PN-ABC-486

Resources for Child Health
REACH

A John Snow, Inc. project

UNIVERSAL CHILDHOOD IMMUNIZATION:

ISSUES AND OBSTACLES

Norbert Hirschhorn, MD
Cynthia Dunn, MPH
Pierre Claquin, MD

- with contributions by Mark Weeks, MPH

October, 1986

Ninth Floor, 1100 Wilson Blvd., Arlington, VA 22209 USA • Tel:(703)528-7474 • Telex:272896 JSIWUR

We are on an audacious journey: to immunize up to 80% of the world' children against six major diseases, within the next four years. It is a journey with maps like those of the ancient mariners: full of wild beast and an uncertain destination. In fact, as the world's population of children increases by 50% in the next two decades, and as new vaccines against other diseases are developed, the journey may have no end at all.

We are on a dangerous journey: if we fail or flag, parents will not believe our exhortations, health workers will be demoralized and cynical. Donors will turn to other programs, equally attractive, and the disease cycle will return, perhaps more vicious than before. Even if we attain o goals, then we become hostage to our own success - efforts to sustain universal childhood immunization will be no less demanding than the effor required to achieve total coverage in the first place.

The year 1990 will be upon us all-too quickly. Many obstacles and unresolved issues stand opposed to the achievement of universal childhood immunization. In this paper we identify them and propose solutions for your consideration and debate. The issues may, for convenience, be groupe into four categories:

I systems and management;

II vaccine strategies;

III evaluation; and last,

IV our obligation to the future.

I. SYSTEMS AND MANAGEMENT MUST BE REORIENTED TO PEOPLE WHERE THEY ARE

A. EPI is rapidly changing

Over the next few years our new sophisticated and technological knowledge will oblige us to introduce new vaccines, different immunizing schedules, cold-chain devices, new types of disposable syringes, new approaches to mass campaigns. Health workers do well because they learn well and guard their knowledge faithfully. Now that nearly 100,000 EPI workers know what to do with today's technology how will they be retrained? On a more mundane level who will pay to revise EPI manuals? How will EPI managers, in fact, maintain their staff's morale and belief in the face of rapid and, perhaps, conflicting changes?

We propose some solutions:

1) Major new antigens and techniques requiring retraining should be introduced only to stable, smoothly running immunization programs or to newly starting EPI, and only after thorough testing in pilot programs. New antigens should be integrated into EPI only if they promise significant improvements in health and can be delivered in the same syringe (or oral dose) mixed, conjugated, or in an epitopic combination of existing antigens.

2) Besides addressing the public, marketing and mass education techniques are also needed to complement personal instruction of health workers - newsletters, cassettes, mass media. Repeated on-the-job training of supervisors in new techniques is needed. Rather than lengthy manuals, we need a technical guide designed to reinforce the few basic skills

needed for EPI delivery: portable, waterproof, pocket-size, illustrated and updatable.

B. Plateau of coverage rates

Many immunization programs have found that it is not extraordinary to achieve 50-60% coverage rates for the first in a series of vaccinations or for a one-dose vaccine. Such coverage is, in fact, a testimony to how widely government sponsored primary health care reaches people but also, unfortunately, its superficiality. Try to get children back for second or third doses of DPT, a fourth or fifth for oral polio or to be fully immunized against six diseases - on time to be protective - we find then the rates for full coverage disheartening: 10-25%. What happens after the first contact? Who initiates immunization anyway, the mother or the health system? Who chases whom? What are the real reasons for the failure of parents to seek out protection for their children? Is it just a lack of knowledge? Fear? Conflicts with beliefs? Cavalier treatment at clinics? A rational suspicion of government? Or are we simply dealing with a poorly organized EPI that can not sustain its efforts regardless of demand? What is needed is an accurate study of the epidemiology of non-participation and its cultural determinants.

We need to prepare for the discovery that the problem is not one simply solved by more information or better management but is woven into the social structure and cultural values: especially the status of women, their limited time and economic constraints.

Proposed Solutions:

1) EPI must immediately take on a strong social science and development perspective. We clearly need better answers than those currently provided by the few questions tacked on the end of an EPI coverage survey, asked at the doorstep. Investigations must have an ethnographic basis - understanding choices and perceptions in their cultural context; and not only of families but those of health workers as well. We may call this "social marketing" if, by this, we do not lose the respect for individuals and their choices.

2) Mass media are now widely available. They may be used to help people to choose by giving new information, new insights. It must not be manipulation, no matter how just we believe the cause to be.

