Results of the HEALTHCOM Evaluation in Zaire
Lubumbashi, 1988-1990

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RESULTS OF THE HEALTHCOM EVALUATION IN ZAIRE
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ABBREVIATIONS

AED  Academy for Educational Development
ASC  Annenberg School for Communication
CCB/RCB Central/Regional Coordination Bureau
CCCD Combatting Childhood Communicable Diseases
CIHDC Center for International, Health, and Development Communication
EPI  Expanded Programme for Immunization
FONAMES Fonds Médico-Sanitaire
HEALTHCOM Communication for Child Survival
IEC  Information, Education, Communication
KHZ  Kabongo Health Zone
MOH  Ministry of Health
ORS  Oral Rehydration Salts
ORT  Oral Rehydration Therapy
PHC  Primary Health Care
RHZ  Ruashi Health Zone
SANRU Projet de Santé Rural (Rural Health Project)
SNCZ Société Nationale de Chemin de Fer du Zaïre
SSS  Water/Sugar/Salt Solution
USAID United States Agency for International Development
1. EXECUTIVE SUMMARY

1.1 Project Objectives

The HEALTHCOM project in Zaire was designed to strengthen IEC (Information, Education, Communication) capacities of health projects at the national, regional, and health zone level. The major thrust of project activity was at the level of health zones. Two health zones were chosen as pilot zones in order to demonstrate the effectiveness of a systematic approach to health communication which uses research to develop and pretest appropriate messages and a combination of interpersonal and mass media channels to deliver them. Both of these zones were located in Shaba province in the southeastern part of the country. The two domains chosen for particular focus in health promotion were diarrheal disease and immunizations.

1.2 Project Activities

During the project the Resident Advisor, Joan Schubert, assisted in the development of IEC strategies for health promotion at the national level with the staff of FONAMES (Fonds National Médico-Sanitaire), EPI (Expanded Programme on Immunization), SANRU (Soins de Santé Primaire Rural), the School of Public Health and USAID. On the regional level, the project established a regional office in Lubumbashi under the supervision of the Regional Medical Inspector of Shaba province. Among project activities with a regional involvement was a workshop for professors of 16 nursing schools in Shaba to show them how to plan an IEC strategy and how to include this strategy in their courses. The project also carried out qualitative research concerning knowledge about AIDS in Lubumbashi in collaboration with the AIDS project of the RCB (Regional Coordination Bureau).

Most of the project attention and resources, however, were focused on activities in the two pilot health zones. In Kabongo Health Zone (KHZ) the project trained a team of health workers in planning and implementing an IEC strategy for a health zone and provided assistance in organizing focus group discussions about ORT and EPI programs.

The project carried out numerous activities for the Ruashi Health Zone during the two years of operation. Among the most important activities were the following:

1) a three-week workshop for staff in the Ruashi and Kabongo zones to instruct them in how to provide IEC, management of diarrhea, and immunization information;
2) one-week instructional workshops in health education for the health workers in Ruashi;
3) brief training sessions for community volunteers (Mamans Tengeneza);
4) development of written training material for teaching ORT in health centers;
5) development and distribution of an immunization calendar for the health centers;
6) a two-week workshop for radio journalists and social mobilizers on the production of messages for the immunization campaign;
7) the development of immunization material for the EPI immunization campaign, and the diffusion by radio (Voice of Zaire), of mass media spots for the same campaign.

During the life of the HEALTHCOM project in Ruashi, project directors gave priority to the training of health workers in IEC planning and implementation, and to the development of print materials on diarrheal disease and immunization. There was a limited use of the media in health promotion except for the EPI campaign at the end of the project. Print materials developed for treatment of diarrhea were not distributed because of ambiguities in overall ORT strategy. However, HFALTHCOM did provide the advertising materials for the special immunization days for the city of Lubumbashi in 1990, including radio and television spots, as well as EPI calendars and posters.

1.3 Evaluation Plan

This evaluation report should not be considered as a full and complete evaluation report for the project in Zaire. The text describes only the results of the two baseline surveys and the training of community volunteers in Ruashi Health Zone. The limited time and funds made available made it impossible for the staff of the CIHDC (Center for International, Health, and Development Communication) to visit Kabongo or complete the evaluations of the training activities in Ruashi Health Zone (RHZ).

The evaluation planned included three main types of research activities:

1) formative research in the initial stages of the project;
2) monitoring the results of training activities in Kabongo and Ruashi Health Zones;
3) doing a baseline and a follow up survey in the city of Lubumbashi.

The formative research results were used in the development of messages on diarrhea and immunization and in the formulation of questions for the baseline survey instrument. The effects of the training of health workers from RHZ were monitored by observing their performance before and after training. Information about the performance of the community volunteers trained in RHZ was obtained by interviewing the participants. Program impact on the population was evaluated with data from the two household surveys conducted in the city of Lubumbashi.
1.4 Results: Immunizations

Project activities within RHZ related to immunization promotion consisted of training nurses from health centers to improve the quality of giving health talks about EPI, of training community volunteers to encourage women to attend under fives clinics on immunization days, and the development of distribution of EPI posters for health centers in Ruashi and the city. In addition, the core group of RHZ supervisors received training in IEC strategies using EPI as an example. For the city of Lubumbashi, the project conducted the advertising campaign for the special immunization days of August, September and October of 1990. Materials and messages included television and radio spots, distribution of 1,000 calendars, and posters and murals for use by health centers.

There was a slight improvement in knowledge about immunizations in Ruashi Health Zone (RHZ). On two of the knowledge items, a statistically significant increase was found. This increase could be the result of improved health talks in health centers and the distribution of print materials in the RHZ.

However, the results of the two surveys for the entire city showed that there was no change in overall knowledge of immunizations in the city of Lubumbashi. The same series of questions concerning knowledge about immunization was posed in 1989 and 1990 with virtually the same results. The questions asked what were the first and last vaccines and at what ages were they given as well as the purpose of immunizations in general. In 1990, 61% knew the name of the first vaccine, 77% knew the name of the last vaccine, and 81% knew that immunizations were given to protect children from disease.

The 1990 survey showed a small increase in immunization coverage in the city according to both sources of data used: verbal reports of mothers and immunization cards. For each vaccine, the proportion of people having received the vaccine increased between 3% to 5% according to mothers' verbal responses and between 0% to 3% according to the immunization cards. Even if the differences are not statistically significant, one sees a small increase, an upward trend. Evidence from all sources combined indicates that in 1990, about 65% of children 12 to 23 months old were completely immunized. That constitutes an increase of about 5% over the 1989 figure.

Although immunization coverage rates improved only slightly from 1989 to 1990, some health zones improved more than others. More improvement was found in Ruashi Health Zone than in the other four health zones of the city. The rate of completed immunizations for children 12 to 23 months old increased from 57% to 71%, a larger increase than in the other health zones of the city. In addition, proportionally more children were immunized during the special campaign in Ruashi than elsewhere. We believe that
the improved performance, albeit small, can be attributed to the efforts of the community volunteers during the special immunization days when they worked for the EPI campaign.

