

PD-ABP-302

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Clapp and Mayne, Inc. Consultants to Management

FINAL REPORT

**IMMUNIZATION AND ORAL REHYDRATION
THERAPY SERVICES FOR THE CHILD SURVIVAL
PROJECT IN GUATEMALA
USAID PROJECT No. 520-0339
USAID CONTRACT No. 520-0339-C-00-2147-00**

JUNE 1996

OH&E/USAID/GUATEMALA

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TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	I
1. INTRODUCTION.....	1
2. BACKGROUND.....	1
2.1 SUMMARY OF GUATEMALA CHILD SURVIVAL PROJECT UNTIL JUNE 1992.....	2
2.2 THE GUATEMALA CHILD SURVIVAL PROJECT AND CONTRACT ACTIVITIES OF CLAPP & MAYNE FROM JUNE 1992.....	4
3. THE IMPACT OF THE PROJECT ON MORTALITY, MORBIDITY AND COVERAGE.....	8
4. ACTIVITIES AND ACHIEVEMENTS BY COMPONENT.....	19
4.1 EXPANDED PROGRAM OF IMMUNIZATIONS COMPONENT (EPI).....	19
4.1.1 EPI OBJECTIVES.....	19
4.1.2 STRATEGIES TO ACHIEVE EPI OBJECTIVES.....	19
4.1.3 INTERVENTIONS TO IMPROVE EPI.....	20
4.1.4 EPI IMPACT AND OUTPUTS ACHIEVED.....	30
4.2 ORAL REHYDRATION THERAPY - ACUTE RESPIRATORY INFECTIONS COMPONENT (ORT-ARI).....	34
4.2.1 ORT-ARI OBJECTIVES.....	34
4.2.2 STRATEGIES TO ACHIEVE ORT-ARI OBJECTIVES.....	35
4.2.3 INTERVENTIONS TO IMPROVE ORT-ARI.....	35
4.2.4 ORT-ARI IMPACT AND OUTPUTS ACHIEVED.....	44

4.	ACTIVITIES AND ACHIEVEMENTS BY COMPONENT. (Cont.)	
4.3	HEALTH MANAGEMENT INFORMATION SYSTEM COMPONENT (HMIS).	49
4.3.1	HMIS OBJECTIVES.	49
4.3.2	STRATEGIES TO ACHIEVE HMIS OBJECTIVES.	49
4.3.3	INTERVENTIONS TO IMPROVE HMIS.	50
4.3.4	HMIS IMPACT AND OUTPUTS ACHIEVED.	71
4.4	IMPROVED ADMINISTRATIVE SYSTEMS COMPONENT (IAS).	73
4.4.1	IAS OBJECTIVES.	73
4.4.2	STRATEGIES TO ACHIEVE IAS OBJECTIVES.	73
4.4.3	INTERVENTIONS TO IMPROVE ADMINISTRATIVE SYSTEMS	74
4.4.4	IAS IMPACT AND OUTPUTS ACHIEVED.	85
5.	MAIN CONSTRAINTS.	86
5.1	CONSTRAINTS COMMON TO ALL COMPONENTS.	87
5.2	CONSTRAINTS BY COMPONENT.	88
6.	REFLECTIONS FOR THE FUTURE.	88
6.1	REFLECTIONS TO OVERCOME CONSTRAINTS AND TO STRIVE FOR SUSTAINABILITY OF PROJECT ACHIEVEMENTS	88
6.2	SPECIFIC REFLECTIONS BY COMPONENT	90
6.3	REFLECTIONS FOR MANAGEMENT OF THE TRANSITION.	96
	ANNEXES	99
1.	LOGICAL FRAMEWORK	
2.	MAIN EVENTS OF THE PROJECT AND THE CONTRACT	
3.	SIGLO APPROVAL COMMUNICATIONS	
4.	LIST OF ACTIVITIES	
5.	LETTER OF INTENT TO WORK JOINTLY ON DEVELOPMENT OF SIGLO	
6.	LIST OF DOCUMENTS PRODUCED DURING THE CONTRACT, BY COMPONENT	
7.	LIST OF PEOPLE EMPLOYED BY THE CONTRACTOR	

ABBREVIATIONS USED IN THE FINAL REPORT.

<u>ABBREVIATIONS</u>	<u>MEANING</u>
ADD	Acute Diarrheal Disease
ARI	Acute Respiratory Infections
BASICS	Basic Support for Institutionalizing Child Survival
C&M	Clapp and Mayne Inc.
CBIS	Community-based Information Sub-system
CORU	Community Oral Rehydration Units
CPs	Conditions Precedent
DDC	Diarrheal Disease Control
DGHS	Directorate General of Health Services
DHS	Demographic and Health Survey
EPI	Expanded Program of Immunization
GCS	Guatemala Child Survival Project
GISS	Guatemalan Institute of Social Security
GOG	Government of Guatemala
IAS	Improved Administrative Systems
IAFM	Improved Administration and Financial Management
IDB	Interamerican Development Bank
INCAP	Institute for Nutrition in Central America and Panama
LOP	Life of the Project
MPHSA	Ministry of Public Health and Social Assistance
MSH	Management Sciences for Health, Inc.

ABBREVIATIONS USED IN THE FINAL REPORT (Cont.)

<u>ABBREVIATIONS</u>	<u>MEANING</u>
NCSO	National Civil Service Office
NGO	Non Government Organization
NHC	National Health Campaigns
NPI	National Program of Immunizations
ORS	Oral Rehydration Salts
ORT	Oral Rehydratation Therapy
ORU	Oral Rehydration Units
PAHO	Panamerican Health Organization
PAU	Project Administrative Unit
POA	Annual Operative Plan (Plan Operativo Anual in Spanish)
PROAG	Project Agreement
RAS	Rapid Assessment Survey
RIG	Regional Inspector General
SCM	Standard Case Management
SIGLO	Health Information System for Local Management (Sistema de Información para la Gestión Local in Spanish)
SIGS	Management Information System (Sistema de Información Gerencial en Salud in Spanish)
SIIS	Health Integrated Information System (Sistema Integrado de Información en Salud in Spanish)
SUIS	Unified Health Infromation System (Sistema Unico de Información en Salud in Spanish)

ABBREVIATIONS USED IN THE FINAL REPORT (Cont.)

<u>ABBREVIATIONS</u>	<u>MEANING</u>
TA	Technical Assistance
UDAMIN	National Teaching Units (Unidad Docente Asistencial in Spanish)
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USAID/G-CAP	USAID Mission in Guatemala and for Central America and Panama
USPAS	Sectoral Planning Unit (Unidad Sectorial de Planificación en Salud in Spanish)
US\$	American dollars
WHO	World Health Organization

EXECUTIVE SUMMARY.

Chapter 1 is an "Introduction" to this Final Report, which presents the achievements of the Guatemala Child Survival Project (abbreviated below as GCS), financed by the United States Agency for International Development (abbreviated below as USAID or USAID/G-CA), in coordination with the Ministry of Public Health and Social Assistance, (abbreviated below as MPHSA) of Guatemala.

The contractor, Clapp & Mayne Inc. , (abbreviated C&M) was contracted through USAID contract No.520-0339-C-00-2147- 00 for technical assistance services for the "Project of Immunization and Oral Rehydration Therapy for Child Survival in Guatemala"- USAID Project No.. 520-0339, for the period from June 4, 1992 to June 30 1996.

Chapter 2 describes the "Background" of the Project and the contract between C&M and USAID. The original Project Agreement between USAID and the Government of Guatemala (GOG) was signed in August,1985. The goal of the Project as stated in the Logical Framework was "reduce the mortality and morbidity throughout Guatemala caused by common early childhood diseases preventable by immunizations and due to or related to the diarrheal diseases." (The full Logical Framework appears in Annex 1.)

The Project was initially focused on "Immunizations for Child Survival" and over the life of the project, there were three main amendments adding other components to the project. The first major amendment added a component for Oral Rehydration Therapy (ORT) in 1986. The second major amendment added two new components- Health Management Information Systems (HMIS) and Improvement of the Administrative Systems (IAS)- in August, 1987. The third major amendment added the control of Acute Respiratory Infections (ARI) , in June 1993, (For additional information on this topic, consult the pages 2, 3, 6 7 of this Report).

In 1988 and 1990, external audits of the Project were done and in 1989, a mid-project technical evaluation was done. The evaluation concluded that the project was making a significant contribution to the achievement of the objectives of increasing the coverage of immunizations and ORT. However, the audit reports called attention to deficiencies in the documentation of payments made by the project. For this reason, in March 1990, USAID suspended disbursements for the Project. In 1991, the Project was reactivated after solving the problems raised by the audit. (For additional information on this topic, consult the pages 3-4 of the Report).

In June 1992, Clapp & Mayne was contracted by USAID to provide technical assistance for the development of decentralized systems and support activities for child survival in 24 Health Areas of the MPHSA. The main components of the Project were (1) Immunizations, (2) Oral Rehydration Therapy, (3) Health Management Information

Systems and (4) Improved Administrative Systems. (For additional information on this topic, consult pages 4-6 of the Report).

The contract with C&M included a sub-contract to Management Sciences for Health (MSH), to provide technical assistance for Component 3, the Health Management Information System, which MSH had worked on previously.

In September 1995, a change was made to the contract that included, among other things, technical assistance to 3 new Health Areas and implementation of the information system. (For additional information on this topic, consult the page 7 of the Report).

The six Organizing Principles for managing the Project were the following:

- 1) Emphasis on the use of Guatemalans employees and entities;
- 2) Technical assistance as training;
- 3) Flexible implementation;
- 4) Strengthening existing institutions;
- 5) Participation of other donors; and
- 6) Focus on decentralization.

Chapter 3 of the Report presents the "Impact of the Project on Mortality, Morbidity, and Coverages." The 1995 Demographic and Health Survey (DHS) for Guatemala shows impressive improvement in infant and child mortality and morbidity and coverage of immunizations against diseases of early childhood, and protection against acute diarrheal diseases among children, which strongly suggests the GCS project has had a significant positive impact. The Infant Mortality Rate for the five years prior to the DHS survey was 51 per thousand for the whole country; the Infant Mortality Rate for Guatemala had declined continually during the previous 25 years from a rate of 103 per thousand born alive in the period 1970-75. The Child Mortality Rate also had decreased significantly; the mortality of the children (less than 5 years old), declined by 41 percent (from 116 per 1000 to 68 per 1000) from the 1980- 1985 period (just before the project started in 1985) to the 1990-1995 period. The data also showed a significant reduction in child mortality from immuno-preventable illnesses. (For additional information on this topic, consult pages 8-9 of the Report).

The morbidity from immuno-preventable diseases also decreased significantly. Among the achievements of the period were the elimination since 1993 of the transmission of the wild polio virus; a dramatic decrease of cases of measles and of whooping cough, and absence of diphtheria outbreaks and cases since 1991 (For additional information on this topic, consult pages 9 & 10 of the Report).

Based on this data, we conclude that the primary "goal" of the GCS Project was accomplished, as well as the goals established in the contract with Clapp and Mayne. Needless to say, other factors influenced the achievement of the goals in addition to the GCS Project.

The "purpose" of the GCS Project was "Support of strengthening the Ministry of Health's capacity to deliver child survival services." The indicators (targets) for achievement of the purpose were the following: 1) increase to 70% the coverage of immunizations against six immuno-preventable diseases for children under five years of age, 2) increase to 60% the neonatal tetanus vaccination protection of pregnant women, and 3) increase to 60% the Oral Rehydration Therapy (ORT) coverage for children under five years of age.

Immunizations increased substantially and the targets for immunizations were partially achieved. The figures from the DHS of 1995 showed the following: the coverage for 3rd doses of polio (giving full protection) was 55.9%; coverage for 3rd doses of DPT (giving full protection) was 59.4%; coverage for measles was 75.1%; coverage for tuberculosis was 78.2%. Fully Immunized Children (with the complete set of vaccinations against six diseases) was 42.6% coverage and the first dose of tetanus toxoid vaccine in pregnant women was 54.9% (For additional information on this topic, consult pages 10 & 11 of the Report).

The comparison of these coverage figures with the comparable statistics in the 1987 DHS Survey shows a significant increase in coverage of all immunizations, and particularly good progress for DPT3 and BCG. The number and percentage of "Fully Immunized Children" is a better quality indicator than measures regarding isolated improvements for single vaccines; "Fully Immunized Children", who had been vaccinated against all 6 immuno-preventable illnesses, increased by 72% during the project period. Another achievement was the increase of 300% in the protection of pregnant women with the first dose of tetanus vaccine (For additional information on this topic, consult the page 11 of the Report).

A key strategy of the Project was to improve "equity" and to focus on improving the coverage of "high risk" groups. In Guatemala, as in many other countries, the population with low income, low education, indigenous (Mayan) ethnicity, and who live in rural areas are "high risk" groups. A comparison of information from the DHS Surveys in 1987 and 1995 shows great improvement in these "high risk" groups. The coverage in the rural area improved so much that they became comparable or better than coverage in the Metropolitan area including Guatemala City, for most immunizations and for the proportion of "Fully Immunized Children". The Metropolitan Region coverage is lower for almost all the immuno-preventable diseases compared to the coverage achieved in the Northwest Region, which is one of the most depressed areas of Guatemala. As for the ethnic Mayan groups, differences persist between them and the "Ladino"(non-Mayan) population, but the differences have decreased due to larger gains in the indigenous populations. The same comment could be made for the "high risk population with the

low educational levels; quite significant progress was made among the groups with little education. In summary, the evidence suggests that Project has contributed to overall improved coverage and has also improved "equity"- with greater improvements in the protection of the population at higher risk, such as indigenous ethnic groups, and those with low income, and little education (For additional information on this topic, consult pages 11 & 12 of the Report).

"Access" to immunizations improved a lot but "continuity" of immunization contacts was less impressive. "Access" was excellent as measured by very good coverage for the first dose vaccinations given to the target population. "Continuity" was not as good as measured by the lower proportion of children that got the second and third doses of vaccines that required three injections to achieve full protection. (For additional information on this topic, consult pages 12 -13 of the Report).

The use of Oral Rehydration Salts (ORS) improved significantly. 21.5 percent of the children with diarrhea received it, according to the Preliminary Report of the 1995 DHS. Compared to the statistics in the DHS for 1987, there was a significant improvement, since in 1987, it was estimated that 13.2 percent of the children used ORS. In spite of the 62.9% improvement in the period, the objective established in the contract of increasing use of ORS among children to 70 percent coverage was not achieved. For additional information on this topic, see page 13 of the Report).

The objective to establish an operating Health Management Information System (HMIS) was completed totally in two Health Areas: Retalhuleu and Suchitepequez. In these Areas all the modules of the information system were implemented. The system modules for personnel, budgeting, goods and equipment and supplies were installed to varying degrees in other Health Areas. Manual inventory systems were installed where there were no computers. In the other Health Areas, various modules of the total improved Administrative Systems were installed (For additional information on this topic, consult page 13 of the Report).

In compliance with the organizing principles of the contract, C&M hired Guatemalan technical personnel who had good experience and who were able to sustain good working relationships with the MPHSA and with the GOG. 47 of the 51 long-term staff for the Project were Guatemalans. 97% of 1,400 person months of the professional services provided by this Project were provided by Guatemalans. (For additional information on the organizing principles, consult pages 13 -18 of the Report).

The principle of using technical assistance as training was used to develop human resources, including formal training and in-service training. Approximately 20,000 participants participated in project training events. The increasing knowledge and abilities of the personnel from formal training were supplemented with the supervised practice of technical skills, procedures and computer applications they learned on the job. The training done was in technical public health topics, management procedures,

financial management, data collection and use of information for management, and in other areas.

The principle of flexible implementation led C&M to change approach to fit the evolving needs of USAID and MPHSA. For example, the staffing pattern shifted from "gestores" in 24 Health Areas to 8 "gestores" in specialized roles. SIGLO was embraced as the agreed approach to HMIS instead of the approach used earlier. ARI was added to the Child Survival Project.

The principal of strengthening existing organizations was followed. The technical assistance contributed to the institutional strengthening of MPHSA, particularly at the level of the Health Areas. C&M provided improved instruments and methodologies for the handling of the human and material resources, physical equipment, financial resources, and information. Many MPHSA staff worked hard to gain the new knowledge and skills to handle better the clinical tasks and managerial tasks required for the project components.

The principles of participation of other donors and emphasis on decentralization were carried out fully.

Chapter 4.1 presents the main achievements and the activities of the Expanded Program of Immunizations Component (EPI) which are summarized below:

- Rehabilitation of the cold chain by increasing the number of working units: working refrigerators increased 28.3%; working freezers increased 55.5% and cold rooms increased by 25%; thermoses increased 115%; 88.9% increase in cold boxes and 85.6% in thermometers (For additional information on this topic, consult pages 20-22 of the Report).
- Improved EPI Systems and Procedures included design and introduction of materials for ordering and manual processing of the information on administration of vaccines, recording and control of the temperature of the refrigerators, and monitoring the cold chain at the level of the Health Area. The improved monitoring instruments are known by the names of "Salvation Charts" "Traffic Light" and "Calendar" (For additional information on this topic, consult pages 22- 23 of the Report).
- Rehabilitation of the transport equipment required supervising major and minor maintenance and repairs on the 130 motorcycles and the 38 vehicles donated earlier by USAID to be used to support activities of vaccination and supervision in the Health Areas. After managing the repairs and maintenance services, the vehicles remained reliable for their normal operation (For additional information on this topic, consult pages 23-24 of the Report).

- Development of a permanent manual process for inventories and recording of the consumption of vaccines and materials for the immunization program. (For additional information on this topic, consult the page 25 of the Report).
- Training of 9,342 participants in topics related to EPI in 119 training events (For additional information on this topic, consult pages 25-27 of the Report).
- Support was provided for EPI actions in approximately 220 "critical municipalities" (with less than 50% coverage for at least one type of immunization) to improve vaccination coverage. The concept of continuous vaccination was introduced and attention to elimination of "lost opportunities" for vaccination was achieved. (For additional information on this topic, consult the page 27 of the Report).
- Support was given to six national vaccination campaigns, called National Days of Health (JNS), to plan and promote the structuring of large campaigns. (For additional information on this topic, consult pages 27-28 of the Report).
- Material for EPI promotion and education were improved, directed to the mothers with children of the age for vaccination by the MPHSA personnel (For additional information on this topic, consult the page 28 of the Report).
- Contribution to improved supervision of the EPI program to improve the quality and the benefits. (For additional information on this topic, consult the pages 28-29 of the Report).
- Revision, production and printing of 4 modules of improved norms and procedures for the handling of EPI activities. (For additional information on this topic, consult the pages 28-29 of the Report).
- Improved Monitoring and Evaluation of EPI including 20 Rapid Assessment Surveys and specialized studies focused on acceptability and rejection of vaccinations. (For additional information on this topic, consult pages 29- 30 of the Report).

Chapter 4.2 presents the most important achievements and activities of the Oral Rehydration Therapy / Control of Acute Respiratory Infections Component (ORT-ARI):

- Support for the revision and approval of the plans for Diarrheal Disease Control (DDC) and management of Acute Respiratory Infections (ARI). These included the revision of the new approach for the Standard Case Management for ARI (MEC); the improvement of quality of care to children with emphasis on the control of diarrheal illnesses (DDC); and ARI actions for education, promotion, monitoring and evaluation of the actions for control of the disease.
- Support for the National Conference on Advances in the Control of ARI in 1994, to share lessons from Guatemala about the implementation of actions to control ARI. The

experiences described had been developed in the MPHSA with the support of C&M. National attention was given to the problem of pneumonia and of child survival. Fifty-six professionals from the Health Areas participated and 41 from Non-Governmental Organizations (NGOs).

- Support in the design and implementation of the module of "Supplies" of SIGLO.
- Support to a National Workshop on Current Communication and Education in Health, with personnel of the 24 Health Areas. Following this activity were local workshops to transfer the methodology of promotion, social communication and coordination across all sectors and Health Areas of the country (For additional information on this topic, consult pages 37 & 38 of the Report).
- Support to the production of messages and the use of various forms of communication for the promotion of the control of diarrhea and cholera in the home, including the printing of pamphlets and materials with messages regarding prevention of diarrheas (For additional information on this topic, consult the page 38 of the Report).
- Development, validation and printing of educational material for promotion and communication about ORT and ARI at the institutional level, similar to efforts directed to the community. (For additional information on this topic, consult the page 38 of the Report).
- Design and implementation of a test of communications to support the control of ARI, mainly pneumonia, which was directed the mothers in two Health Areas: Totonicapán and San Marcos. Both are located in the "Altiplano" highlands and have a population of Mayan origin of more than the 90%. The communication intervention was designed with emphasis on overcoming barriers to appropriate care for pneumonia. The results were encouraging. In spite of the short intervention time, the health personnel developed multiple communication actions and were able to show objectively, sustainable effects of their intervention. In summary, the intervention was notably successful (For additional information on this topic, consult the pages 38-39 of the Report).
- Support for the organization in the City from Guatemala of two Training Units (UDAMINs) at the Pediatric Hospital of the IGSS and the Hospital General San Juan de Dios for the training of facilitators in Standardized Case Management (SCM) for DDC and ARI; the trainees then replicate SCM in their own Health Areas and Districts: (For additional information on this topic, consult pages 39 & 40 of the Report).
- Training of 212 facilitators of 16 Health Areas and training of 4,568 workers to assist pediatric patients at the first level of attention for 18 Health Areas of the MPHSA. Included were 1,082 doctors, 645 nurses, 908 infirmery assistants, 510 rural health technicians, 149 administrative personnel, and 246 from other disciplines. The training was done with the participation of the Central Level of the MPHSA. (For additional information on this topic, consult the page 40 of the Report).

- Training of 1,418 people of the MPHSA to be trainers of voluntary personnel, and training of 4,164 volunteers in ORT (some also received the content of ARI), and training of 2,625 in ARI (sometimes with material on ORT). (For additional information on this topic, consult page 40 of the Report).

- Support for the revision and adaptation for Guatemala of the materials for the introduction of the SCM in the MPHSA. Made an initial revision with participation of the Pediatric Society, the Guatemalan Institute of Social Security (IGSS) and the PAHO/WHO. Planned a year of application, during which this material was evaluated by 9 experts, facilitators and trainers of the SCM, from diverse regions of Guatemala and by technical personnel of the UDAMIN, by technicians of the National Program, and by C&M.

- Introduction and monitoring of the evaluation of the SCM for ARI and DDC, as an important variable in the improvement of the quality of services of the MPHSA. (For additional information on the topics above, consult pages 41-42 of the Report).

- Review of the questions on ARI that should be incorporated in the Demographic and Health Survey for Guatemala, which was carried out in 1995. (For additional information on this topic, consult the page 42 of the Report).

