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FIELD NOTE

**ONE STEP AT A TIME: AN APPROACH TO IMPROVING
PUBLIC HEALTH EDUCATION IN NIGERIA**

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In Nigeria, the HEALTHCOM Project is supporting the goals of A.I.D.'s Combatting Communicable Childhood Diseases (CCCD) Project to improve the management and technical skills of Nigerian health staff at the local, state, and federal levels. HEALTHCOM has collaborated with people in various Nigerian agencies, including the Ministry of Health and public health clinics, and colleagues in numerous development-related projects and organizations, to strengthen communication capacities at these different levels. One aspect of work in the area of childhood immunizations has been the development of print materials for health workers and the design of training workshops for more effective face-to-face interactions with mothers. As part of this effort, the project has carried out a behavioral study to understand how health education is conducted in the clinic environment and to help plan and evaluate the success of these new print and interpersonal strategies.

WHY USE BEHAVIOR ANALYSIS?

Behavior analysis focuses on socially significant behaviors that are observable and measurable and attempts to identify the variables that affect those behaviors. Thus, an evaluation of public health education that includes a behavioral approach holds some promise for improving the interactions among mothers and clinic workers and for increasing the effectiveness of health communication.

Behavioral studies generally look very closely at particular behaviors as they occur within their actual environments. The field of behavior analysis has developed a number of ways of measuring specific behaviors and changes in those behaviors over time. One common design for a behavioral study is to: a) identify and define observable target behaviors; b) obtain reliable measures of the frequency of the target behaviors prior to introducing an intervention; c) design practical interventions that have the potential to change the target behaviors; d) measure the change in behavior during a period of intervention; and e) see if the behavior change is maintained after the intervention is withdrawn.

This field note briefly describes the cooperative effort among many individuals, including behavioral psychologists and public health educators in Nigerian health clinics, who used the strategies of behavior analysis to develop and implement educational interventions that may improve child survival in Nigeria. Behavioral consultants assisted the Health Education Unit of the Niger State Ministry of Health in conducting a small clinic-based study to observe the education provided to mothers by health workers regarding childhood immunization. The overall aim of the study, which took place from

August 1987 to May 1988, was to determine ways in which specific behaviors related to health education and to the interactions among health educators and mothers could be improved, and to design an intervention addressing these practices.

The investigators chose two clinics for study. One clinic was located in an urban setting servicing the city of Minna (population 96,000) and the other clinic was in the rural town of Kuta (population 35,000), 55 km. from Minna. The goals of the study were to:

- Compare the standard immunization education of clients (mostly mothers) at a rural and an urban health clinic in Niger State;
- Compare the sender information (that is, the trainers' teaching) with the receiver information (that is, the clients' learning) in order to determine what information is transmitted;
- Define specific strategies for improving the education related to the Expanded Programme on Immunization (or EPI);
- Design a program (or system) including educational materials, demonstrations, and teacher-learner interactions to improve the impact of EPI education at rural and urban health clinics;
- Study the results (impact) of a program for improving the EPI education at a rural and urban health clinic.
- Explore techniques for increasing the motivation of both trainers (health workers) and trainees (caretakers):
 - Trainers need to be motivated to reach more mothers, especially with regard to "outreach" (traveling to villages);
 - Caretakers require motivation to carry out EPI and ORT (oral rehydration therapy) appropriately and consistently and to transfer their EPI/ORT training to other parents in their villages;

- Explore a variety of motivational interventions for increasing training and learning behaviors, including:
 - The application of feedback strategies to motivate trainers;
 - The application of incentives (and goal setting) to motivate more outreach behavior among health workers.

BACKGROUND OBSERVATIONS

Background planning and work on the evaluation of the educational component of the Expanded Programme on Immunization (EPI) in public health clinics of Niger State began with field trips by two behavior analysis consultants in April and July of 1987. We met with staff members of the Federal Ministry of Health and local health clinics and discussed their current health education practices. We also visited clinic sites in urban and rural settings where field research could be conducted and observed health educators presenting talks to groups of mothers who brought their children to the clinics for vaccinations. These discussions and observations provided the basis for designing our intervention.

At the typical clinic, health education is carried out at scheduled times and in large groups. Although individual mothers arrive at the clinic with their children at varying times and might be seen by health workers at any time during the morning, they are required to attend the daily "talk" at a specified time. In general, the clinic experience at Minna and Kuta was typified by the following:

- Large groups-- As many as 100 or more mothers each with one or more children came to the clinics on days designated for vaccinations.
- Long waiting time-- Some mothers were at the clinic by 7:30 A.M. and most were not able to leave before 11:00 or 11:30 A.M.