Since HEALTHCOM developed and distributed EPI materials in support of the special campaign in Lubumbashi, it was thought that exposure to those messages may have been associated with higher levels of coverage. No association between having heard the radio spots and knowledge of immunizations or immunization status were found. One must remember that only some of the 30 radio spots produced by HEALTHCOM were ever broadcast, and those were heard for two weeks in July and less time in August. Thus the lack of association is hardly surprising.

Overall, the special campaign produced only a small effect in Lubumbashi. The EPI program had problems with uncertain sources of funds, passive social mobilizers, unhappy staff, and political rumors that discouraged participation. The size of the effect when compared to the investment raises questions about the wisdom of the strategy.

1.5 Results: Knowledge and Use of ORT

HEALTHCOM developed print materials about ORT for distribution, it trained nurses in how to plan and implement discussions about ORT with mothers, and it taught community volunteers how to use ORT for diarrhea. Very few print materials were distributed, however, because the project was asked to wait for further instructions from Kinshasa and Washington before continuing. Therefore, it is not surprising that the level of knowledge about SSS in the city of Lubumbashi did not change during the time between the two surveys. The 1990 study showed a small increase in the number of mothers who gave the correct recipe for SSS, but this difference is not statistically significant.

When the knowledge about SSS is examined separately for each health zone, however, one finds that in the Ruashi Health Zone, the percentage of people who have ever used SSS is higher than in the other health zones of the city. This difference is statistically significant. Likewise, in both the Ruashi and Kampemba health zones, the percentage of mothers who knew the correct mixing instructions is higher than in the other zones. It is likely that the project interventions increased the number of people with correct knowledge in Ruashi, but since we do not know why the percentages would be higher in Kampemba as well, we cannot be sure about attributing the change to project activities.

As for the use of ORT in the entire city of Lubumbashi, the second survey did not show any change over the first survey. This is not surprising because there was no special campaign at the city level. When one compares the results of ORT use at home by health zone, one sees a significant increase in the
Lubumbashi and Ruashi zones. One would like to say that this represents an increase due to project interventions in Ruashi, which may be the case, but we cannot explain why there was also an increase in the Lubumbashi Health Zone.

The results regarding ORT confirm the comparability of the two samples of the surveys and show the current level of knowledge and use of ORT. The experience of Ruashi Health Zone with regard to ORT suggests that intense interpersonal training may produce changes in behavior among a small number of people in a short amount of time.

1.6 Results: Training of Personnel

The HEALTHCOM project was asked to work in Lubumbashi in a context with no personnel or any infrastructure devoted to health education at the regional level. At the level of Ruashi Health Zone (RHZ), however, the zonal supervisors constituted a core group of health care staff who collaborated with the project. The medical officer in charge of the RHZ served informally as a counterpart to the Resident Advisor throughout the project, since FONAMES failed to provide a formal counterpart except for the first month of activities.

It seemed logical, therefore, to begin with a program that emphasized training of personnel. Many health workers, health educators, and social workers received several weeks of training in the planning and implementing of IEC activities. These individuals came mostly from Ruashi and Kabongo Health Zones, but others came from various agencies around Lubumbashi. As a result, there are a number of people with experience in message development and pretesting for health education scattered throughout the city, but no central organization to bring them together. Without some central agency to support IEC activities, the effects of the training could be lost.

The project also conducted two-week IEC training workshops and provided curriculum materials to 32 teachers from schools of nursing in Shaba region. While this component was not evaluated by the CIHDC, the immediate post-training evaluations conducted by HEALTHCOM were extremely positive with most participants reporting their intention to integrate health communication into their curriculum. It thus seems plausible that this activity will have a lasting impact in the region.

In Ruashi Health Zone almost all of the nurses (28) working at health centers received one week of training in discussing health education issues with mothers about EPI, ORT, and nutrition. Most of these persons were observed giving health talks before and after their training. No consistent patterns of
improvement were found, although certain individuals gave lessons more accurately and engaged the
group more fully in following discussions after training. There are two reasons for this. Most
fundamentally, it takes much more than one week of training to change health service delivery, including
giving health talks. Changing the way health education is given requires not only longer term training,
but also time to absorb feedback and supervision. Less important, judging from a brief visit during the
session, the second round of training directed by the trainees from the first round suffered from
organizational problems.

HEALTHCOM also trained a group of community volunteers (Mamans Tengeneza) in Ruashi to visit
homes and talk about SSS and immunizations. Judging from the enthusiasm of the community volunteers
after five months of activity, it appears as though the Maman Tengeneza project has been successfully
initiated. The volunteers expressed great satisfaction at what they had learned from the supervisory staff
of the Ruashi Health Zone. The women have clearly been active in talking to their neighbors about the
health of children. They all expressed the desire for more training on health issues and some financial
assistance.

The conversations held with these women indicated there were three domains that remained somewhat
ambiguous in the minds of the volunteers: their basic role, their relation to the health workers in the
health zone, and the possibility of financial assistance in order to continue in the long run. These points
must be addressed if the project wishes to continue in the long term.

1.7 Comments

The Ruashi Health Zone carried out most of the intervention objectives that it programmed in the
implementation workshop of January 1989. The proposed training exercises were completed, instructional
materials were developed, and the advertising campaign for the EPI program was done. Only the
materials were not distributed and assistance to the AIDS campaign was limited to doing focus group
discussions. With regard to the objectives, the immunization coverage objective was reached in Ruashi,
but not the goal for diarrhea management.

The HEALTHCOM project in Zaire trained several dozen people in planning and implementing IEC
strategies for health promotion. These persons belong to many different organizations and thus do not
often work together. These persons have participated with great enthusiasm and attention in workshop
exercises. Unfortunately, without a common institutional base, the skills acquired may well dissipate as
they respond to daily demands.
In Ruashi, the one place with a common institutional base, the RHZ, the group of supervisors may be able to continue health education with an awareness of the audience as primary, a principle learned in project workshops. The Chief Medical Officer (Médecin Chef de Zone) of Ruashi, HEALTHCOM's de facto counterpart in Shaba, has become a knowledgeable and enthusiastic supporter of health communication and who would continue his support in the future if such an opportunity were presented. However, the possible impact of the work of the supervisors is limited, for the health zone does not have the resources to support basic follow up and supervision after training activities.

2. BACKGROUND

2.1 HEALTHCOM in Zaire

In 1982 the government of Zaire adopted a plan for medical services giving priority to Primary Health Care in the organization of medical services that were to be delivered through a decentralized structure comprised of 306 rural health zones. When the Ministry of Health asked for assistance from the United States Agency for International Development (USAID) in developing its capacity for planning, implementing, and evaluating health programs in the areas of health education and information, USAID proposed the HEALTHCOM project to the government.

The HEALTHCOM project, financed by USAID and administered by the Academy for Educational Development (AED), began activities in Zaire in August 1988. The project was to work with the Ministry of Health on several levels: the national level, the regional level, and at the level of health zones. At each level the project’s goal was to improve the capacity of the health staff to produce and diffuse health education messages effectively.