-Support through a sub-contract to the Institute of Nutrition for Central America and Panama (INCAP), for an ethnographic study on ARI, in order to learn about the "do, think, and feel" ("hacer, pensar, sentir") of the inhabitants of three indigenous communities and their handling in the home of children under five with ARI. This research showed many practices of the community were being ignored. For example: parents don't recognize that quick breathing ("taquipnea") as a sign of danger; they don't identify the "tiraje" as a danger sign ("It is not convenient to lift the shirt, when a child is sick"); they go to the health facility infrequently, and often too late to save a child with pneumonia. It was also found that considerable dissatisfaction with the services offered by the MPHSA exists in the populations of Kiché, Kekchí, Kakchiquel and Spanish speakers. (For additional information on this topic, consult the pages 42-43 of the Report).

- Development of a protocol for analysis of the accuracy of vital statistics on ARI. The methodology of verbal autopsy was adapted for Guatemala and 46 verbal autopsies carried out in the homes of children who had died. The results were that the records of the municipality showed 39.1% pneumonia deaths (18 of 46 cases) while the verbal autopsies suggested 60.9% pneumonia deaths (28 of 46 cases). The conclusion of this analysis with a small sample suggests a significant under-registration of deaths for ARI; the true death rate may be as much as 50% higher than indicated in Guatemala's official statistics. This research by the Project suggests it is important to continue investigations and to develop mechanisms to achieve more accurate recording. Similar studies in rural zones where the

reporting is done by non-physician personnel are recommended. (For additional information on this topic, consult page 43 of the Report).

Chapter 4.3 presents the main achievements and activities of the Health Management Information System (HMIS) Component.

- Adoption for the MPHSA , with the support of USAID, PAHO/WHO and UNICEF, of the System of Information for Local Administration (SIGLO), by means of a Letter of Intent to work on a single integrated information system for MPHSA . (For additional information on this topic, consult pages 50-51 of the Report).

- Development, completion, and adaptation of the SIGLO system to the necessities of the MPHSA in Guatemala. SIGLO's main characteristics are the following: ease of use; use of the current personnel; compatibility with manual systems; flexibility of structure; operation by either single users, multi-users, or with networks; use of passwords for security of the information and for user responsibility; readiness of back-up routines to protect information. (For additional information on this topic and the material below, consult pages 51-52 of the Report).

- The minimum technical conditions required for the installation of SIGLO are modest; i.e. a 386 processor or better, 4 MB of RAM, a 20 MB hard disk, and a printer with a wide carriage to print the required reports. These conditions have already been met at the decentralized level in 27 Health Areas of Guatemala and a variety of departments at the Central Level of MPHSA.

- The content of the SIGLO system, as developed and installed in Guatemala, was the following: an opening component with modules for geographical location, institutions and functional organization; a component of human resources with the module of registration of personnel; a component of suppliers and the module of registration of suppliers; a component of supplies, with the module of handling of warehouses; a component of goods and equipment, with the module of registration of goods and equipment; a component of budget with the module of expenditures; a component of health statistics (SIIS) with a module of the forms for recording data and a component for planning with the module for the Annual Operational Plans (POA) at the level of the Health Areas, and their consolidation in the Central Level. (For additional information on this topic, consult pages 52-54 of the Report).

- Development of the system with a data base with all the information necessary for the Health Areas. The computerized version was developed using FoxPro relational data base, Version 2.6. This platform was widely used in Guatemala which facilitated the recruiting of personnel with the necessary skill to operate and maintain the system. The tools used for the development of the system were: data flow diagrams, a data dictionary, diagrams of entity-relationships, and diagrams of transition of data states. (For additional information on this topic, consult pages 54-55 of the Report).

- Implementation of the SIGLO system was done in all 24 of the original Health Areas of Guatemala. The details of the implementation were as follows: Opening module with registrations finished in 12 Health Areas; human resources, totally implemented in 8 Health Areas; goods and equipment, implemented in their entirety in 2 Areas; manual system of supplies, partially implemented in the 24 Areas; computerized recording of supplies, working in 9 Areas; financial system modernized and information updated in 14 Areas; SIIS, working in 6 Health Areas; and planning, given to the Sectoral Unit of Planning in Health- USPAS- of the MPHSA . (For additional information on this topic, consult pages 55-56 of the Report).

- SIGLO training was provided for 1,725 people on diverse topics. User's Manuals were designed in a didactic form to be used for training and for operations. The manuals follow the sequence in which the menus are encountered on the menus and sub-menus. (For additional information on this topic, consult the pages 56-57 of the Report).

- Establishment of 24 micro-centers for processing data in the headquarters of each of the Health Areas, with adaptation on the premises, and provision of equipment and offices and computer networks. Equipment and partial installation in the 3 newest Health Areas. (For additional information on this topic, consult the page 57 of the Report).

- Purchase, installation and maintenance of 116 computers, 42 printers and 24 packages of Novell net software. Also, repair of the copiers and arranging for the maintenance of the computers of the Unit of Computer Science of the Central Level. (For additional information on this topic, consult pages 57-58 of the Report).

- Five Basic Guides for the Use of the Information in Health, on the following topics: basic mathematics, calculation of populations and indicators, graphic presentations of information, preparation and use of maps, and the Use of Information for Management: Monitoring, Evaluation, and Decision-making. The Basic Guides were tested in San Marcos with 316 officials of all levels, and subsequently was disseminated for the rest of Health Areas through 2 facilitators per Area. Material was provided for training in approximately 20 Health Areas. (For additional information on this topic, consult pages 59-60 of the Report).

Publication of 3 issues of the MPHSA Bulletin Advances in Maternal-Child Health, with diverse topics related to all the components of the Project. (For additional information on this topic, consult the page 61 of the Report).

- 20 Rapid Assessment Surveys (RAS) were carried out estimating the Knowledge, Practices, and Coverages relevant to child survival interventions in 19 Health Areas. These RAS studies generated information for regional and local level planning, programming, monitoring and evaluation of the activities of education and promotion of health. The methodology used a simplified method of "cluster sampling" with partially probabilistic selection of interviewees. A series of modular questionnaires were prepared that could be used or discarded according to the local problems. A group of tested basic

indicators were used in each module, as well as a process for simplified training for supervisors and enumerators. Instructions for manual data processing and also a software program for automated data processing were provided, as well as a guide for analysis and use of the information for modifying disease prevention and health promotion programs. (For additional information on this topic, consult pages 61-64 of the Report).

- Trained approximately 300 people of the MPHSA, mainly doctors, epidemiologists, nurses, and rural health technicians, in the RAS methodology. Many were from the MPHSA; other trainees were from NGOs. (For additional information on this topic, consult the page 63 of the Report).

RAS proved useful for diagnosis and analysis regarding local level child survival programs, estimating of base lines for monitoring, definition of objectives and targets, setting priorities for actions, definition of strategies for specific interventions/programs, and reports on achievements resulting from MPHSA actions. (For additional information on this topic, consult the pages 63-64 of the Report).

-An evaluation of the RAS methodology. The most important conclusions of the evaluation were the following: the methodology for cluster sampling and selection of subjects for interviews could be improved; and other practical suggestions were presented for refining the RAS methodology. (For additional information on this topic, consult pages 64-66 of the Report).

- Two studies to improve the quality of the epidemiological surveillance system. (For additional information on this topic, consult pages 66-68 of the Report).

- Analysis of six current experiences for development of sub-systems for Community Based Health Information. (For additional information on this topic, consult pages 68-71 of the Report).

Chapter 4.4 presents the most important achievements and activities of the "Improved Administrative Systems (IAS) Component:

- Analysis, proposals for improvements, modifications and implementation of the systems for planning, financial management, personnel administration, and logistics.

In the planning system, the focus was on completing the centrally mandated Annual Operating Plan (POA). Subsequently the planning process developed into a more complete process of planning, with the participation of the whole health sector, the active participation of the community, the invigoration of the process of decentralization, the orientation toward team work, and the transformation of the POA and control and evaluation of the community into a "social" process of planning. (For additional information on this topic, consult pages 74-75 of the Report).

The improvements of the system of financial management included the module of goods and equipment, the possibility of registering the capital equipment by their main characteristics and assigning a responsible for their handling and custody to a specific employee. In the budget module, management and control of the movements (allocations, ceilings, additions, cuts and transfers) of budgeted expenditures and their approval, with issuing of purchase orders and control of official payments. (For additional information on this topic, consult pages 75-76 of the Report).

In the system of personnel administration, the improvements were in registering, control and tracking the employees and volunteers, and maintaining records of the movements of personnel automatically. (For additional information on this topic, consult the page 76 of the Report).

In the system of logistics or supplies, the improvements were appropriate handling of warehouse inventories, including general supplies and pharmaceuticals, by means of the registration and control of the inventories, managing the movements of the goods, and the rendering of accounts. A suppliers module was developed. (For additional information on this topic, consult the pages 76-77 of the Report).

- Revision and planning of future improvement of the administrative systems of documentation, files, cost analysis and internal controls. (For additional information on this topic, consult pages 78-79 of the Report).

- Training of 5,187 people in 125 events, in the diverse topics of Administrative systems. (For additional information on this topic, consult page 80 of the Report).

- Manuals for all the components of SIGLO, as a document for consultation and for use in future training. (For additional information on this topic, consult the page 81 of the Report).

- Development and testing , in cooperation with PAHO/WHO and BASICS, of a methodology for Rapid Assessment of Management, including assessing the organizational climate and administrative processes. The test was carried out in the Health Area of Chimaltenango with excellent results; with the pertinent adjustments, field work was carried out in the Health Areas of Sololá and Totonicapán. (For additional information on this topic, consult pages 81-82 of the Report).

The main needs identified for improvement in MPHSA were the following: speeding up the execution of the budget and the decentralization of resources; a plan of incentives; definition of the functions of the personnel and the evaluation of their performance; setting standards for each program; preparation of supervision guides and schedules for supervision visits. (For additional information on this topic, consult the page 82 of the Report).

From the analysis of organizational climate of MPHSA, the priorities were the following: developing leadership; the recognition of effort publicly; the improvement of the conditions of work; giving the pertinent resources for doing work; and supervision with defined objectives (For additional information on this topic, consult the page 82 of the Report).

The main conclusions were that the RAM diagnostic instruments were a good way to identify the problems in the Health Areas; that the methodology was well accepted and the sharing of results with the local level were very valuable. (For additional information on this topic, consult page 82 of the Report).

- Placement and management of "Gestores" (i.e. C&M's "Promoters of Improved Management and Administrative Systems") in 24 Health Areas for management improvement and administration of Project funds; in the second phase, their number was decreased from 24 to 8 and their function was changed toward more technical support for transfer of "management technology." (For additional information on this topic, consult pages 82-84 of the Report).

Chapter 5 presents Constraints on the Project and on C&M, including (in 5.1) those constraints common to all the Components and (in 5.2) constraints specific of each component. The limitations common to all components were the following: the lack of permanent counterparts who would have a greater dedication to the activities of the Project; the difficulty of modifying a traditional centralist focus on strengthening the Central Level into the main thrust of the GCS project, a reorientation focused on decentralization with good management, and effective coordination/support from the Central Level; faulty coordination between the dependencies of the MPHSA and with the International Agencies; limited technical personnel at MPHSA for the adoption of the newly developed technology; lack of a culture of "use of information" for management decision-making. The inadequacy of resources for the purchase or acquisition of supplies pertinent to the activities, for example, the travel of MPHSA personnel was limited due to limited funds for the payment of per diems, transport, and fuel; the lack of formal specialized management processes for MPHSA or systems for the Central Level; and occasional lack of determination in regard to the implementation of the recommended processes, methodologies or systems in the Health Areas. (For additional information on this topic, consult pages 87-88 of the Report).

The specific limitations for the Components included the following: a) In EPI, the centralist conception of program by the Central Level; the lack of adoption of the system for administration of supplies in the Central Level and the duplication of operation of this system in the Health Areas; b) In ORT-ARI, insufficient interagency coordination, in spite of the advances achieved; and a lack of integration between the norms of training and of supervision; c) In the HMIS, difficulty in the development of the "Informatica" Unit, so that there were incomplete interrelations between modules; the lack of human and financial resources for the maintenance of software, hardware and nets and constant

"flaws" of the equipment due to inadequate handling; d) In IAS, lack of Administrative Manuals (For additional information on this topic, consult pages 87-88 of the Report).

Chapter 6 presents some "Reflections" for the future, derived from the experience of C&M for 4 years working with the health sector in Guatemala. Reference is made to the need for continuation of support for decentralization, including constructive participation from the Central Level for setting priorities, training, and supervision; the continuation of the development of the administrative and management capacity, and administrative institutional strengthening of the MPHSA through training and technical assistance; the maintenance of Interagency Coordination; the gradual increase of financing the costs of the components of the Child survival Programs from the national budget; the formal adoption of systems (SIGLO), methodologies (SCM) and strategies (e.g. continuous vaccination); the selection of National Coordinators for activities, systems and modules; the recruiting of technical personnel for specialized topics; the continuation of the integration between the Components of the Project (For additional information on this topic, consult pages 88-90 of the Report).

More specific reflections for specific components follow:

a) In the EPI Component - Transform the Central Level EPI group into advisors and trainer-supervisors who provide technical assistance to the decentralized Health Areas and Districts as well as to other health sector institutions that provide immunizations; MPHSA should strive to offer continuous immunization services at all MPHSA facilities (rather than depending so much on nation-wide campaigns and costly door-to-door programs) with immunizations available during the whole working day. Provide immunization services at times convenient to mothers; e.g. evenings, weekends, and holidays. Sustain cold chain maintenance and repairs including contracting for services with private sector suppliers; increased focus on "high risk" groups such as indigenous groups and remote populations; communications studies like those done by INCAP for the ARI component; special effort for improving coverage in the Metropolitan Guatemala City Region; vaccine purchase and management suggestions; more use of RAS-type sample surveys; improved immunization monitoring; epidemiological surveillance; vaccination data collection forms for each individual child; analysis of tetanus toxoid immunization interventions and possible drastic restructuring.

b) In the Component ORT-ARI: similar to EPI, convert to a group of Central Level program advisers and supervisors building and supporting the capacity of the Health Areas; continue the initiatives for integration health care for the child; extend the list of technical and financial support of the MPHSA to other organizations providing health care; continue the institutional strengthening of the management and administrative abilities of the personnel of the Health Areas and Health Districts; reinforce the critical mass of individuals who "use information" for decision-making; strengthen the epidemiological surveillance; continue the development of the Standard Case Management; and continue and extend the activity on communications regarding pneumonia.

c) In the HMIS Component: define the functions of the Informatica Unit with a new focus; continue and strengthen SIGLO; strengthen the maintenance of the computers and peripherals; strengthen the use of the "Basic Guides for the Use of Information in Health" in the MPHSA; Support use of Rapid Assessment Surveys and adaptation of the methodology as appropriate.

d) In the IAS Component: continue support to the Sectoral Unit of Planning (USPAS) in their efforts to develop the planning system appropriately; continue improvements of financial administration systems, personnel administration and logistics; use the documents prepared and produced in the Project for the elaboration and application of specialized MPHSA Administrative Manuals; and, use the methodology of Rapid Assessment of Management in all the Health Areas. (For additional information on this topic, consult pages 90-98 of the Report).

The main reflections for the handling of the transition after the termination of the C&M contract refer to the possibility that the MPHSA will receive support through the INCAP and BASICS for the continuation of the efforts supported earlier by C&M (For additional information on this topic, consult pages 96-97 of the Report).

Annex 6 presents a list of the C&M documents that were prepared during the contract, with copies given to USAID/ G-CAP for future analysis and use, as well as for clarifications and additional details on topics covered briefly in this Report. (For additional information on this topic, consult the Annex 6 of the Report).

1. INTRODUCTION.

This final report presents the achievements of the Child Survival Project in Guatemala, supported by the United States Agency for International Development -USAID- in coordination with the Ministry of Public Health and Social Assistance -MPHSA- of Guatemala.

Clapp & Mayne (C&M) was contracted under USAID contract No. 520-0339-C-00-2147-00 for the period June 4, 1992 to June 30, 1996, for technical assistance included in the "Immunization and Oral Rehydration Therapy Service for the Child Survival Project - USAID Project No. 520-0339".

Chapter 2 of the report presents the background of the C&M contract, then describes the contract objectives and organizing principles and ends with a summary of the main Project and Contract events.

Chapter 3 presents a global analysis of goal and purpose level achievements; Chapter 4 added details about the four technical Components of the contract: 1) Expanded Program of Immunizations (EPI), 2) Diarrheal Disease Control/Oral Rehydration Therapy and Acute Respiratory Infections (ORT/ARI), 3) Health Management Information System (HMIS) (including monitoring and evaluation) and 4) Improved Administration and Financial Management (IAFM). The reporting on each component includes: the established contract objectives, the strategies adopted by C&M to accomplish the objectives, a description of interventions to accomplish the strategies and, finally, the impact and results achieved.

Chapter 5 presents the main constraints on the contractor during the implementation of the contract.

Chapter 6 presents our reflections experience during the contract and the "sustainability" of Project achievements in future. The same Chapter presents reflections on mechanisms and actions needed to manage the transition after the Project ends, on June 30, 1996.

At the end of the report, a document list is included, identifying documents prepared during the contract; copies of these documents were delivered to USAID/G-CAP, for future use.

2. BACKGROUND.

This Chapter presents the background of the Project before June 1992, when Clapp & Mayne's contract began. The second part of the Chapter presents basic information on the Project since C&M contract started, as well as the initial C&M contract and its amendments.

2.1 SUMMARY OF GUATEMALA CHILD SURVIVAL PROJECT UNTIL JUNE 1992.

The original Project agreement between USAID/ Guatemala (USAID/G-CAP) and the Government of Guatemala (GOG) was signed August 1985. The Project Goal stated in the logical framework is "to reduce mortality and morbidity throughout Guatemala caused by the common childhood diseases, preventable by immunization and due to or related to diarrheal diseases".

The original Project Paper focused on the theme "Immunization for Child Survival", and was based on a new approach to increase coverage against immuno-preventable diseases. This approach used channeling, which is outreach via census-based promotion (by local level health workers) of preventive health behavior, including vaccinations.

The Project's purpose was "to increase immunization coverage for the six immuno-preventable diseases (diphtheria, pertussis, tetanus, polio, measles, and tuberculosis) in children under five years, and tetanus toxoid (TT) for pregnant women, from 27% and 0.4 percent respectively, to 80 percent by August, 1988".

The Project was to develop incrementally to cover the 21 health areas outside of metropolitan Guatemala. The Project components were: (1) training and supervision; (2) promotion; (3) cold chain; and (4) administrative support. These components provided technical assistance and logistic support, i.e., transport, fuel, per diem to the Ministry of Public Health and Social Assistance (MPHSA), and permanent local surveillance systems to identify and refer the target groups for immunization.

The Project had a difficult start-up. The original agreement was signed in August, 1985, during the transition from a military to a civilian government, which took office in January, 1986. The change in government included significant changes in the structure and staffing of MPHSA. These initial changes and subsequent staff changes and a nation-wide strike of health workers in the Summer of 1986 caused delays and low expenditure of Project funds.

The original Project Agreement (PROAG), signed August 27, 1985, had four Conditions Precedent (CPs) which were not met until mid-April, 1986, almost 8 months after signing. The four CPs established by Amendment No. 1 were not met until approximately six months after its signing. Thus, scheduled disbursements had to be postponed for about fourteen months, over half of the Project's implementation period (to August, 1987). By August 1987, with 40 percent of project time elapsed, only seven percent of the funds were expended for commodities directly procured by USAID and were not tied to the Project or Amendment No. 1 CPs.

The Project has had three major amendments since its original signature in August, 1985.

Project amendment No. 1 - Oral Rehydration Therapy.

The first amendment added, in the first project year, an oral rehydration therapy (ORT) component to the original immunization program focus. The Project was also amended (in July 1986) to add the three health areas of Guatemala City and to add \$ 3.0 million to support the existing National ORT Program. With the original Project budget of \$ 6.7 million, this amendment raised total grant funding to \$ 9.7 million. The life of project (LOP) was extended 12 months to August 31, 1989. The objective added by the Amendment was to increase the use of ORT from 0.9 percent to 80 percent by Project end. This additional component was primarily to support the production and distribution of oral rehydration salts (ORS), but also included support for training, supervision and promotion of ORT.

Project amendment No. 2 - Health/Management Information and Improvement of Management Capacity.

The slow project expenditure rate resulted in a large pipeline of approximately \$ 8 million against obligations of \$ 9.7 million. To address this problem, in August, 1987, the project strategy was modified to provide management systems assistance to the MPHSA to accelerate project implementation improving their management capacity and information systems.

On August 28, 1987 the project was amended for a second time, to increase grant funding by \$ 6.7 million for two new components (Improvement of Management Capacity and Health Management Information) and related technical assistance. The Life of Project was extended for 28 months, to December 31, 1991. In addition, funds provided in the grant for immunization and in Amendment No. 2, were intended to finance the Immunization and ORT Components during the remaining years of the Project.

Finally, Amendment No. 2 reduced the targets for immunization and ORT coverage during the LOP from 80% to 70%, and targets for TT coverage for pregnant women were reduced from 80 % to 60%.

In July, 1988, contract for technical assistance was awarded to Management Sciences for Health (MSH), to support and strengthen MPHSA capacity to manage and deliver child survival services.

Project Audits and Project Mid-term Evaluation.

In April, 1988 Peat Marwick began a project audit for the period of 10/01/86 to 09/30/87. In January 1989, their final report was submitted to the Regional Inspector General's (RIG) Office. In May 1989, the RIG presented the report to USAID/G-CAP.

The audit report contained a total of 19 recommendations. These were based on several major findings. There was a disclaimer of opinion on the fund accountability statement due to the insufficiency of supporting documentation, noncompliance with agreement terms and because the Project Administrative Unit did not perform physical inventories of materials and fixed assets. The evaluation of compliance with applicable laws, regulations and agreement terms, disclosed \$ 41,000 in purchases

not in compliance with procurement laws and regulations and inadequate documentation for per diem payments. The RIG Office was asked to investigate these anomalies, working with GOG authorities. The MPHSA was requested to comply with the 19 recommendations made by the independent audit.

In July-August 1989, a mid-term Technical Evaluation of the project was conducted. The evaluation found that \$ 6.5 million of the \$ 16.4 million of project funds had been expended. The project had contributed significantly to reaching project objectives in increasing immunization and ORT coverage. With vaccination coverage rates of 53% for polio, 49% for DPT, the evaluation estimated that by Project end, December 31, 1991, the targets of a 70% immunization coverage rate would be met. However, reaching 70% coverage rates in ORT and 60% TT for pregnant women would most likely not be achieved. The evaluation also reported that, for most of the project, the MPHSA Project Administrative Unit (PAU) had been effective in increasing project expenditures and decentralizing funds to the 24 Health Areas. However, in recent months prior to the evaluation, the PAU had significantly reduced project expenditures, resulting in slowed project implementation. With fewer project expenditures and slowed activities, the effectiveness of contracted technical assistance (TA) in management had been limited.