A standard sequence of activities for all clinic attendees-- Mothers were first registered in large groups. Next, all babies were weighed and their growth monitored and charted. Third, children received their vaccinations. Then a standard health talk was given to the

whole group. Last, vaccination cards were returned to the mothers and they were free to leave the clinic.

- Lecture method used for health talks-- The health talks were one-way communications from a health worker with minimal involvement from an audience of 50 to 125 mothers with their children. Occasionally the groups would receive a demonstration (for example, how to mix the ORS solution) or invited to sing a song related to EPI or ORT.
- Much information covered in the health talk-- A single health talk usually included information about several of the following topics: EPI, ORT, growth monitoring, nutrition, family planning, and hygiene.
- Same information presented to all mothers-- No differentiation was made based on what a mother already knew about the health topics or how many times a mother had heard the same health talk.
- Very few visual materials used in presentations-- The only visual aids in the clinics were a few posters that were hung where most mothers could not see them.
- Lack of assessment-- No systematic effort was made to assess what mothers were learning from the health talks.

This structured, group-oriented approach to health education, although presented above largely in terms of its negative features, served a number of important purposes. The system allowed a clinic to deal with a very large number of women and children in an orderly fashion. It allowed the relatively small number of health workers to treat children's individual problems, to keep efficient records of their health status, and to present health information on a variety of subjects to all clients. Because mothers in this culture were familiar with the didactic training approach, they were willing to sit through a long lecture without complaint and join in group songs with enthusiasm.

We suspected, however, that the lack of interaction between clients and health educators, in particular, undermined mothers' attention and also their learning of the

material presented. Because the system had no way of assessing what mothers might be absorbing, health workers themselves could not judge to what extent their messages were getting across. In addition to our attempts to observe health education as it actually takes place in the clinics, therefore, we thought it was important to find out about the parents' perspective on this process. We accompanied a team of researchers including an anthropologist to several remote villages and interviewed mothers about their knowledge of childhood diseases, their preferred methods of treatment for the diseases, and whether they had ever taken their children to a health clinic.

These interviews revealed interesting information both about what mothers were learning and what they were not learning from the clinic experience. The interviews suggested that the average mother who had taken her child to a clinic did not remember important immunization-related facts normally presented in a health talk. Most mothers did not know the purpose of the vaccinations, the types of diseases prevented by the vaccinations, how many vaccinations were required to complete the sequence, or when they should take their child for the next vaccination in the sequence. However, many mothers could recall with great accuracy where on the child's body different vaccinations had been given (that is, forearm, thigh, drop in mouth, or upper arm). They were able to indicate this by pointing to certain locations on the body. When children had received several vaccinations, some mothers were able to point to the different body locations for each vaccination.

There may be several reasons the body locations for the vaccinations are particularly salient and easy to remember. In most clinics, a mother holds her own child while the vaccination is given. She naturally focuses upon the child's fear and reaction to the vaccination. If the location is on the thigh, the mother may need to move the child's diaper or clothes for access to the injection site. Later, the vaccination site may become swollen, there may be a discharge, or the child may rub the area and complain. These events may easily become long-term reminders of the body locations for clinic vaccinations.

DESIGNING AN INTERVENTION

We wanted to design an intervention that would take into account both the strengths and the weaknesses of the current health education approach and would increase mothers' learning of essential EPI facts, leading to increased vaccination coverage. Our discussions with the health clinic staff regarding potential strategies yielded a number of creative ideas. A review of past applications of behavior analysis to

problems in teaching and learning also helped us determine what procedures or strategies might be most relevant to teaching EPI in the clinic setting. Some of the ideas were derived from the work of Fred S. Keller, a psychologist who developed a special approach toward education referred to as the Personalized System of Instruction (PSI). Keller's approach recognizes that every learner is an individual with a different set of experiences and skills that can influence the learning process. In this system of instruction, complex material is divided into small units that can be easily managed. The learner masters each unit and receives feedback before proceeding to the next lesson.