HEALTHCOM's implementation plan described four main types of activities for the project. First, the project was to show how to conduct research in the communities to examine the knowledge and attitudes of the population regarding important health problems. Second, the project was to assist the Ministry of Health (MOH) in applying principals of social marketing to promote the child survival services offered by health centers. Third, the project sought to show how monitoring and evaluation could be useful in the long-term planning of health services. Finally, the project proposed to help the MOH to improve its use of information concerning the functioning of health services to enhance the efficiency of the health system.

During the first two years the project was to address the problems of diarrheal diseases and immunization of young children. The project chose two pilot zones for the most intense activities: Kabongo, a rural
zone, and Ruashi, a semi-urban zone. Kabongo is a health zone located in northern Shaba province, while Ruashi is a health zone on the periphery of the city of Lubumbashi, the capital of Shaba. The technical advisor of the project was based in Lubumbashi in order to better direct the activities in the two Shaba zones.

At the national level, HEALTHCOM worked closely with the IEC office of FONAMES (Fonds Médico-Sanitaires), the organization within the MOH responsible to oversee all health projects in the country. Personnel from that office participated in the planning of project activities at national, regional and zonal levels. For implementation, HEALTHCOM worked most closely with the Projet Elargi de Vaccination (PEV, or EPI), the project responsible to promote immunization. Although the PEV invested much of its resources in vaccination promotion, within PEV was another section called Luttes Contre les Maladies Diarrhéiques (LMD), which promoted the use of ORT for diarrhea.

2.2 HEALTHCOM in Shaba

HEALTHCOM had a small but potentially crucial plan for operating at a regional level in Shaba province. The project was attached to the office of the Regional Medical Inspector so that it might assist some of the Shaba health zones in planning their health education programs. The project organized a workshop for the professors of nursing schools in Shaba. The goal of this workshop was to introduce IEC (information, education and communication) activities into the nursing school curriculum. It was also expected that a library with material concerning IEC and primary health care would be established in the HEALTHCOM office in Lubumbashi.

Within Shaba province the project worked in both Kabongo and Ruashi Health Zones. The initial implementation workshop and those for IEC training of nurses brought the personnel of both zones together. Little will be said about Kabongo in this report, since Ruashi received far more attention and lack of resources prevented our inclusion of Kabongo in the final evaluation visit.

2.3 HEALTHCOM in Ruashi Health Zone

As one of the two pilot health zones, Ruashi Health Zone was the focus for much of the activities HEALTHCOM. The implementation plan for the Ruashi Health Zone, written in January 1989, described the following interventions to be completed by August 1990.
1. Training of 28 health agents in immunization and treatment of diarrhea.
2. Training of 40 community female volunteers to provide education to mothers about immunization and diarrheal disease in their own neighborhoods.
3. Development of instructional materials to be used for teaching the principles of immunization and management of diarrhea, and the distribution of this material to health centers.
4. Support for the three-phase immunization campaign in Lubumbashi by providing print materials and mass media advertising.
5. Assistance to the AIDS project as requested in research and the development of mass media materials.

The same plan described two principal objectives that the Ruashi zone should try to attain with the interventions before the end of the period.

1. Increase from 15% to 50% the proportion of mothers who know how to correctly prepare the water/sugar/salt solution (SSS) for diarrhea.
2. Increase the percentage of immunization coverage for 12 to 23 month old children from 50% to 70%.

The actual interventions of the HEALTHCOM project in Ruashi Health Zone were of three types: training of health care workers and volunteers, formative research, and health education of the public through print and radio. In the period from August 1988 to August 1990, 27 health workers (nurses) were trained in IEC related to EPI and ORT, 37 community volunteers (Tengeneza mothers) were trained to talk about health in their neighborhoods, print materials for the treatment of diarrhea and immunization information were developed, and radio messages about EPI were produced for broadcast. The diarrhea materials were not distributed, in part due to ambiguities in the strategy for the promotion of ORT. On the other hand, the project developed and tested a poster of the immunization schedule which was later distributed to health centers. The project also organized a major workshop for the training of trainers in using IEC methods for health promotion. A number of health workers from Ruashi and Kabongo participated in that workshop.

The project conducted the advertising campaign for the special immunization days of August, September and October of 1990. This included two television spots, 1,000 vaccination calendars, 175 copies of posters promoting immunizations, six large vaccination wall murals for health centers, and 1,000 campaign T-shirts. In addition, 30 radio spots were produced with the Voice of Zaïre for broadcast just before the campaign began. The project also organized a series of qualitative research activities.
concerning diarrhea, immunizations and AIDS which provided useful information for the preparation of messages addressed to the public.

2.4 Evaluation Report Objectives

This report is not a complete and final evaluation of the HEALTHCOM project in Zaire. Because of limited funds under HEALTHCOM I, and because HEALTHCOM was to be continued in a second phase after August 1990, the CIHDC was asked to limit their data collection and analysis to basic results from a follow up survey. Therefore, this evaluation focuses on indicators from the knowledge and behavior changes that occurred in the overall population, and has relatively little to say about the effects of the training activities (workshops) organized.

Among the many activities of the project in Lubumbashi (and notably in the Ruashi health zone) in 1989 and 1990, one can cite two interventions which targeted the general population: the training of community volunteers (Tengeneza mothers) in Ruashi, and the mass media spots with the EPI staff (Expanded Programme on Immunization) for the immunization campaign throughout the city. Most of the results reported here concern those two interventions.

Data used for this report were gathered in March 1989 and during a two month period in Lubumbashi in October and November 1990. The timing of the second survey was a compromise between the need to evaluate a project that had terminated a first phase in August, and a delayed EPI special immunization program that HEALTHCOM supported by doing the advertising in the city of Lubumbashi.
3. EVALUATION PLAN

3.1 Evaluation Issues

The HEALTHCOM project was designed to work at three levels in Zaire: national, regional and health zone. The national and regional activities consisted largely of promoting awareness of the importance of IEC in health services by the frequent participation of HEALTHCOM in workshops and discussions. At the level of health zones, however, the project planned a series of training workshops and health education interventions concerning ORT and EPI for the public. Therefore, the staff of the CIHDC decided to focus the evaluation at the level of the two pilot health zones, Kabongo and Ruashi.

The health promotion activities in Kabongo Health Zone (KHZ) were aimed primarily at health service providers. Since this health zone had just been established, the first priority of the zone was retraining its health care staff. HEALTHCOM agreed to assist the KHZ in training its nurses in IEC related to ORT and EPI, and to provide materials and guidance for the training of village health workers organized by SANRU. The CIHDC planned a visit toward the end of the project to interview personnel about the impact of the project on their performance and to collect health center records on their health education activities.

In Ruashi Health Zone (RHZ), project activities involved both the training of health worker personnel and direct health education directed at the public. The training workshops usually involved personnel from other health zones in addition to Ruashi. Since some of the promotion of ORT and EPI was to occur in the city of Lubumbashi as well as in the RHZ, evaluation research was not limited to the RHZ only.