In September and October of 1989, the Minister of Health and the USAID/G-CAP Mission Director held meetings to review the issues and discuss how they could be resolved. MPHSA staff then responded to USAID/G-CAP issues expressed in the audit recommendations, to improve coordination and more effectively use project TA.

In September, 1989 internal USAID/G-CAP procedures to contract a second independent audit were begun. By January 30, 1990 a second audit was underway. This audit was programmed to cover the period of 10/01/87 through 06/30/89. By February, the audit firm informed the Mission that they could not continue since they had found a lack of documentation for approximately \$ 2 million of project expenditures.

On March 16, 1990 USAID/G-CAP suspended project disbursements. In June, 1990 the audit firm was asked to assist the MPHSA to reconstruct documentation on expenditures from 10/01/87 through the Project suspension date March 16, 1990. The auditor's October, 1990 report confirmed that \$ 1,092,808 of expenditures were not allowable under USAID regulations. In December, 1990 USAID/G-CAP sent a letter to the Minister informing him that the Project could not be re-started until the GOG restored these funds into the Project.

In 1991, GOG reimbursed project funds.

2.2 THE GUATEMALA CHILD SURVIVAL PROJECT AND CONTRACT ACTIVITIES OF CLAPP & MAYNE FROM JUNE 1992.

In June 1992, Clapp & Mayne signed the contract with USAID Guatemala. With this contract, USAID "intends to provide TA to support the development at Central MPHSA and the Areas, an efficient

accounting, administrative and financial system". C&M was to directly disburse funds for certain project activities. C&M was to train MPHSA staff in generally acceptable accounting principles and in the administrative and financial management of project funds. C&M was to serve as a bridge for transition to MPHSA capability to manage project funds.

Project funds were to be disbursed for four major Project components: immunizations, oral rehydration therapy, health management information system and administration and financial management systems.

The Logical Framework of the Project is included as Annex No. 1 to the report.

The Goal of the Child Survival project remained unchanged at contract signing, i.e. To reduce morbidity and mortality throughout Guatemala caused by common early childhood diseases, preventable by immunization and due to or related to diarrheal diseases.

By June 1992 when C&M began its contract activities, Guatemala had experienced the suspension of project activities of two years. Immunization coverage had suffered a decline to a 35 percent coverage rate for children under five. During this period, a measles outbreak had resulted in 4,685 reported deaths and the appearance of three wild poliovirus cases. Other epidemiological information pointed to a decline in services and their quality.

In addition, early in the Project, the MPHSA's Information System was one of its greatest weaknesses. These weaknesses continued through 1992, with information on goods and services, personnel, budgets and vital statistics found not be generally valid, complete or useful for MPHSA planning. Between 1990 and 1992, during Project suspension, certain TA continued to support the strengthening of the MPHSA information system. This assistance included the preparation of physical space for and revision of the Information system for use at the Health Area level and later the central MPHSA level.

The C&M contract included a subcontract with Management Sciences for Health (MSH), for TA in the No. 3 component -Health Management Information System, continuing the work previously carried out by the MPHSA and MSH.

C&M gratefully acknowledges the staff who participated in the technical assistance work for Guatemala. There were four international advisers who relocated to Guatemala with their families to serve as Resident Advisers to USAID/G-CAP and MPHSA as part of the Guatemala Child Survival Project:

- José Peña was the C&M Chief of Party from 1992 to 1993, which included the entire Phase One period and a transition period at the beginning of Phase Two.
- Ramón Ríos Yambó was the resident leader for Management Sciences for Health from 1992 to 1994 and led the work in Component Three on the Health Management Information System during Phase One.
- Rodrigo Bustamante Alvarez was the C&M Chief of Party from late 1993 to 1996 which included most of the period of expanded technical assistance.

- Victor Lara was C&M's resident Senior Advisor for Immunizations, Oral Rehydration Therapy, and Acute Respiratory Infections from late 1993 to 1996. He also provided the intellectual leadership for twenty Rapid Assessment Surveys of Knowledge, Practices and Coverages in Guatemala.

A more complete list of 92 people who worked on this project is presented in Annex 7. This list includes our Guatemalan and international staff, long term and short term, technical and administrative, C&M employees and MSH employees.

At the start of contract activities, C&M confirmed that the MPHSA continued to need significant help to strengthen its administrative and management capacities. The weaknesses found hampered MPHSA decentralized decision making, or Health Area programming and administration. C&M was to support project efforts to improve the control of resources of the Ministry with TA to strengthening of administrative and accounting systems.

C&M began its contract activities with the benefit of the earlier audit report with its 19 major recommendations for improvement of the administrative and financial systems.

Project amendment No. 3 - Acute Respiratory Infections Component addition.

In June, 1993 a new component of the Project was added, the Acute Respiratory Infections Control (ARI), which would contribute to further reductions in infant and child mortality in Guatemala, particularly from pneumonia, the form of ARI that most often kills young children when left untreated.

The primary objectives of the amendment were to improve the quality of pneumonia Standard Case Management (SCM) throughout the country and to achieve 60% coverage of SCM of pneumonia cases in 8 to 10 high priority Health Areas. This effort would lead to earlier diagnosis and treatment of pneumonia and more cost-effective use of GOG and family resources than at present.

The MPHSA, with the C&M support, would define and implement the steps necessary to bring Guatemala's ARI program in line with the revised World Health Organization (WHO) guidelines for pneumonia SCM.

Some other aspects included in the amendment were: to test various alternatives for increasing access to SCM, through specific operations research studies conducted or subcontracted; to strengthen the ability of the MPHSA to guide and organize pneumonia control activities throughout the country, through the establishment of a clinical training center for "master" trainers at one of Guatemala training hospitals and the revision of all ARI training and promotional materials and of the ARI training methodology and information systems currently in use.

The Health Area level was defined as the appropriate location for USAID/G-CAP-supported program assessments, health worker and promoter training and operations research studies. Through active participation in these activities, Health Area managers would develop important planning, evaluation

and quality control skills that were currently lacking. They would also create an on-going ARI training capacity and improve the overall health referral system and improving coordination between primary and secondary MPHSA facilities.

Three new Health Areas included.

In September, 1995 the contract amendment No. 8 was signed. This amendment included an activity to procure and install 7 pentium-style microcomputers, printers, software and peripherals for the new Health Areas of Ixcán, South-west Peten and South-east Peten, created in the mid-year, to bring these Health Areas in line with the capabilities of the other Health Areas; additionally, an activity to complete the integration of the SIIS system with the SIGLO management information system for 27 Health Areas was added. This included preparing the networking software, manuals and staff training.

From this time on, C&M reorganized its work to give technical assistance to 27 Health Areas in the HMIS component, while the rest of components worked in the 24 original Health Areas.

Contract objectives and organizing principles.

Two objectives of the Clapp & Mayne contract with USAID/G-CAP were complementary but distinct from the Project objectives:

1. Management of the Project funds and activities for the MPHSA to support the need of commodities and services for the EPI, ORT, Administration and Health Management Information Systems components during the life of the Project (originally 40 months from contract signing).
2. Improvements of the administrative capacity in all MPHSA levels, so they assume the appropriate administration and control of projects in the future.

Given the history of project activities previously summarized, the TA contract with C&M was designed with explicit organizing principles in order to give guidance to the contractor. These principles encouraged C&M to adapt its technical approach to the specific MPHSA needs during the project execution.

The six main Organizing Principles of Project were: 1) Emphasis on the use of local/Guatemalan advisors and entities; 2) Technical assistance as training; 3) Flexible implementation; 4) Strengthening of existing institutions; 5) Participation by other donors and 6) Decentralized approach. In next chapter the C&M compliance with these principles during contract execution is presented.

During the first stage of the Project, C&M had the participation of MSH in the development of the HMIS component; this firm contributed to the achievements later on presented in this component.

During the implementation process, C&M contract had 8 amendments; a summary of these amendments and of the main events of the Project and the Contract are presented in a table in the Annex 2 to the report.

3. THE IMPACT OF THE PROJECT ON MORTALITY, MORBIDITY AND COVERAGE.

Our analysis of the impact of the project comes from comparing the Project's "goal" and "purposes" defined in the project's Logical Framework, with the most recent information available. For more information about the Logical Framework, see Annex No. 1.

Mortality.

The "goal" of the project, which could be taken as an impact indicator, is "to reduce morbidity and mortality throughout Guatemala caused by common early childhood diseases, preventable by immunization and due to or related to diarrheal diseases". The objectively verifiable indicator of this goal is described as "Reduction in proportion of childhood mortality (under 5 years old) attributable to the common early childhood diseases".

The best data to verify the accomplishment of this goal comes from the 1995 and 1987 Demographic and Health Surveys (DHS).

In the 1995 DHS preliminary report, it is pointed out that the infant mortality rate, for the five years before the survey, was 51 per thousand for the country", that "there has been a clear continuous decrease in the infant mortality rate in the last 25 years in Guatemala, from 103 per thousand born alive during the period 1970-75", and that "the observed decrease in the last ten years is 36 per cent". The period from 1985 to 1995 is the period that applies to the Project.

Regarding child mortality (under 5 years old), the DHS states that "between the periods 1980-85 and 1990-95 child mortality (under 5 years old), decreased by 41 per cent (from 116 to 68)".

Regarding mortality caused by diseases preventable by immunizations, reductions can be seen in the following figures about the number of children's deaths.

**NUMBER OF CHILD DEATHS CAUSED BY DISEASES PREVENTABLE BY
IMMUNIZATIONS, REGISTERED IN THE MPHSA. 1989 AND 1995.**

DISEASES	1989	1995
Measles	343	0
Diphtheria	3 (in 1991)	0
Whooping cough	179	0
Neonatal Tetanus	103	3

Source: MPHSA Epidemiology Division.

From the above figures, it can be concluded that the project and contract "goal" of impact regarding mortality was reached.

Morbidity.

Regarding morbidity caused by diseases preventable by immunizations, the cases registered by Ministry of Health facilities are the following, according to records from the Epidemiology Division of the MPHSA, for the years 1985 and 1995:

**NUMBER OF CASES OF DISEASES PREVENTABLE BY IMMUNIZATIONS,
REGISTERED IN THE MPHSA. 1985 AND 1995.**

DISEASES	1985 YEAR	1995 YEAR
Measles	1,776	25
Whooping cough	1,162	20
Polio	29	0

Source: MPHSA Epidemiology Division.

These figures are a clear evidence of the positive effects of the vaccination program on morbidity caused by diseases preventable by immunizations.

In the case of poliomyelitis, the wild poliovirus transmission has been eliminated from Guatemala, according to the certification issued by PAHO/WHO in 1994 and since the year 1993, no cases have appeared.

In the case of measles, a strong decrease in number of cases can be observed; the cyclical behavior of the disease produces an outbreak in the country every 3 to 5 years, but the coverage reached during the project made it possible to change this phenomenon. Outbreaks presented in the years 1994 and 1995, were limited to the Health Area of Huehuetenango and also mainly involved non-vaccinated adults.

A similar decrease is observable in the case of whooping cough (pertussis). In the case of diphtheria, there have been no cases since 1991 (4 cases and 3 deaths).

Coverages.

The "project Purpose" is to: "support of strengthening the MPHSA's capacity to deliver child survival health services. Increase up to 70% the immunization coverage against the 6 immuno-preventable diseases and increase up to 70% ORS use coverage for children under 5 years of age. In addition, apply tetanus toxoid vaccination to 60% of pregnant women".

The objectively verifiable indicators from this "purpose" are defined as: "increase to 70% the immunization coverage of children under 5 years of age; increase to 60% the neonatal tetanus vaccination protection of pregnant women and increase to 60% the oral rehydration therapy coverage of children under 5 years of age".

Again, the most reliable data comes from the 1995 DHS and its comparison with figures from the 1987 Survey.

Vaccination Coverages.

The data on vaccination coverage evolution in children from 12 to 23 months old and in pregnant women, from the 1987 and 1995 DHS, are presented in the following table:

VACCINATION COVERAGE IN CHILDREN FROM 12 TO 23 MONTHS OLD AND
PREGNANT WOMEN, AND CHANGE BETWEEN YEARS 1987 AND 1995
(in percentages)

VACCINATION TYPE	1987 DHS	1995 DHS	CHANGE
Polio 3rd. doses (OPV3)	52.1	55.9	+7.3
DPT 3rd. doses (DPT3)	47.0	59.4	+26.4
Measles	68.7	75.1	+9.3
Tuberculosis (BCG)	51.0	78.2	+53.3
Fully immunized children	24.7	42.6	+72.5
Tetanus Toxoid 1st. doses (TT1) in pregnant women	13.7	54.9	+300.7

Source: 1987 DHS Results and 1995 DHS Preliminary Report.

It is clear that there has been an important increase in all immunization coverages, specially in DPT3 Y BCG and strongly in fully immunized children, i.e., protection against all 6 immuno-preventable diseases. This is a better quality indicator than single vaccination indicators. The fully immunized children indicator increased 72% in the period. Also, pregnant women protected with first tetanus toxoid vaccination increased 300 per cent in the period.

It is important to note that these achievements are due to MPHSA efforts and also some other health sector institutions' efforts.

Also, it is important to analyze another two aspects of coverages: i) its "equity", reflected in coverage distribution by some population characteristics and ii) "completed series", in immunizations requiring more than one dose. A brief analysis of these two aspects follows.

Protection "equity".

A key project strategy was to focus coverage improvement in "high risk groups", which in Guatemala and elsewhere are concentrated in the low income population, those with less education and indigenous people.

Protection "equity" can be measured by looking at coverages related to these population characteristics: geographical location, ethnicity, and education. The table on the next page shows coverage figures related to the mentioned characteristics, comparing 1987 and 1995 DHS results.

Figures on urban-rural areas show that rural area coverages have increased so much that now they are higher than in urban area, for most immunizations and for fully immunized children; this is a reversal of the 1987 situation for DPT3, fully immunized children and TT1 and an important relative improvement for measles and BCG since 1987, when all urban coverages were higher than rural.

The Metropolitan Region has lower coverages than the rest of Regions, in almost all immunizations, while North-West Region, a particularly deprived area, has an outstanding level of coverages. Similarly, Region comparison between 1987 and 1995 figures show radical changes, since in 1987 Metropolitan Region was higher than the North-West Region in almost all coverages.

Regarding ethnicity, although differences between non-indigenous (ladinos) and indigenous people still exist, gap has been reduced because of greater improvements in indigenous population coverages; the same comment can be made for education levels, with much more significant improvements for less educated population groups.

In summary, project has contributed to improved coverages, and also to improved equity in protecting target population groups at high risk with vaccination: low income, indigenous and less educated people.

"Completed series"

Completion of the full recommended series can be analyzed in coverages for those immunizations requiring more than one dose for adequate protection. Observed coverages in 1995 DHS were the following:

FIRST, SECOND AND THIRD DOSES FOR POLIO AND DPT IN 12 TO 23 MONTHS OLD CHILDREN. 1995.
(in percentages)

IMMUNIZATION	1ST. DOSE	2ND. DOSE	3RD. DOSE
Polio	89.1	76.2	55.9
DPT	85.5	75.3	59.4

Source : 1995 DHS Preliminary Report.

COMPARISON OF POLIO 3, DPT3, MEASLES, BCG AND FULLY IMMUNIZED COVERAGES IN CHILDREN FROM 12 TO 23 MONTHS AND
TETANUS TOXOID 1 IN PREGNANT WOMEN, BY SELECTED CHARACTERISTICS. GUATEMALA
1987-1995
(in percentages)

CHARACTERISTICS	POLIO 3		DPT 3		MEASLES		BCG		FULL. IMM.		TT1 PREG.	
	1987	1995	1987	1995	1987	1995	1987	1995	1987	1995	1987	1995
Area												
Urban	61.9	48.6	60.2	56.6	74.6	77.6	63.6	81.0	37.3	35.0	15.7	52.6
Rural	48.7	59.6	42.5	60.7	66.7	73.9	46.6	76.8	20.4	46.3	12.9	56.0
Region												
Metropolitan	69.7	50.3	62.9	56.1	57.3	74.8	57.3	81.3	30.3	32.9	12.2	51.8
North	36.0	60.2	32.4	55.9	67.6	75.1	55.0	56.8	19.8	36.4	10.6	52.7
North-East	77.6	66.2	71.4	71.3	83.7	74.5	73.5	91.6	55.1	52.9	17.2	67.4
South-East	37.5	72.3	35.4	70.7	79.2	90.4	56.3	92.8	12.5	62.3	39.5	70.0
Central	55.1	52.7	49.0	65.5	77.6	81.1	42.9	83.6	20.4	45.1	17.6	59.2
South-West	50.7	51.7	44.9	54.8	66.7	70.9	44.9	75.2	26.1	42.6	6.7	55.2
North-West	42.9	56.8	38.1	55.9	59.5	68.5	14.3	70.2	7.1	46.0	5.3	41.3
Ethnic group												
Indigenous	44.1	52.0	39.4	52.0	64.4	67.5	38.8	70.1	18.1	38.5	6.9	48.8
Ladino	57.6	58.7	52.4	64.6	71.7	80.7	59.5	84.1	29.4	45.4	18.7	59.5
Mother's education level												
No education	45.1	52.6	41.7	52.3	64.6	66.3	39.8	70.7	18.4	38.9	10.1	51.1
Primary	53.0	58.9	47.0	62.5	72.0	78.9	58.9	81.7	27.4	45.7	N.A	59.3
Secondary	70.8	52.2	60.4	67.7	81.3	85.5	64.6	84.3	41.7	42.2	N.A	52.8
Higher education	62.9	63.7	60.0	63.9	60.0	87.7	60.0	96.3	25.7	30.4	N.A	31.2

Information sources: 1987 DIIS Results and 1995 DHS Preliminary Report for Guatemala.

24

Based on this information, we conclude that the "first contact effort" with target population is very good, but that coverage is lost in second and third doses, due to inadequate follow-up; a strategy to improve follow-up of target population through "continuous vaccination services" in all health facilities, supported by National Vaccination Campaigns efforts, could overcome this problem in the future.

In summary, the "Goal Level" targets for measles and BCG were very successfully accomplished and the other "Goal Level" targets were close to be met.

Oral Rehydration Therapy .

Oral Rehydration Salts (ORS) were received by only 21.5 percent of children with diarrhea, according to 1995 DHS Preliminary Report. In comparison to the 1987 DHS, there has been improvement, because at that time only 13.2 per cent of children used ORS. Although a 62.9 per cent improvement in the period was achieved, the project and contract "purpose" level target to achieve 70% ORS use, was not achieved.

Management and Information Systems Operating (in Health Areas).

The contract purpose of having management and information systems operating was fully achieved in two Health Areas: Retalhuleu and Suchit pequez. In these Health Areas all information system modules were implemented and were managed by Health Area personnel; also these personnel took administrative decisions based on the available data from the system. Likewise, computerized personnel, budget, supplies, goods and equipment systems (and a manual administration goods and equipment system in places without computers), were implemented in both Health Areas.

In the other Health Areas, systems were implemented partially. For more detailed information on management and information systems operating, see section 4.3.3 of the Report.

Use of contract "organizing principles".

C&M work was carried following six organizing principles defined in the contract; these principles were mentioned in the section 2.2 page 7 of this report; details on application of these principles are discusses below.

a) The use of Guatemalan Advisors and Organizations.

C&M hired Guatemalan technical advisors, mostly experienced technicians who maintained good relationships with the MPHSA and GOG. A total of 51 long term personnel were hired for the project, including 47 from Guatemala; a total of approximately 1,400 person-months were invested in the project and 97% of them were Guatemalans.

C&M has also contracted Guatemalan organizations for some services, such as research and equipment maintenance.

b) Technical Assistance as Training.

During the contract implementation, C&M applied this principle and considered that training should be understood as a human resource development process; in this process, personnel knowledge and skills should be increased in training and complemented with a follow-up of application of learned knowledge and skills in working places. Training was carried out in technical and administrative aspects, financial management and other areas. Approximately 20,000 participants took part in the events carried out.

c) Flexible Implementation.

The contract implementation followed this principle, identifying and adapting C&M's approach to MPHSA's changing needs. In this context, C&M tried to apply all project components in an integrated manner in institutions and to strengthen management of Child Survival programs capabilities. Nevertheless, problems in the implementation of one component, were not allowed to delay the implementation of the other components. Afterwards special efforts were made to overcome problems and achieve full application of all components.

d) Strengthening Existing Institutions.

C&M technical assistance contributed to MPHSA strengthening, particularly at Health Area level, as it was intended in the contract. C&M provided better instruments and methodologies for resources management, including human, physical, financial and information resources. Because of this contribution, at present, Health Area personnel have better knowledge and skills on clinical and administrative management related to components; this will allow better planning and programming processes at decentralized levels.

Technical assistance was also given to some central level offices of MPHSA, such as the Maternal and Child Department and the "Informatica" Division; in these offices success was not great, due to lack of permanent counterparts, because of multiple duties carried out by these personnel.

e) Participation by Other Donors.

USAID/G-CAP, as an international cooperation agency, coordinated policy aspects related to the project's scope with MPHSA; C&M carried out activities from this coordination, in support to MPHSA and in an active collaboration with other existing agencies and donors in Guatemala.

This coordination was an outstanding aspect of C&M's contract implementation. This coordination took place in all project components, and it was strongest in a) the Expanded Program of Immunizations (EPI) component with all agencies, b) in the Health Management Information System

(HMIS) component with PAHO/WHO, the National Civil Service Office (NCSO), the Ministry of Public Finance and the National Accounting Controller and, finally, c) in the Oral Rehydration Therapy/ Acute Respiratory Infections (ORT/ARI) with the European Union.

The main coordination examples, which were particularly useful for the MPHSA and the project, were the following:

- For the EPI Component, a permanent Interagency Committee in Guatemala analyses technical, administrative and financial aspects of EPI. C&M actively participated in the Committee, taking initiatives, proposing new strategies and giving support to MPHSA in all requirements for coordination and support.
- For the Information System for Local Management (SIGLO in Spanish) development and implementation, C&M carried out, jointly with PAHO/WHO, a technical analysis of the existing information systems in Guatemala, with emphasis on the system developed in the project and SIGLO. Discussions carried out were the basis for agreements on the information system's consolidation in the MPHSA. Each agency identified its work area, in order to avoid duplications. Results of the technical agreement were presented to the MPHSA, and were formalized with a Letter of Intent for joint development efforts; the Letter was signed in 1994 by the Minister of Health and by USAID G-CAP, PAHO/WHO and UNICEF representatives in Guatemala. C&M acted as a catalyst for coordination efforts, contributed to local adaptation of the system and led its implementation in the original 24 Health Areas. An additional effort was made in three new Health Areas created by the MPHSA, during 1995.

NCSO participated in discussions related to the definition of personnel administration aspects, including job titles in the personnel catalogue for the SIGLO module; the Ministry of Public Finance approved in March 1995 the issue of "purchase and payment orders" computerized continuous forms, as one of the practical mechanisms for sustaining after the project of the budget module.

