return the slip was the parents' belief that their children were already protected against the disease because of participation in a measles vaccination program the year before. Personal contact with parents was found to significantly increase program participation.


Suggestions for the successful implementation of community immunization programs based on the author's experience with such programs in the state of New Jersey. Emphasizes surveillance by local health departments and country medical societies to identify needs, organization of community groups to participate in the campaign, and the importance of private physicians in educating their patients to the need for immunization.


A brief description of the first polio national day of immunization in Paraguay, one of the efforts sponsored by the Rotary in its campaign to immunize all the world's children against polio by 2005.


Review of the history and purpose of the EPI, including a region by region overview of accomplishments, as well as those actions which will have to be taken if the 1990 objectives for the EPI are to be met.


An analysis of the federal government's 1976-77 Swine Flu immunization program. The author contends that, once the government had made a public commitment to immunize the entire population, they found it very difficult to reformulate the program in response to changing information concerning its relative costs and benefits. Suggestions are offered for preventing further erosion of public confidence in essential preventive health programs.


Description of the Gambian EPI. This program met with a high degree of success, which the authors attribute to the program's emphasis on integrating the immunization program into existing health care services.

Research was conducted to determine the reasons for low participation in a free immunization campaign. Children were less likely to be immunized if they scored high on an Adversary Index (composed of variables relating to climate, distance, and scheduling), if they were clients of a native healer, or if pain was an important deterrent. Suggestions for use of such research for program planning are made.


An evaluation of the first operational EPI in Africa. The major factor in low immunization coverage was found to be inadequate publicity.


Lessons learned from a district level program in India include: (1) the promotion of social awareness and participation through all available channels is of central importance; (2) continuing attention needs to be directed to vaccine supply and distribution, management, and training; (3) opportunities to expand involvement in EPI beyond the health system should be utilized; and (4) planning must incorporate political commitment as well as the adequate financial resources.


Basic description of the EPI with a discussion of the information systems, human resources, and financial aspects of the campaigns.


An examination of the swine flu campaign in New York City with emphasis on the effects of media coverage and the public's willingness or reluctance to be immunized.


A discussion of the factors leading to unsatisfactory coverage in the EPI in Oyo State, Nigeria, including inadequate community
involvement, poor communication among government departments, and inadequate publicity.


The author predicts that the major battle against the EPI targeted vaccine-preventable diseases will be won by 1990. He maintains that immunization programs should blend aspects of both social mobilization campaigns and infrastructure development programs. The pros and cons of both single and multiple antigen programs are discussed.


A description of a three-week, national, multi-disease immunization campaign held in 1984. The two primary factors for its success were identified as the successful mobilization of medical personnel, intensive education and the effective use of mass communication.


A good description of a three week long social mobilization campaign including its organizational and communicative strategies.


Commentary of the organization of a "regular" (as opposed to emergency) immunization program, including targeting coverage, public health education, and record-keeping.


An evaluation of different types of postcard messages sent to an at-risk population to encourage them to receive an influenza vaccination. A message designed in accordance with the Health Belief Model was found to be most effective.


A study of participation in the swine flu campaign in Vermont in 1976-1977 found that compliance was lowest among the poorly educated low income rural population and higher among those having
higher incomes and postsecondary education. It is also suggested that persuasive health education can be conducted by private physicians in their own offices with their own patients, as there was a high compliance rate among persons who had recently visited a physician.

Mandl, P. (editor) Universal child immunization by 1990. Assignment Children 69/72

A special issue of this UNICEF journal entirely devoted to immunization and immunization programs. Contains articles on many aspects of these topics, including descriptions of mass campaigns in Turkey, Bukina Faso, West Africa, Uganda, China, Indonesia, Brazil, and El Salvador, as well as articles on issues relevant to marketing and communicative concerns, including "The epistemology of traditional health theories," "Communicating on immunization to mothers and community groups," as well as a revision of Joseph (1985).


A description of the use of AMA auxilliaries to help promote immunization among schoolchildren, an effort which involved media coverage as well as the painting of specially labeled immunization hopscotch courts on school playgrounds.


The immunization completion rates for patients who were given patient-held records was higher, across all variables, than for those patients who were not given such records.


An assessment of a house to house vaccination campaign using techniques first developed for the National Demographic and Housing Census.


A survey revealed that, despite the negative reaction to the swine flu immunization program, the public still favors the general idea of immunization programs in the face of potential epidemics and supports the idea of government sponsorship of these programs.

A discussion of the problems affecting USAID/WHO measles immunization program in Africa, including that of maintaining the cold chain, reaching a population that is 80% rural, and poor epidemiologic surveillance. Although the transmission of measles was interrupted for some years in The Gambia, most of the campaigns have not significantly reduced the incidence of the disease.


Thorough discussion of immunization program concerns presented as a series of topically organized problems to which solutions are offered. These problem areas include immunization and primary health care, evaluation, strategies for increasing coverage, supervision, education, community participation, training, and surveillance.


A report detailing the programs of the EPI in the Americas since its launch in 1977. Includes background information, summary of programs to date, and proposals for further action. Includes a special report on the program for the elimination of poliomyelitis and recommendations for further efforts toward its eradication.