When designing our education interventions for the Nigerian health clinics we considered the following basic principles of PSI:

1. Break the large amount of material into small "chunks" that can be learned sequentially.
2. Begin by teaching something that is simple yet important.
3. Encourage learners to become actively involved in the education process rather than allowing them to remain passive recipients of information.
4. Make the presentation of information as visual as possible.
5. Assess whether the learner has mastered the first small "chunk" of information before going on to the next step.
6. Use rewards or praise to motivate learning rather than punishment or penalties for failure to learn.
7. Provide feedback to the learner about individual progress toward specific goals.
8. Find ways for learners who have mastered the information to help other learners.
9. Use results from an objective evaluation of the educational methods as feedback or guidelines for improving subsequent procedures.

We described these principles as a "one step at a time" approach to teaching and used these as the basis of our educational intervention. Our strategy consisted of two basic parts: the design of several interactive visual aids which would support the "one step at a time" teaching principles, and training workshops for health educators in the two clinics to introduce the new materials and the new educational approach. We hoped to improve the content of the health talks, the degree of involvement of the mothers during health talks, and mothers' knowledge of EPI after the health talks. We therefore designed a study which would measure to what extent these goals were achieved by the two major aspects of the intervention. (See "Data Collection" below for a discussion of how these factors were measured.) The study was divided into four stages: 1) baseline data; 2) measurements of any changes in the clinics after the training workshops; 3) measurements of any additional changes after introduction of educational materials in the clinics; and 4) measurements of any changes after educational materials were temporarily removed.

Materials Development

The materials design team consisted of local artists, MOH officials, and consultants from the HEALTHCOM subcontractor, the Program for Appropriate Technologies in Health (PATH). The team decided to create three printed aids: a) a large (41.5 by 64 cm.) 13-page flipchart ("Facts About EPI for Families") with pictures to illustrate the information; b) a booklet that explains how to use the flipchart in a health talk following the "one step at a time" method; and c) a brochure with sequential illustrations that can be given to mothers as a reminder of what they have learned from the health talk.

The content of our primary teaching device, the flipchart, was guided by critical EPI messages as outlined by the Federal Government of Nigeria and by UNICEF. As a means for communicating those messages, however, we relied heavily upon keys to learning which the mothers found most logical--i.e., the body locations for the different vaccinations. The plan for the flipchart follows as closely as possible the features of "one step at a time" outlined above. The information about EPI is divided into small pieces. Each panel consists of one or more large drawings to illustrate that chunk of information. For example, some of the panels show: a) pictures illustrating the six diseases which can be prevented by vaccinations; b) pictures of a child receiving the different vaccinations at different ages to show how many visits are needed to complete

the sequence (for a total of five visits); c) illustrations of possible side effects of vaccinations; and e) the treatment of different side effects. The flipchart ends with several panels of drawings for use as a review or assessment of how much the mothers have understood.

The flipchart ideas were developed over a four-month period through the cooperation of many persons from a variety of agencies and with continuous testing among members of the target audience. It was particularly important that mothers identify with familiar cultural details in the illustrations so they would believe the messages applied to their own situations. In addition, the overall design and the individual pictures had to be clear to nonliterate people. The age of a child, for example, needed to be conveyed through distinct characteristics (such as a bandage on an umbilical wound) and the passage of time needed to be conveyed through culturally appropriate symbols (such as a series of moons to indicate the passing of months).

The initial design process coincided with a two-week materials development workshop conducted by PATH at the University of Lagos for ten representatives from the Federal Ministry of Health and from each of five state health departments. The workshop gave both health educators and artists an opportunity to study principles of design for nonliterate audiences and the methodology for health education materials development--including message refinement, pretesting, and revision. Participants worked on sketches for the flipchart as part of the workshop exercises. Nigerian artists who had attended the workshop then produced draft panels for the prototype flipchart. These drawings were pretested with three groups of five mothers each in a town clinic in Minna and with a group of 12 health workers in a rural community outside of Minna. This led to a series of revisions, primarily to help illustrate more clearly the different diseases and to convey the ages of a child receiving different vaccinations. The mothers also assisted in refining many other details regarding how children are usually held, bathed, and in showing the side effects children experience most often from vaccinations.

On the back of each flipchart panel is a brief text in large print to aid the health worker as he or she displays that particular drawing to the audience. The back of the first panel includes general information for use in giving the EPI health talk. It suggests that the "objectives" of the flipchart are to:

- a) Inform parents about immunization and the need to complete the series of five visits to fully protect a child, and

- b) Motivate parents to bring their children for immunization.

It also includes simple suggestions about how to use the flipchart:

- a) Stand so that everyone in the room can see the picture.

FACE THE AUDIENCE

- b) If the group is large, move around the room with the flipchart so that everyone can see the picture.
- c) Use the information on the back of each picture to begin conversation about the picture on the next page.
- d) Answer any questions the group has.
- e) After the health talk, give each parent a handout on when they need to return and what to do in case of side effects.