The National Accounting Controller approved using SIGLO as an electronic auditable object, which gives a lot of strength to the system and facilitates its consolidation and future development. Copies of approval communications appear in Annex No. 3 to the Report.

- For the Standardized Case Management (SCM) and Rapid Assessment Surveys (RAS), other donors such as the European Union, adopted these methodologies to be implemented in the Health Areas they supported. Adoption of these methodologies reduces duplication of efforts and costs and promotes a more comprehensive approach to data collection within the MPHSA.

This decision also has increased the number of Health Areas and population covered by the SCM and RAS methodologies and thereby increasing benefits for health workers and, eventually, for children living in those Health Areas. Finally, C&M technical assistance has been

Clapp & Mayne Inc
Final Report-Guatemala Child Survival Project

strengthened, since it has gone beyond original limits and involved personnel who, in other circumstances, would never have received its benefits.

f) **Decentralized Approach.**

C&M contributed to development of technical and administrative skills in personnel from the Health Areas, with emphasis on registration, management and control of personnel, supplies, goods, equipment and budget, besides technical aspects in health. This development in Health Areas facilitates a more rational and adequate use of resources at that level, creating foundations to continue the process to delegate functions and responsibilities from Central toward Local Level.

Additional Organizing Principles.

C&M considered appropriate to add some principles to the ones established in the contract, which are briefly described below.

a) **Working Plans Development.**

C&M's work started with a global plan for the first 3 years, with detailed annual plans.

Annual plans were developed by the MPHSA officials designated for each component with C&M's technical support. Plans specified, for each component and sub-component, the objectives, goals, activities, indicators, responsible person, schedules and implementation follow-up.

The agreed activities were carried out by Divisions and Units of the MPHSA, with C&M technical support. Among participants were the Diseases Surveillance and Control Division, Maternal and Child Division, "Informatica" Unit, Administrative Division, Sectoral Planning Unit, Human Resources Division and others. Also, many aspects of the plans were coordinated with Health Areas personnel and with other institutions of the health sector.

Programming was carried out with instruments prepared for that purpose, among them "Programming Activities and Targets" and "Programming of Training Activities".

For Project's Phase two programming, a joint workshop with representatives from the counterpart Units was carried out; in this workshop proposals were analyzed and modifications from MPHSA and from project technical advisors were integrated. In a second workshop monitoring and evaluation indicators, responsible persons for activities implementation and estimated budget were included in the plan. Activities common to various components were also analyzed, such as: promotion, training, supervision, monitoring and evaluation, transportation, logistic support, information system and financial-administrative systems.

Annual programs were prepared by project's technical personnel and reviewed by the National Project Coordinator, usually the General Director of Health Services, with the participation of the Vice-Minister for Administrative Affairs of MPHSA.

USAID's Project Officer actively participated in discussions and preparation of plans.

b) Management, Supervision and Monitoring Project Inputs.

Project inputs can be analyzed and interpreted from technical, administrative and financial perspectives.

From the technical point of view, C&M followed the contract terms and established relationships with Central Level and Health Areas technicians. The intent was to share advisors knowledge and skills with Guatemalan technicians, in a mutual respectful environment and trying to get the best from both groups for activities development.

During the project, there was an implicit enthusiasm to provide current concepts and norms, the most appropriate methodologies, the most adequate instruments and the most practical mechanisms, to MPHSA personnel who received technical assistance.

In this sense, a contribution to introducing new monitoring tools for the National Immunization Plan was made, and also to introduce the Standard Case Management (SCM) for caring for children with diarrhea and respiratory infections, the ARI communication methodology in several Mayan languages and in Spanish, the operation of a modern management and services information system. Also a contribution was made to start the MPHSA management modernization process at Central and Health Area levels.

Regarding administrative aspects, C&M adapted, proposed improvements and supported application of a series of administrative instruments that supported an orderly efficient implementation of programmed activities, in its internal management and also in MPHSA's technology transfer process.

Among these administrative instruments are the following: definition of the requirements to receive the benefit from the technical and financial support given by the Project; fulfillment of acquired commitments with USAID and MPHSA; fulfillment of administrative and legal norms of Guatemala, the MPHSA and USAID in personnel management and in all purchasing and contracting activities, as well as in the timely accounts reports to designated offices.

We call attention to the transparent management of the financial resources of the contract, given to C&M after a process of crisis described earlier; this good management produced confidence in USAID/G-CAP and the MPHSA and enabled C&M to carry out programmed activities in a very professional way.

c) Periodic Reports.

C&M prepared and presented to USAID/G-CAP quarterly reports on project's progress, following the established formats.

C&M also periodically reviewed with the National Coordinator of the MPHSA and USAID's Project Officer, project's achievements, difficulties, constraints and opportunities, seeking the best solution to problems and to strengthen successful processes.

Administrative information.

The USAID/ Guatemala contract with Clapp and Mayne Inc. was signed on June 4, 1992, with a total budget of \$4,950,185 and an estimated deadline in August 27, 1995. The contract has had eight modifications and the deadline was extended until June 30, 1996. The total budget at the end of the project was \$7,281,361 (The figure given in the Spanish version of this report is different and incorrect).

In long term projects, like Child Survival in Guatemala, C&M has to have a local office with local personnel able to manage administrative and financial aspects of the project with the support of the C&M Home Office personnel. At the beginning of the project, two bank accounts were opened in Guatemala, to pay for all services and procurement in Guatemala. The funds were directly transferred to the Guatemalan accounts from the bank of the Home Office, based on documented requisition from the Guatemalan staff.

The administrative duties were responsibility of the project Administrator who, under direct supervision of the C&M's Chief of Party and with support from the Home Office of C&M, managed all the local payments and salaries, services and materials. The internal procedures and controls were effective since the beginning of the contract to make easier the management and protection of the funds and properties of the project being managed. C&M also provided advice to the project office in aspects related with cash administration, preaudits and invoice payments, personnel management, cost control and other related matters.

The procurement and administration of funds managed on behalf of the MPHSA, were responsibility of the C&M's Financial Officer and were carried out through a separate special bank account, used exclusively for that purpose. In Guatemala, a special computerized accounting application was developed to record procurement and funds administration on behalf of the MPHSA. This application handled fluctuating exchange rates, obligations. Expenses were reported in US dollars and in Guatemalan Quetzales, to fit public sector accounting requirements.

The total value of procured goods with the funds of the project in Guatemala was of \$ 1,295,305, for goods, vehicle repairs, training workshops for MPHSA personnel, computer and vehicle maintenance, cold chain equipment distribution, vehicles and computers, rehabilitation of MPHSA areas to facilitate establish computer microcenters and networks in the Health Areas and other items.

The Home Office of C&M handled big international procurements. The total amount of international purchases was \$ 565,660. The work included the analysis of needs, restoration of the cold chain to support immunization programs in all Guatemala, purchase of the cold chain equipment, acquisitions, shipment and insurance of goods following USAID's regulations, purchasing computers, related accessories, "software" and vehicles.

4. ACTIVITIES AND ACHIEVEMENTS BY COMPONENT.

This Chapter describes the activities carried out and the achievements during the contract; they are compared to the programmed activities and to preestablished objectives. For more details on activities, see Annex No. 4 to the report.

The four components are presented in the following subsections: 4.1 Expanded Program of Immunizations (EPI) component, now called National Program of Immunizations or NPI; 4.2 Oral Rehydration Therapy/Acute Respiratory Infections (ORT/ARI) component; 4.3 Health Management Information System and Monitoring and Evaluation (HMIS) component and 4.4 Improved Administrative Systems (IAS) component.

Information related to each component is presented below.

4.1 EXPANDED PROGRAM OF IMMUNIZATIONS COMPONENT (EPI).

For the EPI component, we describe the objectives, strategies, implemented interventions and impact or results achieved.

4.1.1 EPI OBJECTIVES.

The EPI "purpose level" targets in the contract were the following:

1. To increase immunization coverage against six immuno-preventable diseases to 70% for children under 5 years of age.
2. To increase immunization coverage with tetanus toxoid to 60% for pregnant women.

4.1.2 STRATEGIES TO ACHIEVE EPI OBJECTIVES.

C&M, following the terms of the contract, adopted the following strategies to reach EPI objectives:

1. To restore cold chain and transportation system immediately and to establish a monitoring program on cold chain quality;

2. To improve the NPI planning process;
3. To assure the timely availability of vaccines in all basic health facilities;
4. To improve, through training, the performance of local health staff (nurses, auxiliary nurses, rural health technicians and volunteers) on different aspects related to the vaccination program;
5. To promote better use of immunization services, through Vaccination Campaigns and permanent availability of services, using interpersonal communication and mass media;
6. To improve program supervision, monitoring and evaluation at national and local levels.

4.1.3 INTERVENTIONS TO IMPROVE EPI

Interventions were carried out following the previously described strategies; details are presented, as follows.

- a) **Interventions to restore the cold chain and transportation system immediately and to establish a monitoring program on cold chain quality.**

In the project's first phase, C&M carried out -in 1992- a "Cold Chain Functional Diagnosis", doing an inventory and assessment of existing equipment functionality in all levels of MPHSA.

A review on computer systems provided by PAHO and the German government had been previously made; after that, it was necessary to design and apply a data collection instrument, for use with 36 MPHSA technicians, who were trained for data collection in 1992. Analysis of collected data gave information on equipment characteristics and status. A limited number of refrigerators, thermometers, thermos and freezers were located, many of them in precarious conditions.

Only 65.4% (969 out of 1,482) of refrigerators were functioning properly, 9.5% (140 units) were not repairable; 22.1% (875 out of 3,041) of existing thermos and 28% (35 out of 125) of cold boxes were out of service.

Diagnosis of needs at the Central Level of MPHSA showed needs for "cold rooms" repairs and purchases; this diagnosis also identified out-of-order freezers and lack of use of a control system. Some refrigerated vehicles were also out of order and eight solar refrigerators which had been donated two years earlier, had not been installed.

The analysis of data collected showed it was possible for MPHSA, with C&M support, to assess present cold chain status and make decisions to cope with equipment deficiencies, as well as to repair and redistribute existing equipment.

C&M and/or USAID/G-CAP acquired, during 1993, the cold chain equipment described in the following table.

COLD CHAIN EQUIPMENT PURCHASED FOR MPHSA

TYPE OF EQUIPMENT	QUANTITY	COST (US\$)
Disposable syringes	1,500,000	76,550.85
Thermoses	2,500	52,590.86
Ice packs	13,920	14,840.15
Cold boxes	80	19,189.77
Gas refrigerators	150	142,189.77
Thermometers	750	16,682.33
Freezers	10	40,488.41
TOTAL		362,532.14

C&M also purchased spare parts and materials from local suppliers to repair the cold chain equipment in 1993 and 1994. These included compressors, resistors, freon gas, copper pipes, pinch valves, burners, wicks, capillary tube, crystals, thermostats, oxygen and acetylene.

In 1993, three refrigerated vehicles and two trucks were repaired for the Epidemiological Surveillance Division for vaccines and other supplies transportation. In 1993 and 1994, these vehicles got preventive maintenance. In 1993 and 1994, C&M also contracted transportation services for cold chain materials and refrigerators. Project vehicles were used for vaccines and supplies distribution during Vaccination Campaigns.

During the same period, cold rooms were repaired and air conditioning installed through local providers. C&M also purchased material for solar refrigerators installation, plus new equipment and other materials in Guatemala.

The following table illustrates materials type and cost.

Clapp & Mayne Inc
Final Report-Guatemala Child Survival Project

MATERIALS FOR COLD CHAIN EQUIPMENT REPAIRS AND COST

MATERIALS TYPE	COST (US\$)
- Gas cylinders and regulators with clamps/hoses.	13,816.41
- Accessories for electricity generators.	93.09
- Cold room and alarm.	9,271.62
- Spare parts and materials.	27,495.42
- Cold room repairs and air conditioning installation.	28,677.63
- Solar refrigerators installation.	2,283.19
- Refrigerated vehicles repairs.	3,884.33
TOTAL	85,521.69

Result of the cold chain rehabilitation process was an increase in 1994 as anticipated in the contract, in the total number of functioning refrigeration units. Refrigerator units increased by 28.3%, freezers units by 55.5% and cold rooms by 25%. There was also increase by 115% in thermoses, 88.9% in cold boxes units and 85.6% in thermometers.

Monitoring the Quality of the Cold Chain.

The NPI, with the support of C&M, designed and introduced in Guatemalan vaccination facilities, procedures to organize and process manually the information received on vaccines applications, refrigerator temperature and to monitor the cold chain at Local and Health Area levels.

During 1994 and 1995, registers for monitoring cumulative coverage were developed; this material is well known in Guatemala as "Salvation Tables" ("Tablas de Salvación" in Spanish). These "tablas" are graphs for number of vaccinations against each disease and cumulative coverage month by month. "Tablas" are being used, in May 1996, in 27% to 87% of MPHSA health facilities, depending on Health Area.

In the same period, C&M provided technical assistance to introduce concepts, tools and basic procedures for cold chain monitoring; a special tool called "The Traffic Signal" ("El Semaforo" in Spanish) because the use of red, yellow and green colors, was installed in all Health Areas

headquarters; information is up to date in 6 health areas and not up to date in the rest of Areas, according to project records dated May, 1996.

This monitoring tool records periodically reported information from health facilities, on refrigerator status. Information is coded in three colors, depending on refrigerator's operating status: green means good status, yellow means operating problems and red means out of service. Information is plotted in a graph, which includes all health facilities names.

To monitor refrigerators' temperature, and to make it visible to employees and supervisors C&M supported, starting in 1994, the introduction of a "Calendar"; this instrument is used to write refrigerator temperature figures twice a day, as well as some other program related information. The "Calendar" also includes educational messages to support a better equipment preventive maintenance. The instrument was introduced in all Health Areas and is being used in 15% to 94% of vaccination facilities, in May of 1996, depending on Health Area.

Next page table shows the implementation status of the monitoring tools above described, by Health Area, in May of 1996.

This type of information allows MPHSA management to see in a graphic way equipment status and to identify the facilities that show that they are capable and not capable to maintain vaccines properly. This process is useful to monitor capability to provide safe and effective vaccinations and to identify zones with vulnerability of outbreaks and epidemics.

Monitoring system implementation and materials design were evaluated in a workshop in November, 1995. The main recommendations were: to use more durable materials for instruments; to change in the "salvation tables", in order to use graphs repeatedly and to simplify "calendar", so it can be used on all refrigerators. Some other suggestions were made, about materials distribution to assure its timely availability in local facilities and to train the primary health care personnel in its use quickly and effectively. All these suggestions were incorporated in materials and in reproduction, carried out during the first quarter of 1996.

Transportation equipment rehabilitation.

C&M also carried out, in 1992, a functional diagnosis of available vehicles purchased by USAID in MPHSA. An instrument for the work was designed and personnel from MPHSA were trained to collect the information.

The diagnosis showed a lack of inventories and vehicle status monitoring systems. The data collected were used to assess operational status of vehicles and to identify needs for repairs of two and four wheel vehicles.

The functional diagnosis showed 67% of vehicles had serious malfunctions and needed major engine repairs. The rest of the vehicles required minor maintenance services and tire replacement.

IMPLEMENTATION STATUS OF THE COLD CHAIN MONITORING TOOLS
MAY, 1996

No.	Area	T. LIGHT	RECORD	SALVATION TABLE
21	North Guatemala	60%	Updated	60%
22	South Guatemala	31%	Updated	56%
23	Amatitlán	67%	N.A.	87%
24	El Progreso	46%	N.A.	33%
25	Sacatepéquez	60%	N.A.	70%
26	Chimaltenango	44%	Updated	32%
27	Escuintla	94%	N.A.	86%
28	Santa Rosa	38%	N.A.	25%
29	Huehuetenango	56%	N.A.	69%
30	El Quiché	0%	N.A.	0%
31	Totonicapan	61%	N.A.	44%
32	Sololá	15%	N.A.	50%
33	Quetzaltenango	73%	N.A.	46%
34	San Marcos	47%	N.A.	43%
35	Retalhuleu	28%	N.A.	47%
36	Suchitepéquez	20%	N.A.	46%
37	Jalapa		Updated	73%
38	Jutiapa	40%	Updated	36%
39	Izabal		Updated	62%
40	Zacapa	53%	Updated	30%
41	Chiquimula	0%	N.A.	0%
42	Baja Verapaz	0%	N.A.	0%
43	Alta Verapaz	33%	N.A.	26%
44	El Peten	22%	N.A.	28%

For transportation rehabilitation, Guatemalan suppliers were contracted; these suppliers did major and minor repairs to 130 motorcycles and 38 vehicles donated by USAID. These were the vehicles used to support vaccination and supervision activities in Health Areas.

Types of vehicle maintenance and costs are presented in the following table.

TYPES OF VEHICLE MAINTENANCE AND COST

MAINTENANCE TYPE	COST (US\$)
Corrective: - Overhaul	65,965.00
Preventive: - Maintenance and repairs - Tires	65,056.58 6,226.32
TOTAL	137,246.98

After the repairs and maintenance services during 1993, 100% of the vehicles were ready for normal operation; from that time on and to the end of 1994, as it was stated in the contract, the project paid only for preventive maintenance routines, such as oil and filter changes and other minor repairs were carried out.

Other Actions.

As result of deficiencies detected in cold chain and vehicles functional diagnosis, C&M incorporated an instrument on maintenance to maintain up to date reports on these elements in the Information System for Local Management (SIGLO in Spanish),; this instrument is described in section 4.3.3 of this report.

The SIGLO module for goods and equipment identifies the responsible person for each good and records key good characteristics such as type, brand, color, serial number, plate number, depreciation schedule, and value.

The SIGLO module, implemented in all Health Areas, provides information to monitor vehicle and refrigerator operation status, recording good, fair or bad status. This systematic recording contributes to support cold chain infrastructure and to assure safe and effective vaccines storage.

b) Interventions to Improve the NPI planning process.

During the whole technical assistance period (from 1992 to 1996), C&M in coordination with NPI, supported the development of each "Annual Plan for Immunizations". This plan includes program targets, national strategies, programmed activities, supplies needed and budget requirements. The Plan includes Guatemalan resources and resources from agencies supporting immunization activities; i.e. mainly USAID/G-CAP, PAHO/WHO, UNICEF, the European Community and the Rotary Club.

During the project, from 1994 to 1996, C&M participated in negotiations with MPHSA, in coordination with the EPI Interagency Committee, to increase the amount of national funds for program sustainability. This sustainability was oriented specifically to get funds for vaccines, syringes and registration forms purchase. This process resulted in reduction of external support for recurrent expenses of the immunization program.

In all Health Areas and in most of the so-called "Critical Municipalities" (Municipalities with immunization coverages under 50% for one or more vaccine) C&M supported from 1994 to 1996 immunization plans development, introducing methods and procedures to diagnose, program and design monitoring for those plans. In-service training for local and Health Area personnel also was carried out.

c) Interventions to assure the timely vaccine availability in all basic health service facilities.

In 1994 C&M developed a manual process for NPI for perpetual inventories and vaccines and materials consumption records. This process was complemented with the SIGLO's supplies module, described in section 4.3.3 of this report and is in active operation in all Health Areas in 1996.

Since 1995, all Health Area and Health District started programming vaccines from their level; this is a sample of the decentralized process initiated by the Project.

d) Interventions to improve performance, through training of local health staff (nurses, auxiliary nurses, rural health technicians and volunteers) performance on diverse aspects related to the vaccination program.

Training of MPHSA personnel was one of the most intensive activities for C&M through the contract - 1992 to 1996- on many topics related to the vaccination program.

Training methodology was adapted to the implementation process in each Health Area, giving great autonomy and decentralization to vaccination activities, but taking into account the political and technical national framework. Great emphasis was given to encourage discussions spaces at district level, mainly on present situation of immunizations; based on discussions, results, methodologies, and relevant information were introduced, in order to improve performance and quality in the provision of vaccination services. C&M also took advantage of routine administrative discussion meetings to provide in-service training.

Trained Personnel

During the C&M contract period from 1992 to 1996, C&M trained 9,342 people in topics related to EPI. Some training events were exclusively for EPI training and sometimes training on other project components also was carried out.

Numbers and categories of personnel trained by C&M in immunizations are presented in the following table.

CATEGORIES AND NUMBER OF PERSONNEL TRAINED IN DIFFERENT ASPECTS
RELATED TO EPI.

PARTICIPANTS	NUMBER TRAINED
Doctors	721
Other Health Professionals	86
Nurses	673
Auxiliary Nurses	1,033
Health Technicians	833
Other Technicians	295
Administrative Professionals	66
Technical Administrative Staff	321
Other Administrative Staff	212
Volunteers	4,522
Others	580
TOTAL	9,342

C&M supported 119 immunization training events from 1992 to 1996. Topics included cold chain, vaccinations promotion, transportation, norms, door to door sweeps (barridos de vacunación) and vaccination campaigns ("jornadas de vacunación"). C&M also trained personnel in preventive aspects with topics such as equipment repair and maintenance for maintenance technicians and other aspects of EPI.

C&M provided technical and financial assistance from 1994 to 1996 to activities in approximately 220 "critical municipalities". Work agendas included a risk assessment approach, coverages monitoring, cold chain monitoring, newborns follow-up procedures, basic vaccination strategies review and a "refresher" on programs vaccination. C&M introduced the concepts of continuous availability of vaccination ("vacunación permanente") and elimination of lost opportunities for vaccination.

In 1995 staff and volunteers from 13 municipalities in San Marcos Health Area were trained, in order to systematize EPI activities for coverage extension with community participation. This training process included concrete actions executed by community members, education to those community members and communication with mothers.

Regarding immunizations monitoring from 1994 to 1996, training activities were carried out, focused on primary health care personnel. The training agenda included the use of coverage monitoring instruments, cold chain operational status surveillance and refrigerator temperature monitoring. For this training, 15,000 copies of two bi-fold on "salvation tables" and the vaccination program were printed. An explanatory video also was prepared.

C&M supported the MPHSA Department of Education of the Division of Food and Nutrition in 1995 and 1996 to develop workshops on local education and promotion programs based on a methodology developed by the Institute of Nutrition of Central America and Panama (INCAP) with USAID support. These workshops introduced the standardization of key messages for the population, and especially for mothers, on immunizations and other programs.

e) **Interventions to Promote Better Use of Immunization Services through Vaccination Campaigns and Continuous Availability of Vaccination Services, using Interpersonal Communication and Mass Media.**

From 1993 through 1996 C&M supported nation wide promotional activities, named National Health Campaigns (NHC) ("Jornadas Nacionales de Salud" in Spanish). These activities were structured as mass media campaigns. During the C&M contract six NHC were supported with promotional materials, vaccination ID cards and forms to record activities. Most of printed materials was informative and directed to health workers; the rest of the materials were directed to mothers with vaccination-age children. All materials were developed according to MPHSA and USAID/G-CAP policies and administrative guidelines.