3) Thirdly, EPI needs to increase local autonomy to deal with the problems of drop out - diagnosis and corrective actions are most effectively achieved through outreach, community action, local spread of information. This is subversive because it also means local autonomy for management of EPI, which means resources must be devolved and more training given for local decision-making.

Yet EPI does not exist alone. Too many other absolutely worthy primary care and child-survival interventions are contending for money, space, attention. How to integrate all these strategies! How to integrate them into the dull work-a-day permanent primary care system? At the core is how the various health workers see their roles. A curative care orientation is, in fact, an absolute obstacle to EPI: A major reason children are not immunized fully or on time is that health workers have

learned too well, but incorrectly, all the reasons not to give vaccine: undernutrition, fever, diarrhea, respiratory illness; these children are medical emergencies and are more in need of protection by vaccines.

For all clinic-based programs we need research to discover how immunizations can be the lead activity to which curative care is accommodated, not the reverse. Health workers overburdened with long queues of sick people have little incentive to add another task, such as immunization. What would make health workers anxious and happy to immunize, and families relieved and grateful to receive protection? Is it money? More supervision? A different way of doing business?

Eventually, health workers in primary care have got to adopt a new role, and ministries of health, a new model: moving away from useless drugs toward life-protecting biologicals; away from failing hospitals to a decentralized, primary care system that reaches out and is at the pinnacle of prestige, not the dregs.

C. Lack of safety is yet another potential obstacle to EPI

Safety in EPI is critical to its sustainability - from giving the vaccination with a minimum of trauma, to the use of sterile syringes and needles. Hepatitis B certainly, and possibly AIDS as well, are transmitted by reusing non-sterile syringes. Although WHO and others have valiantly trained health workers and equipped them with sterilizing technology, many programs find it difficult to do carry on sterilization correctly in the field. Health workers do not always appreciate the issue of safety.

EPI workers are seldom the only cadre injecting people. Most faulty, unsterile injections are done by private practitioners (licensed or not); but has anyone looked to see if EPI needles and syringes are being diverted to private injectionists?

Proposed solution:

Any solution is going to be expensive but if hepatitis B and AIDS are being spread by current equipment, a single dose, non-reusable delivery system is the only realistic answer. Now no one knows for sure; there are too many other ways to contract hepatitis B and AIDS; but nevertheless, EPI should set the standards for safety in primary care.

II. VACCINE STRATEGIES SHOULD BE EPIDEMIOLOGICALLY AND ECOLOGICALLY DRIVEN

Vaccine schedules have been derived from considerations of biology and medical care organization: vaccines are given when maximal protection and seroconversion are obtained; and from a delivery model of ordered, regular well-baby visits. In EPI these cannot be the only dialectic. We have to take into account when and where children are accessible; when and why vaccines are acceptable to families; the cultural recognition given to girls and boys of different ages; the timing of festivals, migrations, seeding and harvest. All affect EPI scheduling.

Let us look at the patchwork of schedules: for instance, we now advise giving DPT very early in life - starting after four weeks of age - to protect against pertussis which is most fatal when contracted by children under six months. It is correct that one-third of deaths from pertussis occur in children under six months old but two-thirds of debilitating pertussis cases are in children over 12 months of age. Does the pain and fever of DPT injections given so early prevent completion of the series? A similar question may be asked of the high rate of reactions to the single dose of BCG, given at birth. What are the program costs to find the children when this young (when, in many societies, they are not considered whole beings until several months of age)?

We strongly advocate giving measles vaccine at nine months of age; for epidemiologic and biological reasons we would theoretically prevent more cases than the single dose given earlier or later. But, in many countries where measles is a major cause of death, 25-33% of cases occur before nine months, when death rate and risk of malnutrition are highest.

Worse for the nine-month strategy: mothers often can not be sure when a child is nine months old - a singular "non-event"; and visits to primary care centers fall off steeply before nine months.

In our desire to eradicate yet another disease - polio - have we wisely considered whether a 4-5 dose oral poliovirus vaccine schedule beginning at birth, given en masse on National Campaign days at an exceptionally high cost, is really worthwhile? Remember, we wanted to prevent lameness, itself relatively uncommon (2-9/1,000 children under 5 years), which would be achieved as well by inactivated poliovirus vaccine. Oral poliovirus vaccine is now the most heat-sensitive and keeps the cold chain vulnerable. Polio eradication, it is hoped, will strengthen EPI and primary care. This remains to be seen.