The text on the back of each individual panel indicates not only the facts to be conveyed by the illustration(s), but possible ways to initiate discussion among mothers. The back of the six "disease" drawings, for example, displays the following brief paragraph:

Diseases prevented by each immunization or clinic visit: Ask mothers to describe (based on personal experience) the diseases pictured. (For example, do mothers know anyone in the community with polio or TB?)

The user's guide follows very much the same format as the flipchart. Alternating pages in the book exactly parallel the panels of the flipchart. The facing pages provide basic information on the content of each illustration, together with more detailed suggestions for interactions with mothers than are supplied on the flipchart panels.

The drawings used in the flipchart also appear in the brochure to be given to mothers as they leave the clinic. The six-panel brochure uses pictures to convey the essential EPI messages, including the immunization schedule and possible side effects and treatments. The text consists of very simple headings. Health workers pointed out that

traditional beliefs indicate pregnant mothers should not look at anything unpleasant, so the illustrations of the six deadly diseases are not included in the brochure. This handout, like the heavy paper flipchart, is drawn in simple brown and white line drawings with some color (primarily blue and yellow) added for emphasis.

Data Collection

Simultaneously with designing the materials, we planned our four waves of data collection. The baseline data were collected over three weeks, beginning in August of 1987 and ending a month before our training workshops took place. We conducted the study with the help of three Nigerian research assistants, instructors at the College of Education in Minna, whom we trained to make and record careful observations of specific clinic activities. However, we did not explain to our data collectors any of our experimental hypotheses. After several visits to the clinics at Minna and Kuta, the procedures for observing health talks and interviewing mothers were sufficiently refined to obtain reliable baseline data.

The three researchers visited both clinics each week and directly observed health talks using a checklist to record the topics and information included in the clinic health talks. They also recorded the number of times mothers became actively involved or responded in some manner during the health talks. (For purposes of observation we categorized five different kinds of "involvement behavior" including singing, clapping, questioning, answering, and showing.) The occurrence of specific behaviors during consecutive five-minute intervals were recorded. After each health talk, the research assistants also conducted individual interviews with approximately ten mothers selected at random from the audience to assess what they had learned from the talk. Questions pertained primarily to the number of clinic visits required for a complete immunization series, the general purpose of immunization, and the diseases prevented by vaccinations given at different body locations. The interviews consisted of a 25-item questionnaire, which a research assistant covered with the mother in her preferred language (Hausa, Gwari, or Nupe) with the help of a translator, when necessary. (The researchers spoke both English and Hausa and were familiar with other local languages.) Each interview took approximately ten minutes. As an incentive, each participating mother received a plastic 3 mil. spoon, supplied by UNICEF, used for mixing oral rehydration solution. During the baseline period the research team recorded information from 16 health talks (eight at each clinic) and interviewed 201 mothers.

Training Workshops

Our next step was to design a three-hour workshop for the entire staff of each intervention clinic. The primary goals of the workshops were to present "one step at a time" as an innovative approach to public health education, to obtain feedback from the health workers about the appropriateness of certain "one step at a time" techniques, and to discuss potential ways the new methods could be implemented in the clinics. Another important goal was to introduce the health workers to the draft educational materials and to solicit suggestions for further improving them. We wanted to offer the new ideas and materials in a positive atmosphere, and we wanted the health workers to feel and be integral to their adoption in the clinic. At the same time, we wanted the health workers to understand the need for innovative strategies. We therefore planned to include in our workshop an explanation of the general results of our first round of data collection--i.e., the baseline observations of health talks in their own clinics. Our purpose and tone was to use these data to explain the scientific basis of the new educational approaches, rather than to criticize current practices.

Nineteen participants attended the HEALTHCOM workshop at the MCH clinic in Minna. This included all of the clinic staff plus several officials from the Niger State Ministry of Health. The workshop in Kuta was attended by 25 health workers, including a few officials from the Local Government Area (LGA). Both workshops were divided into four major sections. The first section was an introduction to issues in health education, with an emphasis on various realities of the clinic setting--who the target audience is, what the environmental difficulties are (e.g., large groups, many distractions), what degree of feedback with participants is possible, and what amount of learning and diffusion of information can be expected. This section of the workshop provided an opportunity for much interaction with the participants, who could offer examples from their own experience.