From 1992 to 1996, C&M supported local promotional activities and a "door to door" sweep ("barrido sanitario") in 15 Health Areas, during NHC. These activities included promotional materials and actions for community participation and local coordination and planning meetings in most of "Critical Municipalities"; a total of 4,522 volunteers participated in these activities. After meetings and subsequent training, volunteers made interpersonal and mass media communication in their own communities, participated in broadcasting activities with mobile and static units and with locally printed materials, including posters, brochures, flyers and banners.

Mass Media Campaigns

NHC included mass media communication activities, mainly for radio and with less emphasis for TV. C&M participated in technical design of messages and financial support for NHC publicity campaigns.

For radio promotion, four radio spots were produced (one in 1994, two in 1995 and one in 1996). These radio spots were broadcasted all over the country with financial support from various private companies and with radio time donated by radio stations. C&M and UNICEF led this coordination efforts, but project funds were not used for broadcasting.

Radio spots were distributed to all Health Areas to be broadcasted in local radio stations and regional closed circuits, public squares, markets and mobile and static loud-speaker units ("perifoneo" in Spanish). Cassettes with audio (track) were also distributed to health areas to record messages in local Mayan languages.

C&M supported production of two TV commercials on vaccinations, one in 1995 and the other in 1996. No project funds were used for TV commercials broadcasting, but C&M supported coordination efforts for commercials broadcast in government TV time. This material was distributed to Health Areas and some health districts where there were rebroadcast stations and local cable circuits.

During the 1995 measles campaign, C&M financed production of written, radio and TV messages. The broadcasts and printing were financed by Plan International, without any cost to MPHSA or to the Project.

f) Interventions to Improve Program Supervision, Monitoring and Evaluation at National and Local Levels.

C&M supported supervision efforts nation-wide in Guatemala from 1992 to 1996, providing resources for in-service meetings and sending C&M technical and administrative staff to visit and to coordinate efforts with local health services personnel to improve vaccination actions.

C&M developed in 1995, in coordination with EPI's central team, a supervision protocol for maternal and child care. This document focused in basic procedures health workers should implement in a health facility giving vaccinations. Such procedures include active verification of children's and mother's vaccination status; required vaccinations application; adequate use of record keeping; correct technique for vaccinations; guidance to the mothers and other activities to diminish for vaccinations "lost opportunities". This protocol is ready to be implemented in Health Areas and districts and was delivered to the Directorate General of Health Services (DGHS).

In order to provide an adequate framework for supervision, C&M provided technical assistance during 1994 and 1995 for review, production and printing of 2,000 copies of four updated modules of norms and procedures for EPI activities. These modules were distributed nationwide to all MPHSA health facilities that give vaccinations.

The first module, "Introduction to EPI", describes National Program of Immunizations. It provides information on EPI objectives and measurable planning targets. The second module, "Vaccines for the National Program of Immunizations ", describes vaccination schedule and vaccines indications,

contraindications and adverse reactions; this module also analyzes vaccination procedures and "lost opportunities" for vaccination.

The third module, "Epidemiological Surveillance Manual", describes EPI diseases as clinical entities and explains concepts and procedures for disease control and epidemiological surveillance. The module on "Logistics for the National Program of Immunizations" reviews the main aspects of establishing a cold chain and maintaining it.

C&M printed 6,000 copies of two posters and one bi-fold brochure related to "lost opportunities" vaccination directed to health workers. C&M also printed 50,000 copies of six posters and tri-fold brochures on EPI diseases and their vaccines.

Monitoring and Evaluation.

In order to have information on population attitudes, practices and beliefs regarding immunizations, C&M applied qualitative and quantitative methodologies oriented to activities to improve promotion and communication. These methodologies, applied from 1993 to 1996, are rapid assessment surveys (RAS) and a study about vaccination acceptability and rejection. A brief explanation of these methodologies is presented below.

C&M developed the RAS methodology to get basic information to analyze the present situation, monitor and evaluate health interventions, and improve the immunization program among others.

The RAS purpose is to provide a cost-effective method for public health programs and particularly immunization programs, to get useful information for planning and evaluation. These studies provide a "snap-shot photo" of appropriate indicators at a specific time, and are useful to monitor trends between an initial baseline survey and an evaluation.

The results of the RAS provide valid and reliable statistical data for management decisions and to target high risk groups that should get educational and promotional messages. Survey findings are also used to evaluate program coverage levels and to prioritize resource use. Health Areas and districts are enriched with this very valuable information for local level program development, management and evaluation.

Indicators to analyze NPI achievements using RAS included the following: a) Access to EPI (DPT1); b) EPI coverage (OPV3); c) Measles coverage; d) EPI drop-out rates (DPT); e) Mothers' illiteracy; f) Mothers' knowledge about measles immunization and g) Mothers' knowledge about tetanus immunization. A more detailed description of RAS appears in section 4.3.3 of this report.

For the vaccination acceptance and rejection study in 1994, C&M subcontracted a Guatemalan company, consultants in marketing research, to investigate these issues in some communities on the southern coast and Guatemala's western region. Study objectives were to produce relevant information on behavioral patterns concerning vaccinations; to promote discussions of the usefulness of this type of

studies to improve strategies for changing behavior at local level and to stimulate these conceptual and methodological aspects in local programming and promotion of vaccinations.

The principal findings gave important data on vaccine acceptance levels, determining factors, perceived benefits, constraints to access to vaccinations, decision makers or influencer regarding vaccine acceptance, and target population's perception and knowledge about vaccination types and schedules.

The main findings were the following: no significant differences on perceived benefits from vaccination between non-indigenous (ladino) and indigenous groups; the main vaccination constraints mentioned by both groups -ladino and indigenous- were distance to travel to reach the vaccination site and the cost involved; one reason for vaccine rejection was the method of administration; in cases of rejection, the decision is mainly influenced by husbands, and frequently grandparents are consulted about vaccinations.

All interviewees agree on the need for several vaccinations, but most of them don't know it is necessary to have several doses of the same type of vaccine; the population does not agree with the concept that vaccines prevent deaths; spontaneous recall of vaccination publicity was limited and for radio and TV; use of "perifoneo" was mentioned as a non-motivating medium.

During the study, C&M trained Health Area personnel in charge of promotion actions how to do rapid assessments with simple methods; the local level health personnel used study results to guide promotion strategies and to improve promotion messages.

C&M also provided technical and financial assistance for three national evaluation meetings, one in 1994, one in 1995 and one in 1996. In these meetings Health Areas coverage levels were analyzed, as well as immunization program future goals, strategies to be used, specific actions for "critical municipalities", and logistic and financial elements of the programs.

During the contract the evaluation methodological improved. In 1994 and 1995, C&M provided technical and financial assistance for local evaluation meetings, in Health Areas and districts, on vaccination coverages. These actions included evaluation activities in health districts having "critical municipalities".

4.1.4 EPI IMPACT AND OUTPUTS ACHIEVED.

EPI project component impressive impact on Guatemalan child mortality and morbidity caused by immuno-preventable diseases, were presented in section 3 of this report.

This section provides a complementary analysis of vaccination coverages in 20 Health Areas surveys. The figures are taken from RAS results described earlier.

To analyze immunization program results by Health Area is very important in Guatemala, because of Guatemalan diversity and unequal distribution of resources. In RAS, the recommended indicators to

measure immunization coverages were "3rd anti-polio vaccine dose" and "measles vaccination". The following table shows immunization coverages in Health Areas where 20 RAS were performed.

IMMUNIZATION COVERAGE AGAINST POLIO (THIRD DOSE) AND AGAINST MEASLES
IN CHILDREN BETWEEN 12 AND 23 MONTHS OLD, IN GUATEMALAN HEALTH AREAS.
(in percentages)

HEALTH AREAS	YEAR	POLIO 3	MEASLES
Ixcán	1994	22.6	53.6
Sololá	1994	31.0	45.6
Guatemala Norte	1995	37.3	42.6
Retalhuleu	1995	39.6	47.1
Alta Verapaz	1995	40.3	57.6
Quetzaltenango	1996	41.5	47.6
San Marcos	1996	42.8	46.8
Suchitepéquez	1996	43.0	52.8
Huehuetenango	1995	46.3	53.7
Totonicapán	1994	53.5	56.5
Jalapa	1994	59.4	65.8
Chiquimula-Chortí	1993	61.0	68.0
Santa Rosa	1994	61.3	60.6
Izabal	1993	64.8	63.7
Chiquimula-Perla	1993	66.9	62.5
Jutiapa	1994	67.9	70.8
Amatitlán	1993	73.3	75.2
Zacapa	1993	75.6	78.2
El Progreso	1993	76.7	80.4
Baja Verapaz	1995	82.6	81.7

Source: MPHSA, USAID/G-CAP, C&M. RAS reports in 19 Health Areas. 1993 to 1996. Guatemala.

The table shows a high variability in Polio 3 and measles coverages among Guatemalan health areas. The variations in coverage are striking with relatively high coverages in some relatively poor Health Areas such as Baja Verapaz and El Progreso. The Chiquimula-Chortí survey indicates that coverages in this predominantly indigenous population was 61% for Polio3 and 68% for Measles which compares favorably with the coverage in Chiquimula-Perla with its predominantly ladino (non-indigenous) population. In Ixcán, the low coverage for Polio3 of 22.6% probably improved significantly since 1994 due to the active EPI program in that area after the RAS.

The RAS results were informative and useful in many areas for local programming; i.e. orienting and motivating efforts to improve EPI coverage, especially in the "critical municipalities". In 1995 and 1996 MPHSA used the RAS methodology in several areas, with deliberate over-sampling in the "critical municipalities" to verify that coverage was really very low (e.g. in San Marcos) and then mounting intensive (but relatively expensive) door to door campaigns and other measures to reach the unprotected groups. Other basic information from the studies related to program access and "drop-out" variables; results on these variables were used to develop specific local programming strategies which led to most of "critical municipalities" improving coverages so much that they were no longest classified as "critical".

The RAS analysis of tetanus toxoid (TT) vaccination coverage in pregnant women use the indicator of pregnant women with two TT doses. The following table shows TT coverages in 19 Health Areas where RAS were performed.

TETANUS TOXOID IMMUNIZATION 2ND DOSE COVERAGES IN WOMEN WITH
CHILDREN UNDER 2 YEARS OLD IN GUATEMALAN HEALTH AREAS.
(in percentages)

HEALTH AREAS	YEARS	TT COVERAGE
Jutiapa	1994	4.7
Amatitlán	1993	5.2
Alta Verapaz	1995	5.9
Quetzaltenango	1996	7.0
Huehuetenango	1995	8.4
Ixcán	1994	8.8
Guatemala Norte	1995	9.2
Izabal	1993	11.5
Santa Rosa	1994	12.3
San Marcos	1996	13.4
Retalhuleu	1995	14.4
Jalapa	1994	14.5
Suchitepéquez	1996	15.5
Sololá	1994	18.2
Totonicapán	1994	18.9
Chiquimula-Perla	1993	19.7
Zacapa	1993	20.7
Baja Verapaz	1995	22.5
Chiquimula-Chortí	1993	26.5
El Progreso	1993	29.3

Source: MPHSA, USAID/G-CAP, C&M. RAS reports in 19 Health Areas. 1993 to 1996. Guatemala.

Unfortunately, the statistics on “coverage” for tetanus toxoid are much less useful for management of the EPI program. Since there were only three cases of neo-natal tetanus reported in Guatemala in 1995, it is not considered a high priority public health problem by MPHSA. The Tetanus Toxoid coverage that was achieved was closed to the GCS project target of 60% of pregnant women, using the 1995 DHS estimate of 54.9% of pregnant women who got a first dose (TT1). This is an impressive increase of approximately 300% over the 13.7% coverage in recorded in the 1987 DHS. However, it may be misleading to interpret the statistics to draw conclusions about the protection from neo-natal tetanus. PAHO/WHO recommends two doses for protection in pregnant women and five doses over the reproductive period of almost 30 years. The RAS surveys suggest much coverages for tetanus, but these figures refer to mothers with two doses which is a higher standard of “protection” and the RAS respondents are the “mothers of children 12 to 23 months old”, which may be a significantly biased

sample of the target group of pregnant women. Unlike the information on infants under one year old (a cohort that turns over each year and consequently is easy to calculate), there may be no solution for creating good measures for "protection of mothers" because it involves administration of multiple doses of TT, over a period of almost 30 years of reproductive age, and women enter and leave the target group repeatedly. Specifically, there may be no figures that are obtainable with simple methods that are valid, based on information from the health establishments, and that permit monitoring of the "protection" against tetanus. The "coverage" in any specific year is not equivalent to "protection" because it does not include vaccinations given in past years that still could provide protection to the woman.

One suggestion is monitoring only the absolute number of TT vaccinations by first dose, second dose, etc. and by target group. Monitoring the number of vaccinations instead of "coverage rates" will avoid giving the misleading impression that women in the reproductive age group need a TT vaccination annually and that all pregnant women need two TT vaccinations for each pregnancy. The inappropriate interpretation of the current indicators of TT "coverage" demoralize the staff of MPHSA who do not achieve their annual targets. The use of inappropriate indicators may also interfere with the adoption of the strategy of five doses of TT to each woman during her reproductive years, since MPHSA leaders may be reluctant to have their targets expressed with a suddenly enlarged target group which is 20% of the total population instead of 5%.

Some reflections to on how to improve performance on EPI and to assure maximum sustainability of project achievements are presented in Section 6.2 a) of this report.

4.2 ORAL REHYDRATION THERAPY-ACUTE RESPIRATORY INFECTIONS COMPONENT (ORT-ARI).

This section describes the ORT-ARI component with the component objectives, strategies, interventions to accomplish the objectives and a summary of impact (goal and purpose) and contract outputs achieved.

4.2.1. ORT-ARI OBJECTIVES.

The ORT-ARI "purpose level" targets were the following:

For ORT:

1. To promote and support development and implementation of a National Plan for Control of Diarrheal Diseases.
2. To increase to 70% the number of children under five years of age who have been treated with ORT.

3. To achieve that at least 85% of health centers and posts carry out and promote ORT activities.
4. To achieve that 100% of mothers with children under five years of age who have received this treatment, spontaneously use this technology when it is required.
5. To achieve that 100% of all mothers who visit health centers or posts for pre-natal care receive education about importance of breast feeding as a preventive measure against diarrheal disease and how it contributes to better infant nutrition.
6. To achieve that 100% of health centers and posts are incorporated into ORS distribution national system.
7. To achieve that 9,000 promoters and 4,500 traditional mid-wives receive training on Oral Rehydration Therapy.

For ARI:

8. To improve the quality of pneumonia Standard Case Management (SCM) throughout the country.
9. To achieve 60% coverage of SCM for pneumonia in 15 high priority Health Areas.

4.2.2 STRATEGIES TO ACHIEVE ORT-ARI OBJECTIVES.

C&M, following the terms of the contract, adopted the following strategies to achieve the ORT-ARI objectives:

1. To improve the planning and management process for the ORT-ARI programs;
2. To promote the use of children care services through promotion, education and communication activities;
3. To improve health care services through systematic introduction of Standard Case Management (SCM);
4. To improve supervision, monitoring and evaluation of the programs.

4.2.3 INTERVENTIONS TO IMPROVE ORT-ARI.

Interventions were carried out following the previously described strategies; details are presented as follows.

a) **Interventions to improve the planning and management process for the ORT-ARI programs.**

C&M supported the review and approval of the plans for control of Acute Diarrheal Disease (ADD) and Acute Respiratory Infections (ARI), during 1994 and 1995. These plans were prepared in coordination with other agencies and annually reviewed with Maternal and Child Health Department of the DGHS and the Interagency Committee. Plans have included a review of the new ARI SCM classification, children care quality improvement with emphasis on control of diarrheas and ARI, education and promotion activities and monitoring and evaluation activities.

During 1994, the National Conference on "State-of-the-Art" in ARI was organized. The purpose of this conference was to share with the participants in the experience in Guatemala's health sector regarding ARI, the experiences in MPHSA with C&M support as well as new experiences being used worldwide. This conference contributed greatly to create a momentum of national attention on pneumonia and child survival. In this conference, approximately 56 professionals from MPHSA Health Areas plus 41 others from Non Governmental Organizations (NGO) participated.

As support to widespread use of Oral Rehydration Salts (ORS) and national level of procurement, C&M supported MPHSA from 1993 to 1996 in negotiating with the Ministry of Public Finance for the Purchase and Payment Orders ("Ordenes de Compra y Pago" in Spanish), for the ORS manufacturer, LAPROMED. The purpose was to assure continuous ORS availability in the MPHSA Health Areas. As a result of this support, Ministry of Public Finance paid approximately \$ 200,000 during 1994 and 1995.

C&M supported, in 1993 and 1994, ORS transportation from central to Health Areas level, through preventive maintenance for 2 DGHS trucks and the provision of two pick-up trucks.

In 1994 C&M reviewed supply control systems for the Health Areas establishing that an uniform system did not exist. C&M supported, from that time to 1996, design and implementation of the Information System for Local Management (SIGLO in Spanish) containing a Supplies Module. This module institutions to implement a mechanized control of supplies, in aspects such as availability, needs, consumption and distribution.

To support management of supplies of ORS at local level, from 1994 to 1996, C&M supported the design and implementation of a Manual Supplies Management System. This system control provided instruments such as the Supplies Control Card, Supplies Requisition and Dispatch and the Monthly Supplies Balance. Details of the status of the manual and automated systems as well as a more detailed systems explanation appear in Section 4.3.3 of this report.

In order to clarify the mechanisms for provision of ORS to community health personnel, C&M carried out a study to learn the modes for ORS distribution at community level. Experiences from Project HOPE in Totonicapan and the Santa Apolonia Health Post in Chimaltenango were analyzed. C&M also analyzed the feasibility for selling ORS at MPHSA health posts.

Project HOPE sells ORS to its health promoters at cost and let the health promoters sell ORS to final users with a small margin of profit; this method is working adequately because it facilitates ORS availability for the community through health promoters. Project HOPE continuously sell ORS to health promoters thus maintaining ORS distribution. There are control instruments, such as ORS sales records at HOPE, and ORS sales records from health promoters and a system of periodic supervision. The community is satisfied with the system since they are demanding promoters' services.

Santa Apolonia Health Post's experience is that the person in charge of the Health Post distributes ORS free of charge to the community through Rural Health Promoters. C&M supported the effort by designing two control instruments: a "List to Record ORS given to Community Personnel" and a "Report of ORS used by Volunteer Personnel". This method is not sufficiently systematized because only 2 health promoters are using it, so an adequate ORS availability is not guaranteed for the community. Health post is starting to use the C&M-designed control instruments, but they lack on continuous supervision system that assures ORS availability for the community's final users.

A third alternative, ORS sales in MPHSA facilities, was not feasible because of Ministry of Public Finance requirements to collect, control and render accounts on revenue from ORS sales.

Based on the three alternatives analyzed, C&M recommends use of Project HOPE's method, since it is a system that assures ORS availability to the community, it has been proved to be functional in Totonicapán Health Area, it has control and supervision instruments and it is accepted by population.

In 1994, C&M supported meetings on review and modifications of the "F" series of Recording and Reporting Forms. F9 was a form related to ORT and ARI activities that was modified, to include the new internationally recommended ARI classification. The new form was printed and distributed in 1994; in 1995 the new form was automated in SIGLO. Now, the new form and the new ARI classification that was introduced in Guatemala with C&M support, are being used by MPHSA health facilities.

C&M reported quarterly to USAID/G-CAP on MPHSA programmed activities compared to the contract terms; besides these formal reports, during contract implementation from 1992 to 1996, there was a continuous communication on progress and modifications introduced by MPHSA or USAID/G-CAP.

b) Interventions to promote use of children care services through promotion, education and communication activities.

In order to strengthen the development of Local Promotion Plans, C&M supported in 1995 a National Update Workshop on Health Communication and Education, with participation of 24 Health Area personnel. In 1995 and 1996, C&M supported local workshops on transfer of methodology regarding promotion, social communication and intersectoral coordination in all Health Areas. The Manual

"Guidelines for Food and Nutrition Education" was reviewed and printed to improve basic messages and procedures in local communication and promotion.

C&M supported improvements in mass media education and promotion in 1994 and 1995 through production of messages and use of mass media for promotion of methods in the home for control of diarrhea and cholera. These actions were carried out in coordination with DGHS Maternal and Child Department and the Promotion Department. Two radio spots on this matter were produced and distributed to all Health Areas.

During C&M contract period, C&M subcontracted Guatemalan companies to print pamphlets and materials with health messages; these materials included the following: educational booklets on hygiene for municipal fairs and food and beverages handling; booklets on food sales hygiene; sheets with requirements for street food vendors and cholera stamps. These materials were used, extensively in 1994 and 1995 to support education and training activities for food dealers in Guatemalan municipalities.

C&M supported promotion in-service and community level interpersonal communication for TRO promotional and educational work; specific contents were prepared for this purpose.

The Community Health Department, with DGHS and C&M support, prepared in 1995 a flip chart presentation called, "Nuestro Rotafolio Comunitario" ("Our Community Flip Chart"); this material was intended to be used during training and supervision of health promoters and volunteers. The same year, evaluations were made of the Flipchart with health promoters from Alta Verapaz, Totonicapán and Escuintla Health Areas; results from these evaluations were used to improve flip chart's form and understanding of the content. A limited number of flip charts were printed, in order to incorporate recommendations from groups and persons who have used the flip chart and have experience in using this type of material. A final evaluation carried out by the MPHSA Human Resources Department in 1996, set out detailed recommendations for the final flip chart form and content modifications. At present, the flip chart is being used with excellent acceptance at local levels of MPHSA, NGOs, and the Guatemalan Institute of Social Security (GISS).

C&M supported MPHSA, from 1993 to 1996, in ORT-ARI communication and promotion design, validation and printing material, such as diarrhea patient evaluation posters and tri-folds, coughing and difficult breathing child posters and tetra-folds, Cholera bi-folds, "Cochito" and the cholera and How to Prevent Diarrhea (For the last four materials only graphic were prepared). All these materials were distributed to various audiences.

C&M designed and implemented, in 1995 and 1996, a test of communication to support ARI control activities, mainly on pneumonia. This test was based upon the "Plan for Behavior Strategy for Acute Respiratory Infections Control" ("Plan Estrategia del Comportamiento para el Control de las Infecciones Respiratorias Agudas") developed by C&M and BASICS.

This plan was conceived as a result of an ethnographic research study, carried out by INCAP, which is described in section 4.2.4. Based on these data and other qualitative data, a communication intervention directed to mothers in the Health Areas of Totonicapán and San Marcos was designed; both areas are located in Guatemalan highlands ("altiplano" in Spanish) and more than 90% of the population are of mayan descent. Totonicapán's language is Kiché and the main language of San Marcos' is Mam.

The criteria used to select these areas were the following: high infant mortality caused by pneumonia; health facilities underused; limited access for the population to pneumonia antibiotic treatment; and extensive monolingualism (only Mayan language), particularly in San Marcos.