Curiously, we have yet to mount campaigns to provide tetanus toxoid to women at highest risk of having infants with neonatal tetanus, a leading cause of infant mortality in some parts of the world. Tetanus toxoid is the hardiest, safest and most effective of our vaccines; a program targetted to women could serve as an excellent entry for immunization of their children.

Proposed Solutions:

We should consider immunization schedules less driven by biology, more by local disease patterns and by the most efficient means to assure repeat dosing. Some experts advocate switching to twice or thrice-yearly sweeps (or "pulses") keyed to when health workers and families are not consumed by harvest, festivals or bad weather. We should develop strategies to reach young women with tetanus toxoid, supplemental iodine and vitamin A

simultaneously. We hope the new Edmonston-Zagreb measles strain lives up to its promise as a vaccine effective at 4-6 months; otherwise we ought to review the decision against the 2-dose measles schedule, given at 6 and 12 months (such a schedule, in fact, is recommended by CDC for U.S. children living abroad). We need, in any case, to define measles vaccine strategies targetted for highest payoff; for example: an "urban first" strategy; mandatory vaccination for all clinic and hospital pediatric patients; mass dosing ahead of an expected epidemic; targetting the highest risk children - the poor ones living in crowded homes.

For polio, it may be that priming of the intestine to respond to the oral vaccine with a combined DPT-IPV vaccine represents the best the combined approach.

These are guesses. Right now we are looking at measles and polio outbreaks in the face of good coverage levels, good cold chain; a first priority is to figure out why.

III. EVALUATION SHOULD SERVE THE PEOPLE

A. Coverage Surveys

The definitions of coverage vary from overly strict to lax, according to the rigor with which evidence of vaccination is accepted. The cluster sample technique (too demanding for small, local programs) yields confidence intervals of +/- 10%. But these are seldom stated, and 1/20 such surveys, on average, would fall outside even these limits. In urban areas in and out-migration confound the denominator. Surveys in children 12-23 months old - the standard method - reflect what occurred in the program up to one and a half years earlier and thus have small value for local decision-making; and little understanding is gained of the reasons behind the numbers. Whatever else, coverage survey indicators serve political ends. Does the stress on coverage and numbers encourage coercion of families and padding of reports - events we learned of long ago in family planning? Health workers have less incentive to deal with mothers' concerns, and the forum for their expression is lost in the mass idolatry of numbers.

Proposed solutions:

Coverage surveys should be more designed for local use and immediate feedback on critical areas. Surveys could focus on one or just a few indicators of immunizations: DPT_2, measles, DPT_3/$Polio_3$, tetanus toxoid to women. Lot quality assurance sampling gives rapid feedback on either poor or excellent local coverage. Disease surveillance techniques implementable by midlevel supervisors are known and could be powerful tools for them.

Supervision is normally done on the cold-chain, number of vaccinations given, immunization sessions held, and so on. These should turn into problem-solving evaluations: Why is the cold-chain broken? Why do mothers not come for second or third doses? Why are health workers not giving shots when both child and vaccine are present together? Such process evaluations need assistance from anthropologists whose discipline can help find explanations beyond the numbers.

Problem-oriented supervision and incentives can restore local problem solving ability; not just provide audit.

IV. OUR ETHICAL OBLIGATIONS OF TO TOMORROW'S CHILDREN

We are focusing excessively on program concerns of today - as good technicians must. But as public health thinkers we are morally obliged to consider the future as we affect it today. A bandwagon mentality leads to easily abandoned efforts (this year's toy, next year's scrap), to uncritical collection and use of data, to miscegenation of long-term humanitarian and short-term political goals. Governments and non-governmental organizations are now pumped up by donors to do child-survival programs, but funding is rarely assured for more than three years. Splashy efforts will subvert sustainability, leading ultimately to resurgence of disease. How many examples of malaria, yaws, famine relief and measles do we need to learn this? Yet with billions of dollars in debt and austerity budgets, how much is really bearable by third world governments and communities in the future? If the answer is: not much, are donors then prepared to sustain or expand on current efforts for 20-30 years or more? There is no question that immunizations protect children and we have the obligation to do so. But a larger issue may intrude: what if living conditions 20-30 years from now are too desperate for survivors of child survival? Our focus on technological interventions solely at medical and public health levels gets us off the hook of having to work for disarmament, for liberation of the oppressed and for reduction of poverty, because we think we are doing good. Yet, if <u>we</u> do not consider the effects of what we do, who will?

Proposed Solution:

It is time to make these issues explicit at international forums, technical advisory groups and wherever public health workers gather, such as here.