This overview discussion of clinic activities led logically into part 2 of the workshop: a discussion of actual observations in the Niger State clinics. One of the behavior consultants reviewed the three kinds of information collected in the baseline survey. He pointed out what kinds of educational messages were being conveyed well by the health workers and what kinds of messages were being conveyed less well. The group was praised for those areas in which they were reaching mothers, as evidenced through the actual data. The consultant also explained a table showing percentages of mothers listening or participating during the health talks. The overall theme of this portion of the workshop was the importance of providing feedback to mothers during the learning process.

Part 3 of the workshop introduced the innovative training approach of "one step at a time." Using the analogy of a child who must learn to walk by taking small steps and receiving constant encouragement, the trainer explained how important information about EPI can be broken down into small pieces. An overriding theme of this session, once again, was the need to engage mothers actively in learning. We encouraged health educators to ask many questions while presenting information. If a mother answers correctly, she should be praised (Nigerians typically clap hands as a sign of approval). Answering questions keeps the learners actively involved and provides valuable feedback to the teacher.

Part 4 of the workshop introduced the new educational materials and demonstrated, through example and through role playing, how the flipchart could be used to put "one step at a time" into practice. During this session the participants were also invited to examine and react to the illustrations and to suggest revisions. During the role playing sessions we challenged the participants to find participatory approaches to using the information mothers felt comfortable with--i.e., the body sites for the vaccinations. For example, mothers might be asked to point to locations on their bodies for the five vaccination sites: first, BCG on the forearm; second, DPT in thigh and polio drops in the mouth. This same action is then repeated for the third and fourth visits. The fifth visit requires only the measles vaccination in the upper arm. When a whole group acts out this sequence, it looks like a dance. We challenged the health workers to incorporate these movements into the EPI song that they already sing.

The workshops were presented according to the features of "one step at a time," as outlined above. In other words, we divided the sessions into small parts, started with something easy, got the participants actively involved, and assessed the participants' understanding of each component by giving short quizzes. Then, we gave immediate feedback based on the participants' mastery of the learning objectives. Thus, the training experience for the health educators became a demonstration of how this educational approach can be implemented. We believed that the health workers would learn more by experiencing the "one step at a time" method than by simply being told about it. At the end of the workshop we conducted a graduation ceremony and gave participants graduation certificates.

MEASURING RESULTS

Immediately after conducting the two health education workshops in Minna and Kuta the research assistants collected their second wave of data. They observed a total of ten health talks (four at Minna and six at Kuta) and interviewed 103 mothers.

In the meantime, artists made further changes in the flipchart illustrations as a result of recommendations by the workshop participants. In November, the revised flipcharts were delivered to the clinics for use during the EPI health talks. Each clinic received one draft flipchart. The research assistants then spent an additional 17 days collecting data--observing a total of 11 health talks (five at Minna and six at Kuta) and interviewing 99 mothers. The flipcharts were used in each of the observed health talks during this period.

The flipcharts were removed from the clinics at the end of the month for further refinements and final production. The research assistants then collected their last waves of data (in January and April of 1988). They observed a total of 11 health talks (six at Minna and five at Kuta) and conducted 174 interviews.

We can divide the results of our study into three categories: what health workers presented during the health talks, how much mothers were involved in the talks, and what mothers learned. The observations at the clinics and the data collected showed that after the workshops, and moreso after introduction of the flipcharts, the health workers' coverage of critical information increased, the mothers' participation in the talks increased, and finally their overall knowledge of immunization increased significantly.¹ Moreover, we found that the content of health talks and the information learned by mothers dropped slightly after removal of the flipcharts, but remained higher than during the baseline period. This indicated some residual effect of the intervention upon health worker/mother interaction, but also demonstrated the need for continuing reinforcement of the new behaviors.

We found little difference between the results at the two clinics and can make generalizations across sites. The most dramatic effect of the intervention upon health workers' presentations during the health talks was on their discussions of the occurrence and treatment of side effects. Information presented rose dramatically from the baseline period to the flipchart phase and continued to increase after withdrawal of the flipcharts. (This subject is particularly important in Nigeria; a recent survey showed that 20 percent of African mothers reported that a child had had a reaction to a vaccination. Misunderstandings regarding such reactions could have a dangerous impact upon a community's willingness to immunize its children.) Discussions about where and when to

¹Data are available in "Immunization Education in Nigeria: Evaluation and Improvement of a Clinic Program" by Geller, Lehman, Graeff, & Rasmuson, 1989. (unpublished)

get vaccinations also rose continuously throughout the intervention, but fell off slightly after removal of the flipcharts. Discussions about the names of the diseases prevented by immunization rose only slightly after the workshops, but rose significantly with introduction of the flipcharts and then dropped precipitously afterwards.