A description of a national campaign which took place in the United States in 1977 in response to the growing incidence of vaccine preventable childhood diseases in the late 1960s and early 1970s. This campaign was so effective that by the early 1980s, the emphasis of the campaign shifted to the development and implementation of a system to permanently maintain the achieved levels of immunization.


The problems with the swine flu campaign were found not to have the predicted adverse effects on future immunization programs. There is a certain amount of ambivalence toward flu immunization which needs to be eliminated with education. Women should be targeted in such efforts, as they are likely to be the key to immunization of children and the entire family.


An explanation of the benefits of evaluation for immunization
campaigns including discussions of program audits, evaluation of coverage, community participation, health education, and cost-benefit analysis.


A pilot program in a district which previously had very low immunization coverage achieved significant results through a greatly increased reliance on cold packs rather than refrigerators, and increased use of static centers rather than mobile units. Strategies to scale-up such a local program into a national one are discussed.


A description and evaluation of a 1984 social mobilization campaign centered around 3 national vaccination days.


A number of studies devoted to analysis of the factors that influence the use of vaccines by targeted populations are summarized and their results integrated in two major categories: "personal readiness factors" which include perceived susceptibility to the disease, perceived seriousness of the disease, and perceived safety and effectiveness of the vaccine, and "social and situational factors" which include social pressure, convenience, and demographic characteristics. It is suggested that information about these factors can be used by immunization programs to motivate consumers to become immunized.


A mass campaign which attempts to reach every child under five during vaccination days held twice each. Brazil formerly had one of the highest rates of poliomyelitis in the developing world. This campaign reduced impact of the disease to insignificant levels.

An evaluation of the health belief model in the context of a swine flu vaccination program for senior citizens. The relevant variables associated with compliance were found to be perceived susceptibility to the disease and perceived danger associated with receiving the vaccination.


Description of a district-level immunization campaign in Britain, including the various publicity efforts used to promote participation, including media coverage, health visitors, and leaflets.


The importance of immunization as a major component of a primary health care program. Topics include delivery systems, program management, and evaluation.


An examination of health education and its effects upon a polio vaccination program. It was found that the general level of education among parents participating in the program was high, that fathers play an important role in deciding whether children are immunized, and that newspapers, family physicians, relatives and friends were important sources of information and motivation among the client population.


An analysis of the low coverage of the swine flu vaccination program and a call for more research on the factors which motivate people to participate in, or avoid, an immunization program.


Basic discussion of immunization programs, their problems, and their potential. Includes a discussion of how to reach the poor, illiterate audience who often do not have access to the mass media. These people generally look to the government for health care.

A radio announcement of a diphtheria death in Belize City resulted in a marked increase in the demand for DPT immunization at public health clinics. However, most of these immunizations were for children from well-immunized districts. The author concludes that mass media announcements for immunization must be carefully planned to elicit a response that is appropriate to the threat.


An overview of EPI activities in SE Asia, including summaries concerning the situations relevant to each of the targeted diseases, a country by country description of EPI activities, and discussions of some problematic elements of the programs including planning and management, training, operations, health education, and evaluation.


The most recent edition of a yearly report concerning child health and welfare around the world. Contains substantial information about immunization campaigns, especially social mobilization campaigns, as well as about oral rehydration therapy, and maternal and child health.


A description and assessment of a campaign designed to facilitate a reduction of sickness and death in children under five years of age by providing an integrated package of services and actions to overcome problems such as dehydration caused by diarrhea and to promote breastfeeding, growth monitoring, and immunization.


Includes print and audiovisual materials on growth, oral rehydration therapy, breastfeeding, immunization, food supplements, family spacing, female education, primary health care, water and sanitation, appropriate technology, and disability.


A comparison of three techniques for improving immunization levels among school-age children in Denver, Colorado. The most effective technique tested was one in which immunization-deficient children were identified through an examination of records and then invited to a school-based immunization clinic. Merely sending out permission slips for participation in a school-based
A health education program encouraging parents to have their children immunized on their own produced a significant improvement of immunization levels.


A lack of coordination at all levels and lack of support from local social and professional bodies were found to have significantly reduced the success rate of a comprehensive immunization program for children. Organizational strategies to avoid these problems are suggested.


An examination of the 1976-1977 Swine Flu immunization program with special emphasis on the Federal Government's decision-making process concerning the advisability of initiating such a campaign as well as the question of coverage.


Guidelines for accelerating an immunization campaign. Includes a discussion of the relationships among social mobilization, infrastructure development, and pulse campaigns.


A discussion of the role of nurses in an immunization program including their use in health education and record keeping.


Brief description of a British campaign targeted at immunizing all young girls against rubella. The campaign involved the use of mass media at the national level and social mobilization at the community level.


A program which used mobile immunization teams to circumvent the problem of mothers having to bring their children to difficult to reach static health care facilities. Issues discussed include scheduling, the drop-out rate, and preservation of the cold chain.

Review of the situation of the six EPI target diseases, their epidemiology, and the application of recent research on vaccines, the cold chain, and vaccination schedules which will help improve immunization coverage.


A program which mailed an immunization reminder to mothers of children predicted to be at high risk of failing to receive immunization resulted in a 50 per cent increase in immunizations over a similar group that were not mailed reminders.