Considering that the best solution in the short run was to offer access to recommended antibiotic for pneumonia treatment, the communication intervention was designed to overcome the existing behavioral barriers to parents seeking medical care and antibiotics when they are needed. Main pre and post-intervention results were the following: an increase in health services activities, mainly in institutional and community communication from 8.0% to 25.5% in Totonicapán and from 11.1% to 43.7%, in San Marcos; increase in assistance searching because of observation of fast breathing from 38.0% to 81.6% in Totonicapán and from 48.2% to 52.2% in San Marcos; increase in identification of alarm signals (fast breathing) by mothers (knowledge), from 2.5% to 16.3% in Totonicapán and from 7.3% to 29.1% in San Marcos; and finally, increase in demand for MPHSA health services from 38.0% to 81.6% in Totonicapán and from 38.6% to 51.0% in San Marcos.

It is evident, even though intervention was implemented briefly, that health personnel carried out a lot of communication actions and it was possible to objectively demonstrate, the communication intervention produced substantial positive effects. In summary, intervention was highly successful.

c) Interventions to Improve Health Services Through Systematic Introduction of Standard Case Management (SCM) for Diarrheal Disease Control (DDC) and Acute Respiratory Infections (ARI).

C&M supported MPHSA in 1994 and 1995, two pediatric health facilities: the GISS Pediatric Hospital, and the General Hospital San Juan de Dios in Guatemala City to train Guatemalan facilitators in SCM for DDC and ARI. These facilitators should use the methodology later on in Health Areas and districts. These training facilities are referred as National Teaching Units - Unidades Docentes Asistenciales Nacionales (or UDAMIN in Spanish). Facilitators were trained in an International Workshop in 1994 that C&M arranged through PAHO/WHO. The experience of the MPHSA and the experience of C&M were the basis of the organization of the UDAMINs.

The training methodology was developed by C&M in 1994, based on PAHO/WHO recommendations with modifications for Guatemala; the methodology was tutorial, integrated preventive and curative aspects, and included a systematic performance evaluation process. Training content was prepared based on PAHO/WHO's DDC and ARI training manuals and courses, modified by the project; manuals included SCM for ARI and acute diarrhea, and a review of immunizations and child nutritional status.

The materials prepared included the following: i) for Acute Respiratory Infections: module, posters, videos, slides, conferences and tetra-folds; ii) for diarrhea control: treatment module, prevention module, prevention and treatment manual, posters, tetra-folds, booklets, videos and bulletins. All material was printed in Guatemala City and distributed to each Health Area where tutorial trainings were carried out.

d) Interventions to Improve Supervision, Monitoring and Evaluation of the Programs.

C&M supported strengthening two aspects regarding child care two in MPHSA: performance evaluation and quality control. A short description of these project activities follows.

C&M supported introduction and monitoring of DDC and ARI SCM performance evaluation, as an important variable in improving medical care quality in MPHSA health facilities. A performance evaluation guide was prepared, with the participation of MPHSA, BASICS, INCAP, PAHO/WHO, Italian Cooperation and UNICEF. During their training, Guatemalan facilitators trained at UDAMIN were prepared as expert performance evaluators of Health Areas and district workers they were going to train. This activity was monitored by the Central Level of MPHSA and results were used in Health Areas for decision making. No data consolidation process was done; nevertheless, based on evaluation findings, Health Areas requested C&M support for re-training or new personnel training.

C&M supported in 1995 a integrated supervision process on DDC and ARI program implementation from national level, and C&M supported technical teams from 16 Health Areas and their districts in this type of integrated supervision.

The proposed instruments specified lists of procedures and norms for integrated maternal and child health care. C&M suggested using these lists as basis for personnel training and continuous education. C&M also suggested additional procedures lists to be used as guides for maternal and child health care integrated supervision. This proposal summarized lessons learned and presented alternatives for its future development; however, it was not validated nor systematically applied.

During 1995 and 1996, C&M supported Health Areas to introduce systematically evaluation and monitoring activities. Initially, in coordination with Mother and Child Department, indicators to be used in implementation programs were specified, as well as data sources, periodicity and usage level. C&M supported national programs to collect current data periodically; the indicators for which systematic data could not be collected, were estimated with C&M support in working meetings at Health Areas.

In 1995, a National Workshop in Quetzaltenango was carried out; in this workshop personnel in charge of ARI and DDC programs were trained on the technical basis of the indicators, data collection, data processing and information use. During this workshop Health Areas indicators were estimated by Health Area participants and Health Area personnel were trained in monitoring concepts and use of indicators.

C&M supported national programs in ordinary review of these indicators and promoted use of indicators to set priorities for personnel training; focus resources for supervision and quality improvement, volunteer training, and promotion and education activities.

Also in 1995, C&M supported an extended protocol design which includes evaluation of indicators on capability of facilities to provide SCM. This protocol included knowledge and performance evaluation, user interviews, facilities and supplies evaluation, and review of patient records. This activity was coordinated with the DGHS Human Resources Division evaluation team. The experts group was formed by technicians from this Division and the Health Areas of Alta Verapaz, Baja Verapaz, San Marcos, Totonicapán and Zacapa. With this group in 1996 a SCM quality evaluation was planned and carried out in the Health Areas of Alta Verapaz and Zacapa.

Also in 1996, an evaluation of SCM for ARI and DDC was carried out in twelve Health Areas, personnel trained in SCM in 10 Health Areas including evaluation of the comparison to untrained personnel in two other Health Areas. Main results included the following: between 90% and 57% of workers taking care of pediatric patients in these Health Areas have been trained on SCM; between 50% and 60% of trained workers manage satisfactorily ARI and DDC cases and between 60% and 70% of evaluated workers provide SCM education in homes to mothers whose children use MPHSA health services.

Comparison between Health Areas with and without SCM is being done with a multivariate analysis; however, simple findings show unsatisfactory norms, classification and procedures in Health Areas where SCM training has not been given.

C&M supported in 1995 design of a modified protocol which was used with the Community Health Department in 1996 for promoters and other kind of volunteers. This instrument is critical for SCM development at community level. An evaluation of SCM for ARI/DDC at community level was carried out in the same twelve Health Areas where health services were evaluated, ten with personnel trained in SCM and two without SCM training. Collected data was being processed in the Community Health Department when the C&M contract ended.

In 1994 C&M reviewed the questions to be incorporated in the Demographic and Health Survey of Guatemala, which was carried out in 1995. C&M's main suggestions were to include two sections on ARI: one, on case management including a prevalence estimate, the place where mothers look for advice, treatment administration and ARI-measles relationship. The second part included questions related to mothers' knowledge on signs of pneumonia and the needs for prompt medical care.

C&M contracted in 1994 and 1995 for Institute of Nutrition for Central America and Panama (INCAP) services to carry out an Ethnographic Study on ARI, to know the "actions, thinking and feeling" of inhabitants of three indigenous communities and one ladina community on home management of children under five years old with ARI.

This research revealed many surprising community perceptions and practices. Among the most relevant, the following can be pointed out: fast breathing ("taquipnea" in Spanish) is not recognized as an alarm signal; chest in-drawing ("tiraje") is not identified ("it is inconvenient to raise a child's shirt when the child is sick"); few persons go to the health facility, and frequently when they do it, it is too late.

Besides the "actions, thinking and feeling" related to pediatric ARI, research showed that there is a considerable dissatisfaction in Kiché, Kekchí, Kakchiquel and Spanish-speaking populations with MPHSA services provided through health centers and posts. It was not the intention of this study to identify feasible alternatives to fill this gap.

From this analysis, a communication strategy was designed, to improve mothers' knowledge on when to go to health facilities for a pneumonia problem, in order to reduce complications and, consequently, to reduce ARI mortality. This strategy was explained in detail in part b of this Section.

C&M designed in 1996, a protocol to bring up the discussion on the need of a deeper analysis of ARI vital statistics accuracy. Using a verbal autopsy methodology, adapted for Guatemala, a non-significant small sample of deaths of children under 1 year old was followed-up. In June, 1996 in Guatemala City a review of civil records of deaths of children under 1 year of age, occurred from March 1st. and May 31st., 1996, was carried out. A total of 46 verbal autopsies were done in homes of the dead children.

The main findings of the verbal autopsies were the following: in municipal registers, pneumonia represented 39.1% of deaths (18 out of 46 deaths) while, verbal autopsies suggested pneumonia actually represented 60.9% of deaths (28 out of 46 deaths). Conclusions from this modest sample suggest underrecorded drastically is perhaps as much as 50% more than the official statistics. This underregistration percentage indicates the importance of research and also to develop ways to improve accurate records, for example, to train people to properly complete death records. Additionally, it is recommended to carry out this type of studies (verbal autopsies) in rural zones, where death reports and confirmation are done by non-medical personnel. When we find that the probable cause of death based on a verbal autopsy is much higher than the official statistics it has direct implications a) to do further analysis with a bigger sample and more careful analysis, b) to improve the record-keeping procedures for deaths that could be ARI, and c) increased priority for prevention, control, and treatment of ARI since it may be much bigger health risk than is implied in the official vital statistics. This study has had the intention and effect to show simple methods for this type of analysis and to introduce the topic in Guatemala, for further future development.

2.4 ORT-ARI IMPACT AND OUTPUTS ACHIEVED.

Impact achieved by ORT-ARI component, on child mortality, morbidity and coverage related to ORT use, was presented in Section 3 of this report. In this Section, a complementary analysis is made, to highlight differences among Guatemalan Health Areas and also to show the component objectives' accomplishment level, compared to the targets stated in section 4.2.1.

Information provided by 20 Rapid Assessment Surveys (RAS) show a big range of ORT use in Guatemala, from 14.4% in Ixcan to 56.1% in El Progreso. Nevertheless, none of the Health Areas reached the 70% target when the study was carried out. Next table presents this information, by Health Area.

ORAL REHYDRATION THERAPY USE AS A PERCENTAGE OF CHILDREN UNDER 2
 YEAR OF AGE WITH DIARRHEA BY HEALTH AREA

HEALTH AREA	YEAR	ORT USE
Ixcán	1994	14.4
Suchitepéquez	1996	18.0
Alta Verapaz	1995	22.7
Retalhuleu	1995	27.1
Santa Rosa	1994	30.1
Baja Verapaz	1995	31.0
Jalapa	1994	33.6
Zacapa	1994	34.2
Jutiapa	1994	36.7
Quetzaltenango	1996	36.7
Chiquimula-Chortí	1993	39.1
Izabal	1993	36.9
Amatitlán	1993	39.1
Huehuetenango	1995	40.5
Totonicapán	1994	41.0
San Marcos	1996	41.3
Guatemala Norte	1995	45.8
Sololá	1994	47.3
Chiquimula-Perla	1993	48.9
Progreso	1993	56.1

Source: MPHSA, USAID/G-CAP, C&M. Twenty Rapid Assessment Surveys in 19 Health Areas. 1993 to 1996. Guatemala.

The objective to promote and support development and implementation of a National Plan for Control of Diarrheal Diseases was fully accomplished; details were presented in Section 4.2.3 as one of the main interventions to improve program planning and management process.

The objective for at least 85% of health centers and health posts to design and implement ORT activities probably was achieved but was not precisely measured. The great amount of trained and evaluated institutional and community personnel and the evidence of adequate SCM use in a big proportion of trained workers, encourage us to conclude that this objective was reached in those Health Areas where the intervention was implemented.

There is no specific information for analysis of the objective to achieve that 100% of mothers with children under five years of age who have received ORT, spontaneously use ORT when it is required. Information from twenty RAS provide basic measurements on mothers' knowledge and practices in almost all Health Areas; these indicators are the foundation for starting and/or continuation of ORT/ORS promotion actions. There is great variability among Health Areas, as can be observed in the next page table. It is important to mention that these RAS findings were instrumental in many Health Areas to motivate greater efforts by MPHSA and Health Areas made additional efforts to improve performance after the RAS.

Another objective was for 100% of mothers who visit MPHSA Health facilities, receive education on diarrhea prevention and breast feeding. Evaluations of performance made by the MPHSA Human Resources Division estimate that, in a representative sample of primary level health services of Health Areas where component activities were carried out, 65% of mothers who visit health centers received education on diarrhea prevention, breastfeeding and other preventive and home-care activities for children with infectious diseases.

The target for ORS availability was 100% of MPHSA health centers and health posts incorporated into the national ORS distribution system. The last evaluation of ORS availability in health facilities from a representative sample of Health Areas where strategy was implemented, carried out in early 1996, showed that 90% of the health facilities had sufficient ORS quantities at evaluation time and that 70% of these facilities had a physical area (Oral Rehydration Unit-ORU) to apply ORT or for assistance with intravenous hydration.

**MOTHERS KNOWLEDGE AND PRACTICES REGARDING ORAL REHYDRATION
THERAPY (ORT), IN 19 GUATEMALAN HEALTH AREAS.**

(in percentages)

HEALTH AREA	YEAR	MOTHER'S PRACTICES FOR CHILD WITH DIARRHEA			KNOW HOW TO USE ORT
		Breast- Feeding Continued	Use of liquid continued	Use of food continued	
Alta Verapaz	1995	59.3	55.8	34.8	48.5
Amatitlán	1993	81.6	88.0	64.8	80.4
Baja Verapaz	1995	73.9	81.5	61.8	63.0
Chiquimula-Chorti	1993	77.3	78.0	61.4	65.1
Chiquimula-Perla	1993	79.3	82.4	63.8	62.1
North Guatemala	1995	80.0	81.8	55.4	87.0
Huehuetenango	1995	80.2	84.1	58.7	74.9
Ixcán	1994	67.3	65.4	47.0	43.2
Izabal	1993	70.6	79.0	67.5	37.9
Jalapa	1994	82.5	78.0	58.3	43.2
Jutiapa	1994	84.7	79.7	63.2	70.9
Progreso	1993	84.8	85.9	69.6	99.4
Quetzaltenango	1996	82.1	84.7	55.8	60.4
Retalhuleu	1995	74.8	83.2	63.7	54.7
San Marcos	1996	81.9	87.4	72.3	74.1
Santa Rosa	1994	85.7	78.0	57.1	67.2
Sololá	1994	79.0	80.5	57.5	73.2
Suchitepéquez	1996	84.0	84.5	67.6	40.7
Totonicapán	1994	83.2	72.6	48.5	76.0
Zacapa	1993	76.6	91.3	72.3	75.5

Source: MPHSA, USAID/G-CAP, C&M. Twenty Rapid Assessment Surveys in 19 Health Areas. 1993 to 1996. Guatemala.

The last ORT target -to achieve that 9,000 promoters and 4,500 traditional mid-wives received training on oral rehydration therapy- was extensively accomplished, since 9,208 promoters were trained, as shown in the following table.

**NUMBER OF VOLUNTEERS TRAINED BY SUBJECT MATTER
1992-1996**

SUBJECT OF TRAINING	TRAINEES
Oral Rehydration Therapy (ORT)	3,494
EPI/ORT	3,122
EPI/ORT/ARI	510
ORT/ARI	2,082
SUB-TOTAL	9,208
Expanded Program of Immunizations (EPI)	890
Acute Respiratory Infections (ARI)	90
Health Management Information Syst. (HMIS)	7
Improved Administration Systems (IAS)	9
TOTAL	10,204

The first target for ARI was to improve SCM for pneumonia nationwide. Evaluations carried out in 1996, give evidence of improvement in pneumonia SCM quality; between 57% and 90% of Health Area personnel where activities were carried out had been trained; between 50% and 60% of interviewed workers knew adequately the SCM procedures and between 60% and 70% of service providers gave education on SCM at home level correctly.

The target to introduce SCM for pneumonia in 15 Health Areas was surpassed. New SCM procedures and norms were introduced in 18 Guatemalan Health Areas. Findings from evaluations carried out in 1996, show that from a total of 12 Health Areas investigated, only two are not using SCM. The two did not receive support from the project and thus served as a control group; in the other 10 Areas, SCM coverage ranged from 90% to 57%.

In summary, component purpose and objectives, as stated in the contract, were partially accomplished.

70

Some reflections on how to overcome constraints in the future and to assure maximum sustainability of project achievements are presented in Section 6.2 b) of this report.

4.3 HEALTH MANAGEMENT INFORMATION SYSTEM COMPONENT (HMIS).

This Section presents information on the HMIS component objectives, strategies, interventions to accomplish the objectives and summary of impact (goal and purpose) and contract outputs achieved.

4.3.1 HMIS OBJECTIVES.

The HMIS "purpose level" targets were the following:

1. To facilitate appropriate decision-making at all levels by developing and utilizing an adequate national information system for MPHSA.
2. To provide for a better utilization of available resources.
3. To reinforce local programming and coordination of the health sector at this level.
4. To provide valid information which is beneficial to users within the health sector and to others involved in the development process.

4.3.2 STRATEGIES TO ACHIEVE HMIS OBJECTIVES.

C&M, following the terms of the contract, adopted the following strategies to achieve HMIS objectives:

1. To support the design of an integrated information system.
2. To support development of the designed system with manual and computerized components.
3. To support implementation of the developed system, with emphasis in Health Areas and selected Central Level units of MPHSA.
4. To improve information analysis, interpretation and use, through guidelines development and personnel training.
5. To incorporate into the system for gathering periodic information, simple and reliable data collection methodologies.

6. To support development of program monitoring and evaluation mechanisms, with emphasis on project's components.
7. To support design a community based information subsystem.

4.3.3 INTERVENTIONS TO IMPROVE HMIS.

Interventions were carried out following the above described strategies; details follow.

a) **Interventions to support designing an integrated information system.**

Guatemalan MPHSA information system had been supported by the USAID-funded Child Survival Project, before the 1992 contract with C&M, as described in Section 2 of this report. At that time a so-called Unified Health Information System (SUIS in Spanish) was designed; this system was conceived as a set of data collection instruments, oriented to record activities performed by various MPHSA programs. This system was tested in the Sololá Health Area for 3 years under the name of Integrated Health Information System (SIIS in Spanish), before the signing of C&M's contract.

Once the C&M contract was signed, Management Sciences for Health (MSH), working as a project sub-contractor led the HMIS component in the first stage, building on work started before C&M's contract.

As one of the first steps of this component, the project evaluated SIIS with participation by approximately 150 MPHSA officials; they represented technical policy making Units of the Directorate General of Health Services of (DGHS) and Health Areas at a three day workshop supported by the project and directed by MSH. One of the main results was to reduce the number of data collection instruments used by the system from more than twenty to eleven.

MPHSA decided to abandon the computer language Clarion, which had been used to program computer applications before C&M's contract; thus, project carried out from 1992 to 1993, conversion of applications to FoxPro and continued using FoxPro which facilitated hiring computer programmers and operators in Guatemala.

As a latter development and because it was necessary to integrate the system for health services and administrative activities, C&M made contact in 1994 with PAHO/ WHO in Guatemala, where identical goals were found and where software was being developed that supported the integration of health and administrative services.

The first benefit of these interagency relationships was the adoption, for the MPHSA, and with the support of USAID, PAHO/WHO and UNICEF, of the Information System for Local Management (SIGLO in Spanish). This was done by agreement by the Minister of Health and the representatives of the 3 External Cooperation Agencies mentioned, in a Letter of Intention to work jointly on a single health information system for Guatemala; the letter appears in Annex 5 to this report.

This letter stated that, from the institutional point of view, information process would consist of capturing basic service data about real events in each area, validating them and converting them to a form that could be shared and would contain data that was substantial and useful for administration, decision making, operation and carrying out concrete actions.

In this context, SIGLO is a work instrument that permits data to be captured at the time and place of service, and also the following: i) generates and maintains records for decisions made and care given; ii) produces forms and written required reports; iii) exports data to other functioning applications; iv) assists decision-making with on-line norms, guides and standards; v) facilitates decentralized management of resources (human, physical and financial) and administration process and vi) contributes to continuous improvement of management and institutional administration.

SIGLO is an open and modular system developed for the health sector, that can be implemented in stages, according to priorities, necessities and characteristic of each institution. Its characteristics were described in a pamphlet titled "Conceptual Bases of the Information System for Local Management - SIGLO". In 1995 one thousand copies were printed and distributed to MPHSA.

The main characteristic of the system are the following:

- a) Ease of handling: SIGLO can be used by any personnel who can read and have an elementary knowledge of typewriters. Computer knowledge is beneficial but not essential. Personnel require general SIGLO system training and specific training in the module they will use.
- b) Use of the current MPHSA personnel: the system does not require additional personnel because the current staff can use SIGLO for their daily tasks.
- c) Compatible with the manual system: Since SIGLO is compatible with the current manual processes for managing information, the system can be placed at the level in the health system where aggregation of data is done -for Guatemala's MPHSA at the Health Area Headquarters-. From there, support is provided for the manual processes that are still done at lower levels.
- d) Flexibility in their structuring, according to necessities and specific situation of each institution. The people that administer each unit can adapt the structure and procedures of SIGLO to their setting. With traditional systems, such changes would require the continuous assistance of programmers.
- e) Operation can be set up for single users, multi-user, or networks; it is an option determined by the users depending on their specific needs and how the best performance is reached.
- f) Protection by passwords: Use of passwords for security of the information and to prevent unauthorized access as well as to limit access to information in a single module to the person previously designated.

- g) Back-up routines to review and assure the integrity of file and directory structures and to protect the information in magnetic media and facilitate their recovery in case of malfunction.

The technical minimum conditions that are required for the installation of SIGLO are the following:

- a processor of the type Intel 386 or better.
- at least 4 MB of RAM memory.
- a hard disk of at least 20 MB.
- a printer with a wide carriage is preferred for wide reports, but is not essential in order to run the software.

These conditions have been met for all 27 Guatemalan Health Areas through data processing microcenters installed by the Project, with the necessary staff and equipment, as is described in subsection c) of this Section of the report.

The Guatemalan MPHSA version of SIGLO is summarized below:

Component 1: Opening.

This contains the modules for: i) Geographical Location (the geographical area served by the institution, the structure of population age groups and projections); ii) Institutions (units with direct and indirect relationships) and iii) Functional Organization (organigrams, units of production data and system codes from the Management Information System of PAHO/WHO).

Component 2: Human Resources.

The module contains i) the staffing table for each institution including volunteers, ii) personnel data on their education and work experience, iii) requirements of each position, iv) personnel administrative actions and records about transfers, vacations, leaves and absences, retirements, etc., and the automatic recording of the personnel changes.

Component 3: Suppliers.

The module has lists of suppliers, like a kardex of people and institutions, that offer goods and services to the facility. It has descriptions of important variables such as identification of the supplier, type of entity (producer, distributor etc.), goods and services offered, prices, past experience, good or bad, with the entity and their registration in the Ministry of Finance.

Component 4: Supplies.

The module is for warehouse management, using the records of data from warehouse procedures that are required for maintaining inventories. It includes general supplies and pharmaceutical products. It also records the movements of the inventory and the units charged for goods received.