We did not record specific types of "involvement behavior" by mothers during the baseline phase, because the only observed interaction occurred when mothers sang the standard EPI song at the end of the health talk. However, the overall level of involvement during the EPI portion of the talks rose dramatically with the workshop, remained high throughout the flipchart phase, and dropped by about 50 percent after removal of the flipcharts. Interestingly, both "active" and "responsive" kinds of behaviors by mothers were more common during the EPI portions of the talks than during the ORT portions. This remained true even after removal of the flipcharts. The fact is noteworthy because the ORT presentations include demonstrations of mixing and are by nature somewhat interactive.

According to the results of the individual interviews, mothers' overall knowledge of immunization-related information rose consistently from stage to stage throughout the intervention, and fell off slightly after the flipcharts were removed. Mothers' knowledge of which diseases are prevented through immunization and the number of vaccinations required increased from the baseline, to the workshop, to the flipchart phases. This was not true for their knowledge about the purpose of immunization. We speculated that this may have been a result of the greater time spent in the health talks on vaccination side effects and treatments--a subject our workshop and flipchart both treated in some depth. Unfortunately, we did not measure mothers' knowledge about vaccination side effects.

REFLECTIONS AND NEXT STEPS

We can certainly view the results of this intervention as a "success" in the short term. The combination of new materials and new opportunities for training improved the health workers' interactions with mothers and increased mothers' knowledge about immunization. We also saw, however, that these benefits started to drop off soon after removal of the flipchart. To be effective over the long term, educational strategies must become self-sustaining and old habits need to be replaced with new ones.

In retrospect we can see that not all of the nine features of the "one step at a time" approach to public health education were fully implemented by the clinics in this study. The first six features were addressed to a certain extent by the way in which the

flipcharts were designed to be used. The brochures provided a way to extend what a mother has learned to other learners (feature 8 of the principles). Specifically, a mother could take the brochure to her village and show the pictures to the other mothers. So far there has been no assessment of whether the brochures are actually used in this way or how accurately the information is transmitted beyond the clinic.

The two features of "one step at a time" that seemed least well implemented were the ones involving feedback (features 7 and 9 of the principles). The idea of using performance feedback to guide future behavior appeared novel to the health workers when it was explained during the workshops. We suggested that if a mother masters part of the material on the flipchart during one clinic visit, there might be some way to indicate such mastery on her child's vaccination card. This information could then be used to tailor health education presentations to different groups. The clinics have not yet developed a method of recording progress and providing feedback to mothers. The difficulty may be that such an approach would require a degree of individualization that the clinics are not prepared to handle at this point. Using results from an evaluation of educational methods as feedback to revise educational procedures (feature 9) is another "step" in the one step at a time model that is currently beyond the resources of the average clinic.

The workshops in Minna and Kuta were only the first in a series of training experiences planned for the Zone C states (all in northern Nigeria). They served as an opportunity to test and refine materials, and to evaluate the probable success of a new training approach. Several months later these "study" workshops were followed by a number of workshops for supervisors and health workers. The first of these was held in January of 1988 for 40 medical officers and health education supervisors in Niger State and six neighboring states. This training-of-trainers (TOT) workshop took place over a period of a week and focused on the development of action plans for extensive immunization education efforts in the participants' states. The one-step-at-a-time methodology, together with the finished flipcharts, users' guides, and brochures for mothers, were introduced to these high level participants. Afterwards, the newly trained health education supervisors held a series of smaller workshops during March and April in their respective local government areas in Niger State and neighboring states to disseminate the new materials and training approach to the clinic level. The facilitators of the TOT workshops assisted in planning and conducting the local training.

Whereas it would have been difficult to observe systematically the impact of these many local workshops, our "study" gave us a basis upon which to predict the

effectiveness of the new training. It gave the designers a chance to test their materials in a natural clinic setting, and it gave communication planners insights into the longer-term challenges of encouraging feedback and outreach in the health education process.

We may be tempted to wish that the whole public health education system could be influenced positively and all the features of "one step at a time" be implemented at once. But then, that would not be in keeping with the "one step at a time" philosophy. We should be satisfied if certain aspects of the methodology were adopted on the first try, and then accept the challenge of helping to implement the next step toward optimal health education in the clinics. Certainly, we must attempt to practice what we preach!

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