The evaluation plan for the RHZ and Lubumbashi involved three major components: formative research in Lubumbashi, monitoring of training in Ruashi, and a baseline and follow up survey in the city of Lubumbashi. The formative research was conducted in three different health zones of the city. The observations of health talks occurred only in Ruashi, since only RHZ personnel were trained in the specifics of giving health talks about ORT and EPI. The baseline and follow up surveys were conducted in the entire city rather than in Ruashi only for two reasons: changes in the RHZ with no changes in adjoining zones would provide stronger evidence of program impact, and the mass media interventions of the project (radio, TV, print) would be diffused throughout the city.

3.2 Research Activities

Three major research activities for formative purposes were conducted early in the project: a study of how diarrheal disorders are diagnosed in Swahili, a workshop on conducting focus group research, and
a baseline survey on knowledge and practices related to diarrhea and EPI in Lubumbashi. The study of local diagnosis of diarrhea was done in order to provide the project information about what kinds of illnesses to address in the development of messages and how to formulate questions for the baseline survey. In this study a Zairian anthropologist and assistants interviewed 39 small groups of women in Swahili about their knowledge of childhood illnesses. The workshop on focus groups, carried out with the Resident Advisor, trained a team of social mobilizers from the city of Lubumbashi to conduct focus groups related to diarrheal disorders and immunizations. Members of this group later assisted personnel from Kabongo to conduct focus groups in KHZ as well as conducted focus groups about AIDS in Lubumbashi. Finally, a baseline survey of mothers with young children was conducted to determine what treatments were chosen for diarrhea and what they knew and did about immunizations. Information from the survey was used in the development of messages about treatment of diarrheal disorders and in planning for the EPI campaign.

In addition, the CIHDC supervised a study by a university professor of how women in Ruashi spend their time and where they most often meet to identify possible channels for interpersonal communications, as well as a study by medical students of the medical services, including health education, that were available in the health facilities of the Ruashi Health Zone.

The project conducted two major training workshops for health care personnel in Lubumbashi. One was a three-week training of trainers workshop for health workers from Ruashi, Kabongo, the EPI program, and the social mobilization team of the city. This workshop focused on the management, planning and implementation of IEC activities related to EPI and ORT. The impact of this workshop was not evaluated per se. The second workshop, organized in two stages, was to train all nurses in Ruashi to improve their style of giving health talks in health facilities. To evaluate the impact of this training, the CIHDC organized, along with AED, a series of observations of health talks before and after training. Observers already trained in survey work by the CIHDC were hired to conduct the observations with a short protocol that measured the accuracy of message content and involvement of the audience in the presentations.

It should also be mentioned that HEALTHCOM organized a training workshop for teachers of nursing schools in Shaba province in order to assist them in introducing IEC materials into their curriculum. In this way the project trained 32 nursing teachers in two phases.
4. SURVEY AMONG WOMEN OF LUBUMBASHI

4.1 Sampling

For the 1989 baseline study, the research team chose a sample of households in the city of Lubumbashi from statistics obtained from ward (quartier) leaders on the city population. This sample was chosen from the population living within the administrative limits of Lubumbashi, including the peripheral zone (zone annexe). Having decided to interview women from 75 different clusters, this number of clusters (cellules) were chosen at random from the total population (640,650). For the 1990 study, the clusters selected in 1989 were again used in order to assure a good basis for comparison. Therefore, the women interviewed during the second survey were from the same clusters as those of the baseline survey. The only exception was the nine clusters moved from Katuba Health Zone to Ruashi Health Zone, which produced a slight over-sampling for Ruashi.

The demographic characteristics of the populations by cluster in 1990 and 1989 were compared to check on possible biases. No significant differences were found in the two samples.

4.2 Training of Interviewers

The training team spent two weeks in the Régideso Centre in order to teach twenty interviewers the principles of survey research and how to conduct interviews. A great deal of time was also spent on the questionnaire to be certain that it was written in the Swahili spoken in Lubumbashi. Role playing with interviewing and responding was use extensively in the training in addition to a thorough pretesting of the questionnaire.

4.3 Interviewing Mothers

A total of 1,153 women in Lubumbashi were interviewed during twelve days of work in October 1990. Only mothers or caretakers with a child less than three years of age were interviewed. The interviewers worked in teams of three or four persons per group. A team leader was responsible for checking the material, identifying the streets within the cluster for team members, and verifying responses at the end of the day. Fifteen or sixteen women were interviewed in each cluster per day. The interviewers found they spent 30-40 minutes per interview. One person normally did five interviews quite easily in one day.
4.4 Entering the Data

Using the statistical package developed by Tulane University, Tshilumba Matenda, computer specialist at the School of Public Health in Kinshasa, supervised the data entry. He trained a team of three persons who, each day, entered the data from the preceding day. Thus the data entry process was completed on the day following the completion of the survey.

5. RESULTS: IMMUNIZATION COVERAGE

5.1 Knowledge about Immunization

The same series of questions concerning knowledge about immunization was posed in 1989 and 1990 with nearly the same results. In 1990, 61% of women could name the first vaccine required (BCG) and another 15% indicated that it is the immunization given in the forearm, which is considered as evidence of knowledge of the first immunization. Sixty-four percent gave the correct age (at birth) for the first immunization, and 79% gave the correct age (nine months) for the last immunization. Also, 78% of women knew that the last immunization given is against measles. Finally, 81% said that children are immunized to protect them against disease. Table I compares the responses to questions concerning the knowledge of immunizations for the two surveys.

<table>
<thead>
<tr>
<th>KNOWLEDGE OF IMMUNIZATIONS</th>
<th>1989</th>
<th>1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knew the name of the 1st vaccine</td>
<td>64%</td>
<td>61%</td>
</tr>
<tr>
<td>Knew the age for the 1st vaccine</td>
<td>75%</td>
<td>74%</td>
</tr>
<tr>
<td>Knew the name of the last vaccine</td>
<td>75%</td>
<td>77%</td>
</tr>
<tr>
<td>Knew the age for the last vaccine</td>
<td>80%</td>
<td>79%</td>
</tr>
<tr>
<td>Knew the purpose of immunizations</td>
<td>87%</td>
<td>81%</td>
</tr>
</tbody>
</table>

It can be seen that the two surveys obtained the same answers to these questions. The difference in knowledge of the purpose of immunizations is not statistically significant.
5.2 Criteria for Evaluating Immunization Coverage

This discussion about immunization coverage answers three basic questions:

1) What was the immunization coverage of children in Lubumbashi at the time of the study?
2) To what extent do immunization rates for 1990 differ from those of 1989?
3) What was the impact of the 1990 immunization campaign on immunization coverage in the city and in the different health zones?

In order to answer these questions properly, the criteria used for estimating coverage and for presenting the results must be clarified. The results for children from 12 to 23 months of age are given first, since this age group is most often used in reports on EPI projects. The coverage rates for this age group are shown as calculated in two separate ways: as read from immunization cards, and as reported by mothers. For children with a card, the information written on the card was used to estimate coverage; for those without cards, the mothers were asked whether their child had received the immunizations, one by one. These two sources of data are known as card data, and verbal report data. In addition, for children with immunization cards, age appropriate coverage rates are given.