Component 5: Goods and Equipment.

This module contains the records for goods and equipment and identifies the employees who are responsible for their handling and custody. Information to identify each item is included with identification of equipment specifications, dates of purchase and entry into service, the values at time of purchase and at present, the type and the periods of depreciation, the condition of the item and its maintenance requirements.

Component 6: Budget.

This module is for management of expenditures including planning of budgeted expenditures and adjustments, assigning budget ceilings for expenditures by time periods, and recording additions, cuts and transfers. This is done with issuing of purchase orders and payments using continuous forms, with automatic calculation of withholdings and taxes. It also carries out the process of closing each account period for the organization.

Component 7: SIIS (Health Integrated Information System)

The health information components were integrated, into the following reports before SIGLO: Summary of Morbidity (F3), Summary of Immunizations (F8), Summary of ARI and ORT cases (F9), Quarterly Summary of Activities (F11) and Deaths (V2).

In a second phase SIIS was integrated with SIGLO. The component was redesigned to use the structural programming of SIGLO, using the SIIS data formats, as the foundation of the system and the SIGLO query structure, and a report generator.

Component 8: Planning.

This module supports the preparation of the Annual Operating Plans (POA in Spanish) for Health Areas and consolidates them for the Central Level of MPHSA.

The module permits recording information on general policies, national strategy and health objectives; it contains data on the health situation of the Area including demographic, epidemiological, socio-economic and other aspects of the population; the prioritizing health problems and their causes, the inventory of physical and human resources available and the main coverages accomplished and activities performed. Also, it strengthens strategic planning and local programming for the Health Area,

regarding the Area's mission, operational objectives, operational policies, programmatic lines, local activities programming activities by levels and assignments of resources and scheduling.

It is important to note that all SIGLO modules have a report generator which produces the main required administrative and fiscal reports, as well as new reports, consultations and the preparation of statistical data.

b) Interventions to support development of the designed system with manual and computerized components.

Having specified the logical design and the technical characteristics of the system, C&M and PAHO/WHO consulted MPHSA users reporting their needs on meetings in 1994 with MPHSA Central Level personnel. In these meetings information needs of policy makers and the strategy for the implementation of SIGLO were specified. This strategy was sequenced in several stages, starting with training and continuing assistance at Health Area headquarters until SIGLO was successfully incorporated in the operating culture of Health Areas.

It was important to validate with more confidence that the needs of the local level had been incorporate in the system and that it also met all needs of Health Areas. In the last quarter of 1994 C&M led a workshop with the technical personnel and office workers of the Headquarters of the Health Area of Baja Verapaz.

The workshop results provided information for further discussions in the first quarter of 1995, with technical personnel and office staff of the Headquarters of the Health Areas of Alta Verapaz, Baja Verapaz, Chiquimula and Escuintla, with the attendance of PAHO/WHO consultants and MPHSA Central Level officials.

With recommendations obtained, C&M and PAHO/WHO adjusted SIGLO's programs in 1995 to provide information required by all MPHSA levels.

SIGLO developed a FoxPro 2.6 relational data base, which was well known in Guatemala. It was fully compatible with other current data bases, and readily compatibility with other products and future developments. As it was previously mentioned, it also facilitated hiring computer programmers and operators in Guatemala with enough ability to use it.

The tools used for the development of the system were:

- Flow Diagrams which are a visual image of a netlike system of functional processes, connected to each other through conduits and storage areas.
- Data Dictionary which is an organized listing of all data pertinent to the system, with precise and rigorous definitions so that all users, from system analysts to clerks to programmers, have a common understanding of the inputs, outputs, functional components and intermediate products.

- Diagram entity-relationship which it is a highly conceptual model that describes the relationships among the data stored in the system.
- Diagram of transition of states which shows the several changes of the state of data as it is being processed by the system.

c) Interventions to Support Implementation of Developed System, with emphasis in Health Areas and Selected Central level Units.

System implementation, for Health Areas was carried out in several stages, as follows:

- The first stage was a series of 2-day workshops, always carried out in C&M office in Guatemala City with Health Area technical staff -between 7 and 10 persons-. During the workshop, a theoretical explanation of the system was provided and then a practical exercise, in order to familiarize personnel with system and equipment. This stage started late in 1994 and continued until 1996.
- The second stage was carried out at the Health Area and provided more in-depth experience with each module for the responsible officials. Besides initial work with C&M consultants' support, a so-called "SIGLO Tutor" was installed, to allow Health Area workers to carry out fictitious exercises with SIGLO without affecting real Health Area data. This stage was also from late 1994 to 1996.
- The third stage was also carried out in the Health Area level and was the initial recording of information for the modules, by the Health Area workers. C&M was present and provided support. This stage was implemented in 1995 and 1996.
- The fourth and last stage was carried out throughout the project, with emphasis in 1995 and 1996; in this stage C&M consultants visited Health Areas periodically, in order to give support to persons in charge of SIGLO modules, as well as to respond to all technical assistance requests received.

The following was the situation of SIGLO implementation, module by module, as of May, 1996. In this list the three new health areas are not mentioned, because they were recently created; at the end of the contract, C&M gave them computer equipment and trained their personnel.

- a) Opening Module: the module was fully operational in 12 Health Areas and partially in 12.
- b) Human Resources Module: the module was totally operational in 8 Health Areas: Escuintla, South Guatemala, Izabal, Jutiapa, Retalhuleu, Sacatepéquez, San Marcos and Suchitepéquez; partially implemented in 16: Amatitlán, Alta Verapaz, Baja Verapaz, Chimaltenango,

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Final Report-Guatemala Child Survival Project

Chiquimula, El Petén, El Progreso, El Quiché, North Guatemala, Huehuetenango, Jalapa, Quetzaltenango, Santa Rosa, Sololá, Totonicapán and Zacapa.

- c) Goods and Equipment Module: 2 Health Areas were using this module fully: Retalhuleu and Suchitepéquez; partial records in 21 Health Areas. Only Izabal Health Area remains uninstalled.
- d) Manual System of Supplies: partially operational in the 24 Health Areas with a partial information flow from health posts and health centers toward Health Area headquarters in Amatitlán, Baja Verapaz, Chimaltenango, Chiquimula, El Progreso, Escuintla, South Guatemala, Huehuetenango, Izabal, Jalapa, Jutiapa, Retalhuleu, Sacatepéquez, San Marcos, Santa Rosa, Suchitepéquez, Totonicapán and Zacapa.

Computerized records for supplies were totally operational in Chimaltenango, El Progreso, Jalapa, Jutiapa, Retalhuleu, Sacatepéquez, Santa Rosa, Suchitepéquez and Totonicapán.

- e) Financial Module: totally operational in 14 Health Areas: Amatitlán, Alta Verapaz, Baja Verapaz, Chiquimula, El Progreso, North Guatemala, Jalapa, Jutiapa, Retalhuleu, Sacatepéquez, San Marcos, Sololá, Suchitepéquez y Zacapa; partially updated information in Chimaltenango, South Guatemala, Izabal, Quetzaltenango and Santa Rosa. Remaining to be installed were Escuintla, El Petén, El Quiché, Huehuetenango and Totonicapán.
- f) SIIS (version adapted to SIGLO): the module was totally operational in 6 Health Areas: Amatitlán, South Guatemala, Jalapa, Santa Rosa, Sololá and Suchitepéquez; 13 Health Areas had partially updated information: Alta Verapaz, Baja Verapaz, Chiquimula, El Progreso, Escuintla, Huehuetenango, Izabal, Jutiapa, Quetzaltenango, Retalhuleu, San Marcos, Totonicapán and Zacapa. . Remaining to be installed were: Chimaltenango, El Petén, El Quiché, North Guatemala and Sacatepéquez.
- g) Planning Module: the Planning module was delivered to the MPHSA Sectoral Planning Unit (USPAS in Spanish) in June 1996, which will enable it to promote its use for planning for the Central and Local Levels and which will support the preparation and consolidation of the POA for 1997.

The table "Analysis of SIGLO Implementation in Guatemala's MPHSA" shows that status in May 1996 in tabular form.

HMIS Training.

A very important activity, performed as a system implementation pillar, was MPHSA personnel training, which was carried out in two stages.

The first stage, carried out in Phase I of the C&M contract in 1992 and 1993, was the training done for the capture of the data with the SIIS forms.

ANALYSIS OF SIGLO IMPLEMENTATION IN GUATEMALA'S MINISTRY OF HEALTH AND SOCIAL ASSISTANCE

MAY, 1996

No.	AREA	OPENING	HUMAN RESOURC.	GOODS & EQUIP.	SUPPLIES MANUAL	SUPPLIES AUTOM.	BUDGET	SHS
21	North Guatemala	B	B	C	C	C	A	D
22	South Guatemala	B	B	B	B	D	C	A
23	Amatitlán	A	B	C	B	C	A	A
24	El Progreso	B	C	B	B	B	A	C
25	Sacatepéquez	A	A	B	B	B	A	D
26	Chimaltenango	B	B	B	A	B	C	D
27	Escuintla	A	B	C	B	D	D	B
28	Santa Rosa	B	B	B	B	B	C	A
29	Huehuetenango	B	C	C	C	D	D	C
30	El Quiché	A	B	D	D	D	D	D
31	Totonicapán	B	C	B	B	B	D	C
32	Sololá	B	C	D	D	D	A	A
33	Quetzaltenango	A	B	C	C	D	C	B
34	San Marcos	A	B	C	C	D	A	C
35	Retalhulcu	A	B	A	A	A	A	B
36	Suchitpéquez	A	A	A	A	A	A	A
37	Jalapa	B	B	B	B	B	A	A
38	Jutiapa	B	A	B	A	A	A	B
39	Izabal	A	B	D	B	D	B	B
40	Zacapa	A	B	C	B	C	A	B
41	Chiquimula	B	C	B	C	D	A	B
42	Baja Verapaz	A	B	B	B	C	A	B
43	Alta Verapaz	A	B	C	C	D	A	B
44	El Petén	B	C	D	D	D	D	D

For Opening: A = Full records B = Partial records C = No records
 For other modules: A = Full operation B = Updated records C = Initial records D = No records

29

The second stage was made to implement SIGLO from 1994 to 1996. A program of training was carried out at the Central and Local Levels, and complemented with in-service training.

The number of personnel trained as part of this component was 1,725; main training topics were related to sample survey, computer courses and specialized SIGLO events. Participants performance was evaluated after training and was satisfactory when system was managed by MPHSA personnel without external technical support.

To re-enforce the acquired knowledge and to serve as a reference text, in 1996 a "SIGLO User's Manual" was finished. It follows the sequence of the SIGLO menus and sub-menus. It serves as a clear guide to understanding the operations of the system and guarantees the continuation of use of the SIGLO modules as they were implemented. The "SIGLO Users Manual" contains the 8 specific modules of SIGLO described previously. The Manual also includes additional technical instructions for the handling of the equipment and use of the microcenter, instructions for installing SIGLO, daily routines for use of the computer, anti-virus, and the SIGLO Main Menu. The Manual was given to the system users.

Logistical support for HMIS.

As part of the C&M support of the information system implementation, C&M provided logistical support in the following aspects:

- Establishment of data processing micro-centers in the headquarters of 27 Health Areas. For this, C&M supported in 1992 and 1993, physical and electrical studies for upgrading facilities proposed to be micro-centers in Health Areas and of selected offices of the MPHSA Central Level; preparation of the facilities diagrams and remodeling work in 24 original Health Areas. In 1996 C&M analyzed conditions of three new Health Areas, in order to establish 3 more micro-centers; equipment for the last 3 microcenters was transferred at the contract end when these Health Areas started operations.
- Purchase of computers. C&M made 4 purchases of computers, printers, peripheral equipment and supplies: #1 in 1993 for 24 original Health Areas and selected MPHSA Central Level offices; #2 in 1993 to complement #1; #3 in 1995 to install computational networks in original 24 Health Areas and #4 in 1996 to include three new Health Areas and some other Central Level offices. Since the micro-centers were small in new Health Areas, it was not necessary to purchase Novell Network software for them. The specifications of the equipment were specified based on dialogue with MPHSA and USAID/G-CAP. The Procurement Division of C&M led the process of international procurement, shipping, insuring, etc, supporting C&M in Guatemala.

The following table presents the information about equipment types and quantities purchased for MPHSA.

TYPE AND QUANTITIES OF COMPUTER EQUIPMENT PURCHASED FOR MPHSA

TYPE OF EQUIPMENT	PURCHASE #1	PURCHASE #2	PURCHASE #3	PURCHASE #4	TOTAL
Microcomputers					
VTC-80486	31	6			37
VTC-80386	48				48
DELL-4660M			24		24
DELL-GL-575				7	7
Total					116
Printers					
EPSON-LQ-1170	29	3		7	39
EPSON-LQ-8000		3			3
Total					42
Software					
Novell (Networks)			24		24
COST (US\$)	221,379	23,957	171,965	27,405	444,706

- Purchase of Furniture and Equipment. Health areas headquarters AND some MPHSA Central Level offices received computer furniture consisting of desks for the computers, tables for the printers, metal file cabinets, executive chairs, etc., at a cost of \$72,658.
- Printing of forms. C&M financed the reproduction and distribution of the newly revised forms for the SIIS until the end of 1994, as it was stated in the contract.

System and Computer Equipment Maintenance.

Support provided to the MPHSA "Informatica" Unit, included repairs to the document reproduction equipment. Also, to assure the operation of the existing computer equipment in the Unit, a maintenance contract was provided during 1994, as anticipated in the contract.

81

Equipment purchased by C&M was covered for by vendor guarantees until June 30 of 1996. The National Coordinator of the Project was timely informed about the end of the warranty period. 14 computers have extended guarantees because of defects and spare parts changes done during original guarantee period. Servers for the micro-centers networks were 24 DELL 486, 66MZ computers that have a guarantee of 36 months starting in May, 1995. Finally, the 7 Pentium computers, DELL Optiplex GL 575, 75 MZ, were also covered with a 36 months guarantee starting in May, 1996.

d) Interventions to improve information analysis, interpretation and use, through development of guidelines and personnel training.

MPHSA and C&M considered that one of Guatemalan HMIS main constraints was lack of guidelines or orientation, to help health personnel to adequately present and appropriately interpret the information they gathered. Decision-makers needed this help to convert data in a real and effective decision making at decentralized level. In this context, it was agreed to develop decision making in all levels of MPHSA. Emphasis was given to the local level, to adapt to current trends to decentralization problem-solving and resource management.

As a result of this agreement, a Series of "Basic Guidelines for Use of Health Information" was prepared. Some Guidelines sections were adapted for Guatemala from documents published by the Office of the World Health Organization in New Guinea, which was given to C&M by Management Sciences for Health (MSH). Other material was adapted from the publication "Current Management in Family Planning" by the Family Planning Management Development (FPMD) Project, supported by USAID.

The material was adapted in 1995 and 1996 to the Guatemalan MPHSA circumstances, with participation by Central Level and Health Area personnel.

The first version of the "Guidelines" was tested in the Health Area of San Marcos during March and April of 1996 with 47 officials of the Area: doctors, nurses and administrative personnel (secretaries, technician of maintenance, statistician, accountant and hospital administrator).

The opinions of the participating personnel were the following: concepts included were useful; examples were clear, useful and applicable to daily practice; exercises were suitable and conducive to be applied in the appropriate area; self-instruction methodology was well presented and was expected to be an effective way to train the health personnel of the Districts without external technical support. In summary, there was very good acceptance of the guidelines from participants. One of the good suggestion was to reduce the number of Guidelines from 6 to 5.

A summary of the Guidelines follows:

Guideline Number 1: Basic Mathematics

Guideline 1 shows the application of basic mathematical operations, like multiplication and division, percentages and rates with epidemiological and administrative health data. The Guideline contains practical exercises for interpretation of raw data, percentages and rates in order to improve understanding of health data and facilitating better decisions in health, influenced by quantitative information.

Guideline Number 2: Calculation of Populations and Indicators

Guideline 2 illustrates the calculations and methods for projecting of the size of the population to be served, and how to use these estimates in planning programs. It also includes the calculation of indicators targets and how they can be used to measure and control the results of interventions. Practical exercises are included. There is also a section on protocols for the interpretation of population data.

Guideline Number 3: Graphing Information

Guideline 3 presents instructions for presentation of data including making tables and 5 kinds of graphs using lines with simple and cumulative data, bars with simple and cumulative data, and pie charts; and the uses of each type of graph. Each explanation is reinforced using practical exercises. It also includes protocols for the interpretation of graphs and specific functional examples for monitoring including coverage vaccination rates and cold chain monitoring and endemic corridor ("corredor endémico").

Guideline Number 4: Preparation and Use of Maps

Guideline 4 presents the methods and techniques for the construction of maps, in simple form. Maps are one of the oldest and best instruments to summarize, analyze and present information for public health. It also shows how to represent different types of data on enhanced maps, with exercises to consolidate the acquired knowledge. It also illustrates the interpretation and use of maps for planning and decision-making.

Guideline Number 5: Information for Management: Monitoring, Evaluation and Decision-Making

Guideline 5 presents concepts, methodologies, techniques and indicators used in monitoring and evaluation, and an orientation to the interpretation of indicator data. It illustrates decision-making in general and in specific situations. Finally, it describes the Information System for Local Management (SIGLO), at present being implemented in Health Areas, and proposes protocols to use the information produced by SIGLO, with more knowledge and depth of understanding.

The revised version of the Guidelines were used for training in April and May, 1996, of all personnel from the District Level (Centers and Posts) of the Health Area of San Marcos. 316 staff were trained including doctors, nurses, auxiliary nurses and administrative personnel.

Two facilitators were trained for 20 other Health Areas in June, 1996. Training and materials provided to these persons will enable them to train additional MPHSA personnel in their area as needed in the future.

C&M provided technical and financial support for publication of 3 issues of the Bulletin "Advances in Maternal and Child Health" in 1995. The Bulletin provided examples of use of information at local level for decision making.

"Bulletin Number 1" presented the following topics: "Pneumonia is a Fatal Illness", "Priorities for the Prevention of Diarrhea", "The Promotion of Breastfeeding and Its Benefits", "How to Promote Breastfeeding In Urban Communities", "Conceptual Bases of Information System for Local Management" and "Acute Respiratory Infections."

"Bulletin Number 2" presented articles on the following topics: "Exclusive Breast Feeding", "Relationship Between Breast Feeding and Mother's Nutritional Status", "Care of Children with Pneumonia", "What is ORT?" and "Breast Feeding: Basic Concepts."

"Bulletin Number 3" presented articles on the following topics: "Introduction to Nutrition", "Antibiotics and Diarrhea", "Useful Rules for Administering ORT at Home", "Rapid Assessment Studies", "Guideline for the Elimination of Measles" and "Basic Concepts: Distribution of Foods at Mealtimes".

These Bulletins were coordinated, for preparation and publication, with MPHSA Maternal and Child Department.

C&M worked in 1995 and 1996 with the Human Resources Division and the Maternal and Child Health Department, to develop the institutional capacity for MPHSA to continue producing the Bulletin after the USAID-supported project. However, the anticipated success was not achieved, because no person was assigned the responsibility for production of the Bulletin and no resources or counterpart funds were budgeted for production. Getting funds from MPHSA will be very difficult given the lack of economic security of the MPHSA and since educational activities are secondary to providing patient services. At the end of the project, there was sufficient material remaining to publish at least three more issues of The Bulletin.

- e) **Interventions to incorporate into the system for gathering periodical information, simple and reliable data collection methodologies.**

The Rapid Assessment Surveys (RAS) were an important basis for generating management information specific to Health Area level and local facility level for planning, monitoring and evaluation of health education and promotion activities.

The key characteristics of the RAS methodology are summarized as follows: responsibility at Health Area or local level; content of the information focused on main indicators of knowledge, practices and coverages of the Child Survival Project components; basic information for management of preventive and promotion activities; simplicity in procedures and instruments for gathering, processing, analysis and presentation of information, but guaranteeing satisfactory technical standards and quality and accuracy in the produced information; very low total cost of the studies and minimal direct cost; exceptional opportunity in generation of useful results for local programming; and flexible and integral use of information in the decision making process for the Child Survival Project.

The RAS methodology uses the following techniques: i) a simplified method of cluster sampling, partially probabilistic, developed by WHO for the Expanded Program of Immunizations (PAI); ii) a series of modular questionnaires that could be chosen according to local problems; iii) a group of basic indicators for each module; iv) a process of simplified training for supervisors and data collectors; v) the processing of data by manual or automated means and vi) an analysis workshop directed to the use of the information for reorientation and adjustment of preventive and promotional programs.

The thematic content of the surveys includes the modules to estimate basic indicators of knowledge, practices and coverages in child feeding, including breastfeeding; acute diarrhea control; acute respiratory infections control; immunizations, and maternal health.

The Rapid Assessment Surveys in Guatemala have been an impressive "user-friendly" technique for improving decentralized management of child survival programs. The RAS methodology was adapted from similar methods developed elsewhere and used for 20 surveys that were supported by C&M and MPHSA. The methodology has evolved somewhat based on the experience in the earlier RAS surveys. At the end of the project an international expert on sample surveys for health evaluated the methodology and made practical suggestions to deal with potential problems in the future.

The contrast with traditional sample surveys is dramatic. The RAS does not require expensive international experts to do the sample selection, data gathering, data processing, data analysis and interpretation, the reporting, and the key step from data collection to decision-making on what to do to make the public health programs better. All these steps were done successfully at the Health Area level in Guatemala in various diverse locations around the country. The costs to do the RAS surveys are low. The results can be available in less than a month for useful management decisions.

RAS were carried out in 19 Health Areas, following the proper procedures. They represent a clear achievement in one of the essential objectives, which is the widespread use of a management tool for decentralized management at the Health Area and/or local levels.

20 RAS were carried out in 19 Health Areas from 1993 to 1996 with project support (technical assistance, materials, transportation, and lodging); part of survey costs was assumed by Health Areas (personnel, transportation and fuel). Each one of these studies had a separate final report. RAS were carried out in the following Health Areas: Amatitlán, Chiquimula Chortí, Chiquimula Perla, El Progreso, Izabal and Zacapa in 1993; Ixcán, Jalapa, Jutiapa, Santa Rosa, Sololá and Totonicapán in

1994; Alta Verapaz, Baja Verapaz, North Guatemala (Metropolitan Area), Huehuetenango and Retalhuleu in 1995 and Quetzaltenango, San Marcos and Suchitepequez in 1996.

El Progreso and Zacapa studies were co-financed by Plan International; Ixcán RAS was co-financed by CARE and PRODERE and Jutiapa, Jalapa and Santa Rosa studies were totally financed by the European Union.