5.3 Immunization Coverage for 1990

The sample in 1990 included 427 children from 12 to 23 months of age. The coverage rates by vaccine for this group are shown in Figure 1 based on the two sources of data: immunization cards and verbal report. The hatched columns show the coverage rate by vaccine according to immunization cards only, which assumes that children with no cards have not been immunized. The black columns show the rate of coverage by vaccine estimated from verbal report of mothers added to the information obtained from the cards.

Extensive analysis of coverage data from this data set as well as that of other HEALTHCOM sites has led to the conclusion that immunization data based on verbal report reflects what occurred more closely than does card data alone. It is true that mothers may be inclined to say yes to questions about vaccines her child has received whether the child has received them or not, out of a desire to appear to be doing the right thing. This would lead to a over estimate of coverage. However, using card data alone provides a gross underestimate of coverage for two reasons: 1) using card only data means there are no data from many children, those without cards; 2) or, if all children in the sample were included, it assumes that all children with no card had not been immunized at all, which is not accurate.
For this sample of 12 to 23 month old children, 44% of the mothers were not able to show the immunization card for their child. It is worth noting that the difference in coverage between using "card only" data and "verbal report" data for each vaccine varies from 41% to 49%, not far from the 44% who did not show cards.

Immunization coverage rates were also calculated separately for children with cards and without cards in order to see how they differed. Considering the group of children from 9 to 36 months of age (N=763), which is all children who should have completed their immunizations, the children were separated into two groups: children with cards (N=377) and children without cards (N=386). The immunization status was calculated for each of the two groups separately. For the group with cards, the coverage estimates are based on the information written on the cards. For the group without cards, the coverage rates are based on the verbal responses of mothers.
Figure 2 compares the immunization status of the two groups. The percentage of children completely immunized for those with cards is 67%, while for those without cards the figure is 72%. Additional analyses that take into account recording biases have indicated that the figures should be slightly modified. Most likely, the "real" coverage for those with cards is about 73%, while for those without cards it is about 60%. Therefore, all the evidence suggests that the percentage of children completely immunized in Lubumbashi in 1990 was about 65%.
5.4 Comparison of Immunization Coverage: 1989 and 1990

Figure 3 shows the change in immunization coverage during the period from March 1989 to October 1990 by vaccine. Coverage levels by vaccine are shown for children 12 to 23 months old regardless of the specific age at which the children were immunized based on mothers' verbal responses. According to mothers' verbal responses, for each vaccine the 1990 rate is a bit higher than the 1989 rate. Although the differences are not statistically significant, given the regularity of differences, it is unlikely that they are random. Therefore, there was a small increase in immunization coverage for the city as a whole.
Figure 4 shows the immunization rates for children 12 to 23 months of age based solely on immunization cards. One sees the same difference as in Figure 3, that is, a slight increase of about 3% for each vaccine.

![Figure 4](image)

In sum, there was only a slight increase in immunization coverage from 1989 to 1990 in the city of Lubumbashi as a whole. Because of the special immunization campaign in August and September, one might have expected a larger increase. The overall rate of completed coverage for October 1990 was about 65%.
5.5 Effects of the EPI Immunization Campaign

The Expanded Programme on Immunization (EPI) in Shaba, together with the HEALTHCOM project, UNICEF, and the Rotary Club, mounted a special campaign for vaccinating young children and women of childbearing age from July to October, 1990. During three days at the end of the months of August, September and October, the EPI project established additional immunization sites and conducted a special advertising campaign. In each health zone the medical administration organized teams of social mobilizers to travel around the neighborhoods and encourage women to take their children for immunizations during the special days. In Ruashi, the community volunteers (Maman Tengeneza) played this role.

The HEALTHCOM project contributed to this campaign by developing and distributing EPI posters to health centers, by preparing materials for large signs in the city, and by holding a radio workshop for health educators and journalists in June to teach them about radio production and to develop EPI messages. During this workshop some 30 radio spots about immunizations in French and Swahili were developed and produced for broadcast. During two weeks in July and part of August, the local radio station broadcast several of these spots four or five times a day.

The last day of interviewing for the survey coincided with the last day of the special immunization campaign in October. Therefore, the data collected show the effects of the first two waves (August and September), but not the third wave in October. With the data from the first two waves only, one cannot calculate with precision the overall impact of the campaign. One can, however, evaluate the effects of the first two waves which normally have the most impact on immunization coverage.

In addition to looking at overall impact, the information collected from the first two waves allows us to answer three questions:

1) To what extent did the campaign increase the number of immunizations given each month? That is, was there a sharp increase in immunizations given in August and September?

2) Are the ages and immunization status of children immunized during the campaign different from those of children immunized at other times? That is, what children are responding to the special advertisements?

3) Is it possible to see a difference in the size of the increase in immunizations given among the health zones? That is, did some health zones do better than others in the campaign?
The first question is answered by examining the mean number of immunizations given each month during the past year. The months preceding the campaign are then compared to the number from August and September. Only children with immunization cards can be used for this analysis, since only card data provides dates of immunizations.

Figure 5 shows the total number of immunizations received each month for each of the 644 children with cards in our sample. Months are indicated by numbers below the x-axis (8 is August, 9 is September, etc.). For example, in August 1989, 142 immunizations were given to these children while in January 1990, 217 immunizations were given. The total is significant only in comparison with the number of immunizations given during the campaign in August and September. The number of immunizations given during the special campaign days of August and September are shown as the hatched part of the columns for those two months. In fact, 119 and 117 immunizations were given in August and September respectively during the 3 campaign days each month.
The special campaign increased somewhat the number of immunizations given and thus increased coverage. From August to December 1989, the mean level of immunizations per months was 154. From January through June the mean number given per month was 208, an increase of about one-third achieved before the special campaign began. During August and September the mean number was 245 with 40% of the immunizations occurring on the special days.

One can gain some understanding of the effects of the campaign by examining the age of children immunized during the special campaign days. Figure 6 shows the mean age of children immunized for BCG during the special campaign days in August and September compared with those immunized at other times. The mean age of children who received the BCG vaccine in general is 5.0 weeks, while the mean age of children immunized during the campaign days is 15.0 weeks.
Figure 6 clearly shows that the children immunized during the campaign were much older than those immunized at other times. This indicates that the campaign succeeded in getting children to come for immunizations who had not been immunized for BCG on time. According to the same calculations, it was found that the mean age for receiving DPT1 was ordinarily nine weeks, but during the campaign the mean age rose to 14 weeks. The same effect, therefore, is seen for both vaccines.

Immunization data were analyzed by health zone to check for differences in response to the special campaign by health zone. The city of Lubumbashi is divided into five health zones, including Ruashi. Since the number of clusters was not the same for each health zone, and the proportion of children who had not completed the immunization series also varied, we corrected the figure according to the number of clusters in each zone compared to the total of 75 clusters in the city.

Figure 7

RESULTS OF VAC CAMPAIGN 2: HEALTH ZONES
(Children with card & fewer than 8 vales)

% children vaccinated on vac days

<table>
<thead>
<tr>
<th>Health Zone</th>
<th># of children</th>
<th>Sept 28-30 %</th>
<th>Aug 28-31 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubumbashi</td>
<td>57</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Kenyanka</td>
<td>76</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Kanoema</td>
<td>107</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Katuba</td>
<td>77</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Ruashi</td>
<td>133</td>
<td>17</td>
<td>19</td>
</tr>
</tbody>
</table>

* # of children: children with card who had not had 8 vales by Aug 28, 1991

BEST AVAILABLE COPY
The graph shown as Figure 7 shows the result of this analysis. The graph shows the proportion of children with cards that had received at least one immunization on the special campaign days by health zone. Below each column is written the number of children for each health zone who had not completed the series of eight immunizations by August 28, the first day of the campaign. For example, in Lubumbashi Health Zone, 67 children needed one or more immunizations to complete the series, while in Ruashi, 133 children needed immunizations. The raw number from the Ruashi zone is higher since there were twice as many children in Ruashi. The two other lines show the percent of children needing immunizations who received them. For example, in Lubumbashi Health Zone, in August, 6% of these children were immunized and in Ruashi, 17% were immunized.

In order to know the percentage of children immunized during the first two waves of the campaign, it is necessary to add the percentages from both months. Thus, in Lubumbashi the percentage is 18% (6% + 12%), in Ruashi it is 36% (17% + 19%), and in Katuba, 11%. The figure shows that in the Ruashi zone, the percentage of eligible children immunized is almost two times higher than elsewhere.

We see two possible reasons for the difference between Ruashi and the other zones. Either the delivery of services in Ruashi was more effective, or the mobilization effort was more effective. The second option, that the social mobilization effort proceeded better in Ruashi, is the more likely one, since only in Ruashi were there trained community volunteers to mobilize the population to participate. The community volunteers were trained by HEALTHCOM to teach mothers about ORT and EPI.

5.6 Immunization and Radio Listeners

The HEALTHCOM project organized a workshop for health educators and staff from the local radio station (Voice of Zaire) to provide training in the production of health education materials and to produce radio spots on immunization for the immunization campaign organized by the EPI program. Thirty brief radio spots consisting of jingles with music were created during the workshop. During part of July and August five or six of these spots were broadcast repeatedly. In addition, several broadcasters discussed immunization during their regular programs to increase public awareness of the importance of the campaign.

The question can then be asked: Is there a correlation between listening to the radio and immunization knowledge, or between listening and having taken a child to be immunized? In other words, does a person who listened to the radio messages concerning EPI know more than those who did not listen? Are these people taking their children to be immunized in greater numbers than those who did not listen?
To answer these questions, a knowledge scale was created from five questions about immunization and another scale based on questions about radio listening. The knowledge scale ranges from zero to five and is reliable (a=.62). Almost half (45%) of the sample received five points (all responses were correct), while only 16% received 2 or fewer points. The mean score is 3.88 with a standard deviation of 1.31. Comparison of the scores obtained by persons who listened to the radio with those who did not shows several significant differences. Table 2 shows the difference between those who owned radios and those who did not.

**TABLE 2**

<table>
<thead>
<tr>
<th>Total number</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a Radio</td>
<td>N=653</td>
</tr>
<tr>
<td>Do not have a Radio</td>
<td>N=500</td>
</tr>
</tbody>
</table>

Persons having a radio at home knew a little more about immunization than those who did not have a radio. The difference is significant, but if one controls for wealth, the difference disappears. In fact, it was found that for wealthier people radio listening was not associated with higher immunization knowledge, but for people with less wealth, this association was statistically significant. In the same manner, for education, radio listening is positively associated with higher immunization knowledge among persons with little education, but not among people with more schooling. This indicates that a health education program will have more impact among the relatively poor population and among those with little education, but will have less among the more wealthy and better educated.

The group of people with the highest scores were those who listened to the health programs on the radio. They received a mean score of 4.30 points, while those who listened to the radio but did not follow the health programs received 3.94 points. However, no relationship was found between those who heard an immunization program and those who did not. The people who listened to the health programs were better informed about immunization in general, but having heard a program on immunization in previous months did not increase their knowledge. No difference was found in the immunization coverage of children of mothers who listened to the programs compared to those who did not. Therefore, no evidence was found that radio spots or programs about immunization influenced people to have their children immunized.
5.7 Immunization Coverage in Ruashi

Since the HEALTHCOM project worked mostly in the Ruashi Health Zone, a summary of the situation in this zone concerning immunizations will be presented. Table 3 shows the percent of women who responded to the immunization knowledge questions in 1989 and 1990 in the Ruashi health zone.

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>IMMUNIZATION KNOWLEDGE IN RUASHI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1989</td>
</tr>
<tr>
<td>Knew the name of the 1st vaccine</td>
<td>49%</td>
</tr>
<tr>
<td>Knew the age for the 1st vaccine</td>
<td>65%</td>
</tr>
<tr>
<td>Knew the age for the last vaccine</td>
<td>75%</td>
</tr>
<tr>
<td>Knew the name of the last vaccine</td>
<td>65%</td>
</tr>
<tr>
<td>Knew the purpose of immunizations</td>
<td>83%</td>
</tr>
</tbody>
</table>

The table allows us to compare the level of immunization knowledge in Ruashi for the two surveys. There was a significant increase in mothers' knowledge of the name of first vaccine required and the age for the last immunization but not for the other three items. This indicates that for the two elements, women knew a bit more about immunizations in 1990 than in 1989. It appears that the messages diffused by the media or in person addressed the name of the first vaccine and the age of the last immunization (measles). The public may have heard that message more clearly because of three interventions: 1) health workers were trained to improve their way of giving health talks about immunization; 2) the training given to the Maman Tengeneza in speaking to their neighbors may have increased the numbers coming to health facilities or simply hearing about immunizations at home; 3) women learned more from hearing immunization news on the radio.

The improvement in knowledge is a positive accomplishment, but changes in behavior are stronger evidence of program impact. We looked at whether there was an increase in immunization coverage in the Ruashi health zone. Table 4 shows the percent of children more than nine months old according to their immunization status: No immunization, one to seven (1-7) immunizations, and all immunizations (8). The calculation of percentages was done according to the method used Figure 2, that is to say, by dividing the children into two groups. Coverage of children with a card was calculated by using the cards. For those without cards we used mothers' verbal responses corrected to account for the tendency to say "yes" when asked if their children have been immunized.
TABLE 4
IMMUNIZATION STATUS OF RUASHI CHILDREN: 1989 AND 1990

<table>
<thead>
<tr>
<th></th>
<th>1989</th>
<th>1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>No immunizations</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>1 to 7 immunizations</td>
<td>39%</td>
<td>23%</td>
</tr>
<tr>
<td>8 immunizations (all)</td>
<td>57%</td>
<td>71%</td>
</tr>
</tbody>
</table>

N=71 N=237

Immunization coverage in Ruashi rose from 57% in 1989 to 71% in 1990. This indicates that the Ruashi zone greatly improved its immunization coverage. We believe that this improvement is partially the result of project interventions: the training of health workers, the training of community volunteers who worked in the special immunization campaign, and efforts of the zone staff. Most likely, the fact that the Maman Tengeneza were available when the special EPI campaign was looking for social mobilizers made a key difference in what happened in Ruashi, for in other health zones the mobilization efforts were less successful.

6. RESULTS: DIARRHEA AND ORT

6.1 Introduction

Discussion of the survey results concerning diarrhea will be very brief, since HEALTHCOM was unable to complete planned promotion of ORT. The project did develop and print 175 posters on ORT and dehydration and distributed them to health centers for use by health workers in their teaching about diarrhea and ORT. The project also produced 50 audio cassettes with songs about diarrhea and dehydration which were passed out to health workers. However, uncertainty about the official government policy in Kinshasa about ORT and mixed signals from Washington (AED) prevented the project from doing more.

In the Swahili spoken in Lubumbashi one finds the names of five different illnesses that a doctor would classify as being related to diarrhea. They are kuhara, lukunga, kilonda ntumbo, kasumbi, and buse. The sickness known as kuhara or maladi ya kuhara is recognized by frequent stools and runny stools, which is considered as ordinary diarrhea in biomedicine. Lukunga is distinguished also by frequent bowel movements and runny stools, but it is very often accompanied by intense thirst and a depressed fontanelle. Therefore, the child with lukunga is dehydrated. Kilonda ntumbo is most often characterized by bloody stools and mucus, which suggests dysentery or intestinal parasites. The two other illnesses, kasumbi and
buse, are not common. Kasumbi is recognized by red spots on the buttocks and seems to be caused by leaving a child too long in a diaper soaked with urine. Buse is associated with signs of malnutrition and is considered a serious sickness. Thus it is diarrhea with malnutrition.

6.2 Incidence of diarrhea

The vast majority (81%) of the 1,153 women questioned indicated that their children under three years of age had already been sick from one of the five diarrheal diseases cited above. For analysis, the cases of diarrhea were divided into three categories according to time: recent cases, which were current cases or those which began within the two weeks preceding the interview; cases which dated from three weeks to three months prior to the interview; and those cases which occurred more than three months before the interview.

It was found that 29% of households had a case of diarrhea on the day of the interview and 17% had a case which had begun during the two preceding weeks, which comes to a total of 46% of homes with a recent case. That figure of 46% seems unusually high for current and recent cases of diarrhea. In the category of cases between three weeks and three months the figure was 18%, and for cases more than three months old the figure was 19%. Finally, 17% of households had not had a case of diarrhea among children less than three years old.

In order to analyze the symptoms and chosen treatments, only recent cases were analyzed because we consider the responses for these cases more reliable than responses for older cases. If only recent cases are considered Table 5 shows the distribution of cases according to the diagnosis of the women.

<table>
<thead>
<tr>
<th>Sickness</th>
<th>Percent (N = 536)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuhara</td>
<td>46%</td>
</tr>
<tr>
<td>Kilonda ntumbo</td>
<td>34%</td>
</tr>
<tr>
<td>Lukunga</td>
<td>12%</td>
</tr>
<tr>
<td>Kasumbi</td>
<td>2%</td>
</tr>
<tr>
<td>Buse</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
</tr>
</tbody>
</table>

The table shows that cases of kuhara are the most frequent followed by kilonda ntumbo, that the cases of lukunga (dehydration) are less frequent than the first two and that the cases of kasumbi and buse are
rather rare. In most of our analyses we will consider only cases of kuhara, kilonda ntumbo, and lukunga given that they constitute together 92% of the diagnoses made by mothers. This distribution does not differ greatly from that of the first study.

6.3 Knowledge and Experience with SSS

During the two surveys, women responded to the same series of questions concerning the preparation and use of SSS and ORS packets. We expected to find much the same results in 1990 as those found in 1989, because there was no special effort to promote the use of ORT for diarrhea. Figure 8 presents the results of the two surveys for SSS. The percentages in the two studies are almost identical, which provided
evidence that the samples were comparable in the city as a whole. The slight increase in knowledge of how to prepare SSS correctly is encouraging, but the difference is not statistically significant.

Although we found no changes for the entire city in knowledge and use of SSS since the first survey, the 1990 study did show differences among the five city health zones. It was expected that in Ruashi, where the nurses were trained in health education about ORT and EPI, and where the community volunteers were also trained to talk about ORT and EPI, perhaps knowledge would be a bit higher. Table 6 shows the 1990 results for certain questions by health zone.

### TABLE 6
EXPERIENCE WITH SSS BY HEALTH ZONE IN 1990

<table>
<thead>
<tr>
<th>Health Zone</th>
<th>H</th>
<th>K</th>
<th>U</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubumbashi</td>
<td>93%</td>
<td>76%</td>
<td>64%</td>
<td>14%</td>
</tr>
<tr>
<td>Kenya/Kamalondo</td>
<td>86%</td>
<td>64%</td>
<td>62%</td>
<td>12%</td>
</tr>
<tr>
<td>Kamemba</td>
<td>91%</td>
<td>70%</td>
<td>66%</td>
<td>23%</td>
</tr>
<tr>
<td>Katuba</td>
<td>91%</td>
<td>66%</td>
<td>55%</td>
<td>10%</td>
</tr>
<tr>
<td>Ruashi</td>
<td>91%</td>
<td>73%</td>
<td>70%</td>
<td>23%</td>
</tr>
<tr>
<td>Lubumbashi City</td>
<td>90%</td>
<td>70%</td>
<td>64%</td>
<td>18%</td>
</tr>
<tr>
<td>H - Heard about SSS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U - Had ever used SSS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K - Knew how to prepare SSS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C - Correctly prepared SSS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The column entitled "H" gives the proportion of women who had heard of SSS. The column entitled "K" gives the proportion of women who said they knew how to prepare the solution. The percentage of women ever using SSS is shown in column "U", and the percentage of women who gave the correct mixing instructions for SSS during the interview is shown in column "C".

The percentage of responses in the different zones are very similar, but there are four key differences which should be noted. One, the Lubumbashi zone seems to have a higher proportion of women who had heard of SSS and who said they knew how to prepare the solution, but these differences are not significant. Two, in the Ruashi zone, the percent of women who had ever used SSS is much higher than in the other zones. This difference is statistically significant (at p< .009). Third, the Kamemba and Ruashi zones have a higher proportion of women who knew the correct preparation of SSS; this difference is statistically significant. Fourth, in the Katuba zone, there were fewer women who had used SSS and even less who knew the correct mixing instructions.
The higher percentages of women in Ruashi who had ever used SSS and who knew the correct preparation may be the result of the training of staff in the Ruashi health center in IEC, ORT, and immunization as well as in how to carry out health education. It is unclear why the Kampemba Health Zone had a higher percentage than Ruashi of women who knew the correct mixing instructions for SSS.

6.4 The Use of ORT

It is encouraging to note an increase in knowledge of ORT (rice water, SSS, and ORS packets), but what really counts is the use of ORT for diarrhea. The fundamental question is this: Was there an increase in the percent of cases of diarrhea which were treated with ORT both in the home and at health centers when the two surveys are compared?

We first consider the results for treatments given at home for recent cases in the entire city. Table 7 shows the use of ORT for the two surveys.

<table>
<thead>
<tr>
<th></th>
<th>1989</th>
<th>1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice water</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>SSS</td>
<td>10%</td>
<td>13%</td>
</tr>
<tr>
<td>ORS (packets)</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>17%</td>
<td>19%</td>
</tr>
</tbody>
</table>

The table shows that in 1989, 17% of all recent cases of diarrhea received ORT at home, and in 1990 19% of cases received the same treatment. Thus, one sees no change overall.

However, if one considers the same question by health zone, subtle differences may be seen. Table 8 shows the percent of recent cases which received ORT treatment at home in 1989 and 1990 classified by health zone.
The two columns of numbers show the percent of recent cases of diarrhea which were treated with ORT in each health zone. For example, the 1989 study indicated that 14% of cases in the Lubumbashi health zone received ORT and that 25% of cases in the Kenya/Kamalondo zone received ORT at home. In the same manner, in 1989 9% of cases in the Ruashi zone received ORT; this number rose to 21% in 1990.

Comparison of the two columns shows two large changes: The Lubumbashi zone rose from 14% to 31% and the Ruashi zone rose from 9% to 21%. We do not know why the level of use of ORT rose in Lubumbashi. With regard to the Ruashi zone, we believe that the increase is the result of project interventions among health workers and community volunteers.

6.5 Conclusion

A comparison of both knowledge and practice indicators related to diarrhea in 1989 and 1990 showed no change in either knowledge of diarrhea and ORT or in the choice of treatments for diarrhea. That was expected, given the lack of a promotion campaign in the city. Differences were found, however, among health zones. In both Ruashi and Kampemba Health zones, more women knew the correct recipe for mixing SSS and the difference was significant. In the same way, in both Lubumbashi and Ruashi Health Zones, the use of ORT for a recent case of diarrhea was significantly higher than for other health zones, for both zones increased their use of ORT substantially. We believe some of the increases in knowledge of SSS and in the use of ORT can be attributed to the training of health workers and community volunteers by HEALTHCOM. However, other factors enter in, since two other health zones had similar changes without the project intervention.
7. STUDY OF COMMUNITY VOLUNTEERS IN RUASHI

7.1 Introduction

The Ruashi Health Zone includes the administrative zone of Ruashi on the eastern edge of the city and several districts of the peripheral zone. The more urban section includes some 85,000 people who receive medical services from the Centre Mobutu, a hospital and health center. The health zone also runs a health center in the Mamba district and supervises activities of several private health centers as well as a health center of the SNCZ, the Zairian National Railway Company.

In May 1990 the health zone, under the direction of Dr. Tshiula and the supervisory team from the zone, and in collaboration with HEALTHCOM, began a project to train women as community volunteers to provide health education in neighborhoods and to encourage women to take their children for immunizations on time. A group of twenty-eight women were trained for two days during May and a second group of seventeen women were trained during June. They were given the title of "Maman Tengeneza." Since that time, these women have visited homes to talk about health problems; they encouraged women to take their children to under fives clinics and showed mothers how to prepare SSS for cases of diarrhea.

Since the first period of the HEALTHCOM project had just ended, and a second period was about to begin, information was sought concerning the activities of these volunteers so the health zone could better guide the volunteers during the second period. A protocol with open-end questions was prepared which allowed the volunteers to talk about their experiences, their activities and their problems. We were particularly interested in hearing the women talk about their own lives. In short, we wanted to know how these Maman Tengeneza experienced being "Tengeneza mothers" and how their experiences determined or contributed to their activities. Thus, in October, 35 of the 37 Tengeneza mothers who had been trained in the Ruashi Health Zone were interviewed at length by a woman who was a university researcher in Lubumbashi. The interviews were all conducted in Swahili.

7.2 Training of Volunteers

According to the Maman Tengeneza themselves, several procedures were used to select them. They were chosen by the community, by the head of the neighborhood, by staff responsible for the monthly weighing or from the Mobutu Center, by women frequenting the weighing clinics, or by a minister. Some were visited at home in order to see if they corresponded to the necessary selection criteria. Some enrolled when they heard about the project. It should be noted that they all made the personal choice to become a volunteer, whether they had been chosen, designated or elected. What prompted them to accept this
task was primarily the desire to gain more education, to increase their knowledge and to help the population. These were relatively young women (21 - 43 years old), married and engaged in some small commercial activity. Most were active in a church.

These community volunteers received training for two days in the Mobutu Center to learn how to provide health education in the neighborhoods, how to care for diarrhea and when and why to immunize children. After the training, they spent one day each month at the Mobutu Center giving their monthly reports and getting additional training in nutrition, weighing children and malaria. They all received tee shirts with the EPI logo on them.

The volunteers said they were generally happy with the instruction they received in the two sessions in the first month and the subsequent monthly training sessions. They have learned information on the importance of immunizations and the immunization schedule, and problems linked to poor nutrition, diarrhea and malaria. They hoped that their activities would continue over the long term. Two sets of expectations have developed among the group. Some women are satisfied with the nature of the program and are waiting for new training on other topics related to child health. Some hope to act as midwives with more training that would allow them to provide routine health care or assist with first aid or immunizations.

7.3 Activities of Maman Tengeneza

The Maman Tengeneza devote themselves mainly to providing health education in their neighborhoods. For these volunteers, educating the public means visiting mothers in their community. They most often cover the following themes: immunization, and problems related to malaria, diarrhea and nutrition. In reality, the frequency of work varied from volunteer to volunteer. Generally, they worked one to four days each week, on average one to two times each week. Some did not limit themselves to visiting homes, but also taught in religious organizations. At times women from the neighborhood came to consult them at home. The volunteers spoke about their work with great enthusiasm and devotion.

Our discussions with Tengeneza mothers revealed some ambiguity in the concept these women had of their own role in the community and their connection to the Mobutu Center. They considered themselves the link between the Mobutu Center and the public without knowing exactly what that meant. They expressed a desire to know more about what the Mobutu Center expected from them and to know more about the future of their project. They would like their project to have a more permanent structure.
7.4 Conclusion

Judging from the enthusiasm of the community volunteers after five months of activity, it appears as though the Maman Tengeneza project has been successfully initiated. The volunteers expressed great satisfaction at what they had learned from the supervisory staff of the Ruashi Health Zone. The women have clearly been active in talking to their neighbors about the health of children. They all expressed the desire for more training on health issues and some financial assistance.

The conversations held with these women indicated there were three domains that remained somewhat ambiguous in the minds of the volunteers and that should be addressed by those in charge of the training project. One, many of them are still unclear about their role. Two, many are unsure how they are to relate to the health workers in the health zone. This uncertainty is intensified because no system for supervision has yet been established. And three, most of them believe they need some sort of financial assistance in order to continue in the long run. Without some form of support they do not believe they can continue to do health education and still care for their families.

In the analysis of the survey data, the clusters with community volunteers were compared to those without volunteers with regard to use of ORT and immunization coverage. No differences were found. On the other hand, the fact that EPI coverage increased in Ruashi Health Zone more than in other health zones may be attributed in part to the role played by the volunteers in mobilizing people to have their children immunized.