The RAS "technology was transferred" sufficiently that it has been used in at least one health district without need for support from C&M nor foreign agencies nor the Central Level of MPHSA. In the Estanzuela Health Center in Zacapa in 1993, Dr. Arreaga used her experience in the Zacapa Health Area RAS to manage her own RAS for her district. She was able to carry out the study without technical assistance, without computers, without special funding. She also was able to do the study without delays to ask permission from the Central Level and she was able to take action based on the results without waiting for permission. The most striking result of the Estanzuela RAS was the low coverage for ORT and ARI; the health promoters were assembled promptly, given improved materials and focused training and motivation and sent back to the field to do a better job.

A Ministry doctor in Sacatepéquez also used his experience in RAS methodology to demonstrate, carrying out his own RAS, that a classified "critical municipality" did not have low immunization coverages as it was previously presented.

C&M trained approximately 300 MPHSA people about RAS, mainly doctors, epidemiologists, nurses and rural health technicians. These persons were trained in the design of the studies, carrying out field activities for data gathering, processing, analysis and use for program improvement. Further, C&M trained personnel from PCI, Project HOPE, CARE, Plan International, PRODERE, Doctors without Frontiers and UNICEF.

RAS results have been summarized as a series of basic indicators, which have been used for making decisions at local level. Also, for comparing purposes, results have been presented in tables and graphs. Some examples of prepared tables and graphs are presented in next pages.

RAS findings were converted into recommendations and concrete actions to improve child survival activities at local level (area/district). However, it is evident that more training on information processing and use for planning and monitoring actions is required. The project initiated a training process on use of information modules, generated due to this observed need. This activity should be continued to create a "use-of-information" culture at MPHSA.

Study results have been used for the following, among others:

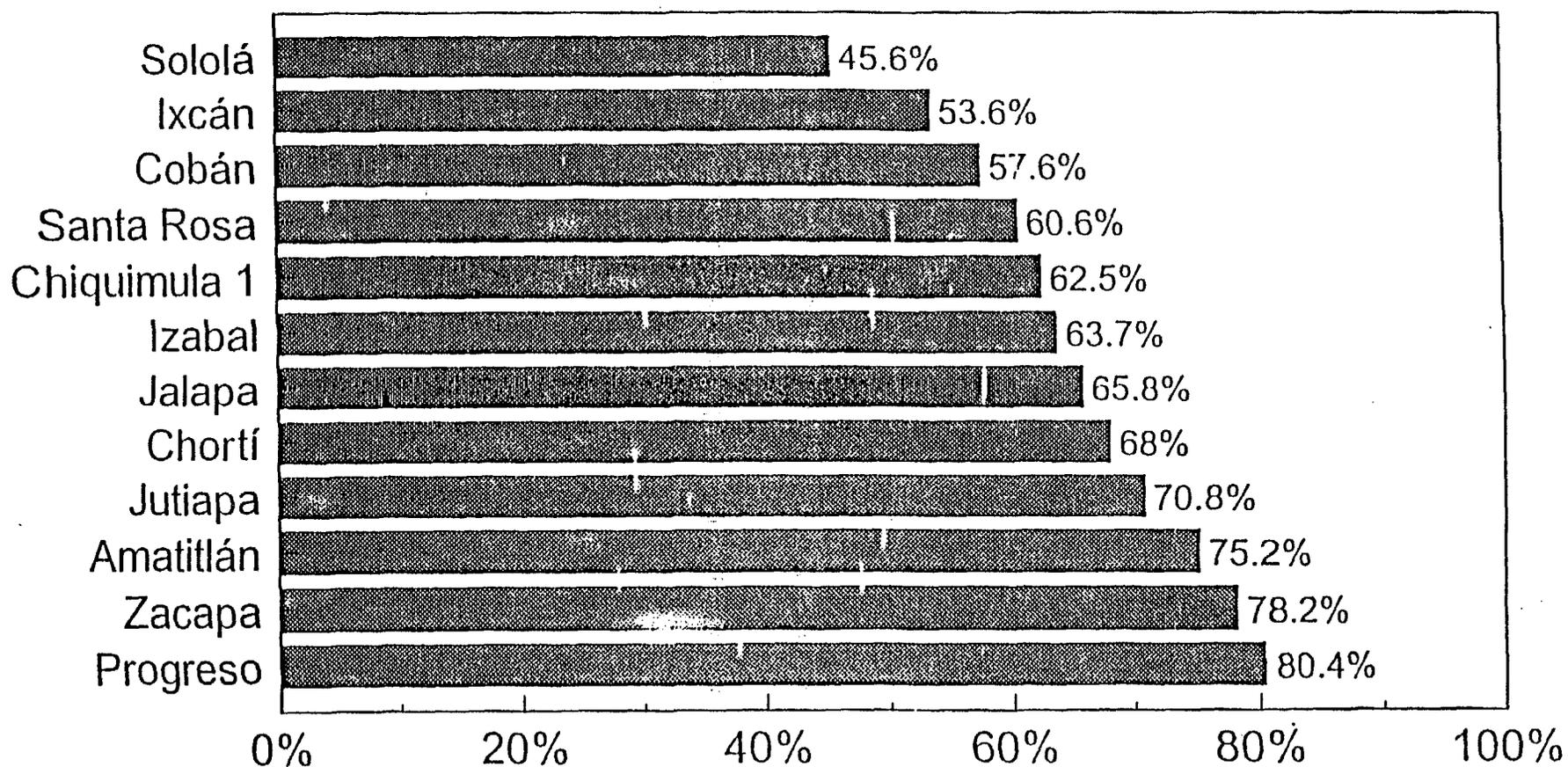
- a) Health diagnosis. Information was sometimes used, as in Ixcán Health Area, to present, discuss and analyze health area situation and, from the diagnosis, to plan and implement health actions.

INDICADORES	Jutiapa		
	frecuencia	total (N)	porcentaje
1. PRACTICAS DE ALIMENTACION INFANTIL			
a. iniciacion de la lactancia	229	344	66.6%
b. lactancia materna exclusiva	12	64	18.8%
c. introduccion de alimentos	33	38	86.8%
d. persistencia de la lactancia materna	24	76	31.6%
2. MANEJO DE ENFERMEDADES DIARREICAS			
a. continuacion de la lactancia materna	50	59	84.7%
b. liquidos continuados	63	79	79.7%
c. alimentos continuados	48	76	63.2%
d. uso de terapia de rehidratacion oral	36	98	36.7%
3. CONTROL DE NEUMONIA			
a. tratamiento medico	56	100	56.0%
4. COBERTURA DE VACUNACION			
a. acceso al PAI (DPT1)	161	209	77.0%
b. cobertura PAI (OPV3)	142	209	67.9%
c. cobertura sarampion	148	209	70.8%
d. tasa de abandono PAI (DPT)	20	161	12.4%
5. CUIDADO MATERNO			
a. carnet de atencion materna	22	344	6.4%
b. cobertura de toxoide tetanico	16	344	4.7%
c. una o mas visitas prenatales	38	344	11.0%
d. uso de metodos anticonceptivos	32	252	12.7%
OTROS INDICADORES			
1. CONOCIMIENTO			
a. alfabetismo de madres	236	344	68.6%
b. inmunizaciones sarampion	69	344	20.1%
c. alimentacion	215	344	62.5%
d. lactancia materna	236	344	68.6%
e. control de diarrea	244	344	70.9%
f. control de neumonia	264	344	76.7%
g. inmunizaciones toxoide tetanico	145	344	42.2%
h. atencion prenatal	288	344	83.7%
2. NUMERO DE CASOS			
a. enfermedad diarreica	98	344	28.5%
b. ira	100	344	29.1%
3. USO DE SERVICIOS			
a. enfermedad diarreica	38	98	38.8%
b. ira	56	100	56.0%

INDICADORES	Jalapa		
	frecuencia	total (N)	porcentaje
1. PRACTICAS DE ALIMENTACION INFANTIL			
a. iniciacion de la lactancia	266	407	65.4%
b. lactancia materna exclusiva	24	67	35.8%
c. introduccion de alimentos	35	42	83.3%
d. persistencia de la lactancia materna	38	93	40.9%
2. MANEJO DE ENFERMEDADES DIARREICAS			
a. continuacion de la lactancia materna	80	97	82.5%
b. liquidos continuados	85	109	78.0%
c. alimentos continuados	60	103	58.3%
d. uso de terapia de rehidratacion oral	44	131	33.6%
3. CONTROL DE NEUMONIA			
a. tratamiento medico	39	91	42.9%
4. COBERTURA DE VACUNACION			
a. acceso al PAI (DPT1)	196	278	70.5%
b. cobertura PAI (OPV3)	165	278	59.4%
c. cobertura sarampion	183	278	65.8%
d. tasa de abandono PAI (DPT)	40	196	20.4%
5. CUIDADO MATERNO			
a. carnet de atencion materna	88	407	21.6%
b. cobertura de toxoide tetanico	59	407	14.5%
c. una o mas visitas prenatales	33	407	8.1%
d. uso de metodos anticonceptivos	27	282	9.6%
OTROS INDICADORES			
1. CONOCIMIENTO			
a. alfabetismo de madres	235	407	57.7%
b. inmunizaciones sarampion	109	407	26.8%
c. alimentacion	202	407	49.6%
d. lactancia materna	91	407	22.4%
e. control de diarrea	176	407	43.2%
f. control de neumonia	228	407	56.0%
g. inmunizaciones toxoide tetanico	79	407	19.4%
h. atencion prenatal	259	407	63.6%
2. NUMERO DE CASOS			
a. enfermedad diarreica	131	407	32.2%
b. ira	91	407	22.4%
3. USO DE SERVICIOS			
a. enfermedad diarreica	39	131	29.8%
b. ira	39	91	42.9%

Programa Ampliado de Inmunizaciones Cobertura Contra el Sarampión

Comparación de 12 Estudios CPC



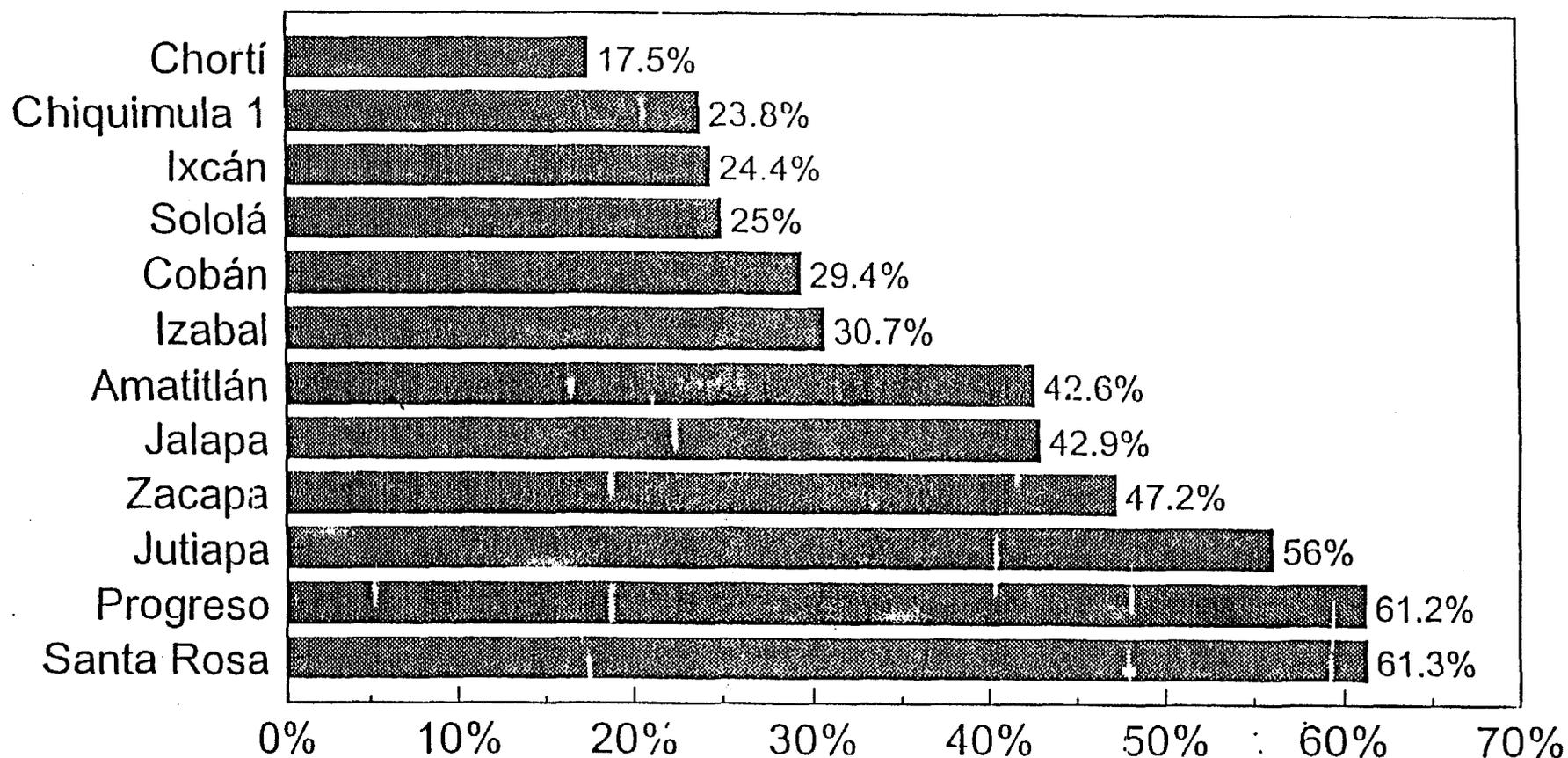
Preliminar

49

Manejo de la Infección Respiratoria Aguda

Uso de Tratamiento Médico

Comparación de 12 Estudios CPC



Preliminar

- b) Baseline estimates for monitoring. In some Health Areas, like Zacapa, information was used as baseline for follow-up actions derived from RAS results.
- c) Setting objectives and targets. Almost all Health Areas where a study was performed, took results as a basis to set objectives and targets in technical areas included in the study: child feeding, including breastfeeding; acute diarrhea control, acute respiratory infections control; immunizations and maternal health.
- d) Actions identification and setting priorities. Almost all Health Areas where studies were performed, used results as a basis to initiate high priority actions in weak areas, particularly regarding immunizations.
- e) Strategic planning for specific programs. An outstanding example of study information use occurred in Estanzuela, a Health District of Zacapa Health Area; as it was mentioned above, the chief of the District decided to apply RAS methodology at district level, without external support and without access to computers, to identify causes and solutions of a district diarrheal disease problem. Results were excellent.
- f) Reports on achievements. In a good number of areas, particularly those receiving support from external assistance agencies such as El Progreso, Jalapa, Jutiapa and Santa Rosa, RAS information was used to present reports on activities performed and achievements.

Only the Health Areas of El Petén, El Quiché, South Guatemala and Sacatepéquez did not carry out their RAS studies, for various reasons. It is recommended that personnel trained and experienced from other areas be used in support to these areas, when required.

Methodological Considerations and Lessons Learned.

C&M carried out a RAS methodological evaluation in 1996, to analyze some questions on technical aspects, as well as to focus on lessons learned with the RAS experience in Guatemala. In summary, the following are the most important conclusions of the evaluation.

Cluster sampling approach is conceptually well supported and has been successfully used; however, to get ideal statistical characteristics requires equal final probability of selection is needed; it would be best to use a sector definition process in which sectors and communities have a clear boundary and an estimation of the number of houses, the total inhabitants and the number of target group children. Also, the total population should be at least double the number of sampled cases. The use of the sectorization prepared by the Guatemalan National Statistics Institute (INE in Spanish) is a satisfactory alternative.

The methodology for selection of interviewees should be adjusted to give similar probability of selection to all study subjects. It is suggested to look for the widest possible dispersion of subsampled to get the most heterogeneous universe, with the minimum sample size. Subsampling methodology needs detailed instructions and an adequate supervision and control system, with non-respondent records as well as causes for non-response.

Control of selection probabilities is also necessary to get ideal statistical results. When final probabilities of sampled subjects are equal, sampling results can be combined and used without any restriction; however, when final probabilities are unequal, it is appropriate to weight sampling values, using the reciprocal of the selection probability, previous to any aggregation or calculations, to avoid the implicit bias in the unequal probabilities.

The minimum sample size, as has been used in the RAS protocol, should be used only for phenomena represented in 50% or more of study universe, in order to achieve a relative standard error of 10% or less. Fortunately, most studies had more than 200 children in the samples; these sample sizes allow satisfactory estimations on less frequent phenomena. On the other hand, calculating sample size must receive more attention if the RAS results will be used as part of a management information system; to be able follow-up programs indicators over time, new studies should analyze the possibility to take larger sample sizes, for dealing with changes of less than 50%.

Data gathering seems to be satisfactory as it was done in Guatemala; however, complete instructions for supervision activities should be prepared, as well as instruments documenting the data collectors journey and process incidences, such as non-interviews and their causes, and instruments to record supervisor tasks.

Analysis of results has had a descriptive orientation and, in this sense, has been adequate; it was pointed out that the progressive introduction to explanatory analysis, i.e. causes identification and analysis of identified problems, is a significant link in connection with the use of information for decision-making.

The expert on sample surveys is eager to refine the RAS for use in management decision-making. He distinguishes between two kinds of surveys: multi-purpose surveys which include various indicators of health variables and on context/situation and without trying to go in depth on any of them; most surveys are of this type. The other type is the special purpose survey which explores in greater details the potential explanatory variables, which gives the analyst a better chance to establish statistical evidence of cause and effect relationships and to make a stronger case regarding interventions that management decision-makers can do to improve the situation.

The expert acknowledges that it is unlikely in the short term that complete multivariate statistical analysis will be widely used because of the need for large sample sizes focused contents, methodological complexity, extended delays for doing the studies, etc. He suggests a qualitative methodology instead. A "Local Committee of Child Survival Experts" will discuss the following: indicators, possible explanatory causes for the magnitude and behavior of the indicators, classification and judging the importance of the variables- by consensus, identifying alternative solutions strategies and reaching consensus; identifying inputs to carry out the alternative interventions (personnel, supplies, transportation, etc.), estimating the costs for the inputs, and deciding on the financially feasible alternatives.

C&M's conclusion regarding the Rapid Assessment Surveys is strongly positive regarding its value as a promising instrument for decentralized management of public health programs in Guatemala and elsewhere. The attractive features of RAS for serving management needs will more than compensate for the deviations from a methodology that will fully satisfy the theoretical ideals of the statistician. The RAS methodology will benefit with further refinements at the margins that do not sacrifice its simplicity and low cost and "user-friendliness". The sample sizes can be increased somewhat, as is already done through deliberate "over-sampling" for important "sub-groups" within the target population. The selection process can be adjusted when appropriate. We are particularly interested in pursuing the refinements needed to integrate RAS into management information systems and for "before and after comparisons" to monitor and evaluate public health interventions. In practice in Guatemala, the results of the surveys are frequently so striking regarding the low level of coverage in the target population on a selected item, it is clear to everyone involved what needs to change. The group analysis process already in use in Guatemala is useful in building consensus about "what to do to improve the situation"; C&M has evolved a semi-automated process for generating alternatives for consideration by the group and subsequently, transforming the consensus into an action plan. There are usually some "obvious alternatives" at the decentralized level- such as focusing of effort and resources on a "critical municipality"; or retraining the promoters and motivating them and supporting them better; this part of the RAS process would benefit from further refinement in Guatemala and elsewhere.

Other important issues to be dealt with in the future include how to take advantage of the power of these "community surveys" (or "target group surveys") for decision-making at the Central Level? And how to protect the potentially valuable decision-making process at the decentralized level from undesirable delays and interventions from the Central Level? What is the best way to promote beneficial exchanges of experience among the decentralized personnel- in the use of the RAS methodology and in other interventions to improve immunizations and ORT/ARI, etc? What is the best mechanism for bringing about leadership and promotion of the use of information from RAS and other sources for better decision-making on decentralized programs?

There are related comments on these issues in Section 6.2 with "Reflections" on steps to sustain the achievements of the project.

f) Interventions to support development of programs monitoring and evaluation mechanisms, with emphasis on project components.

Testing the quality of the epidemiological information system was carried out in 2 stages, by means of 2 short consultancies: one, with a Guatemalan expert and the other international, through MSH.

The first consultancy was carried out in February, 1994, by Dr. Oscar Córdón. He prepared a list of studies for quality verification of the epidemiological information system was done, and an analysis of the epidemiological surveillance systems in operation in Guatemala, as follows:

- a) The available documentation on the topic was reviewed, at the national level and interviews were done with the main persons operating epidemiological surveillance systems in Guatemala.

b) Seven information systems were identified as operational in Guatemala. Twenty-one characteristics were selected that should be present in these systems; these characteristics could be summarized as simplicity, flexibility, acceptability, sensitivity, positive predictive value, representativeness and timeliness. The main conclusions of the analysis were:

- None of the systems had all the desired characteristics.
- Positive characteristics exist, including: focus on important public health diseases; correct health problems identification and classification; simple to use; provide timely information; acceptable to users; most of them started system implementation carrying out a population census in their work area.
- The other desirable characteristics were found with less frequency in the systems. Rare was the presence of clear explanations of the intended use of information; there was lack of responsibilities definition in the information process and in information flows; personnel training on system management was not included.

Other conclusions were related to delays in providing information; lack of clarity on responsibility for reporting statistical information; fast response to epidemics when surveillance is done at local level; lack of procedures for gathering, recording, reporting and especially using information. Constraints on the epidemiological surveillance system included the following: different groups interested in obtaining information; resistance to data collecting reduction or simplification; and tendency to automate uncritically collected information.

- c) A protocol was proposed for operational evaluation and monitoring of the epidemiological surveillance system at health district level.
- d) A tentative content was prepared for "Model of Instructions for Handling the Epidemiological Surveillance System in a District".

The second consultancy was carried out by Dr. David Nelson for MSH, who used the results of the consultancy described above.

The technical assistance efforts were focused on the "use of information", knowing that "use" is what improves data quality and timeliness. The consultancy was organized to identify and analyze examples of effective use of the information gathered at Health Post, District and Area Levels. This would be a basis to propose actions that would improve the use of information at local level and its impact on health indicators.

The protocols designed by Dr. Córdón were adjusted to the new task, tested and finally applied in 13 Health Areas, 15 Districts and 8 Posts. Interviews were done with the Chief of a Health Area, his

assistant, an Area Epidemiologist, a Health Area technical team, and a health center situated in a district was visited.

The main conclusions were the following: there was no analysis of information, only consolidation and this was considering wasting time; vague knowledge on indicators and little ability for handling data; lack of motivation to use the information; ignorance of norms, definitions and regulation about use of information at all the levels; and finally, lack of training and instructions on interpretation, dissemination and use of information for programming, monitoring and evaluating.

Results of these two consultancies led to the Guidelines for Use of Information in Health, described in the subsection d) of this section of the report.

g) Interventions to support designing of a community-based information subsystem.

The task of design a community-based information subsystem was added to the contract in the last contract amendment.

MPHSA experience in this topic was analyzed and supplemented with information from 4 NGOs. To develop the design, C&M identified and analyzed the following experiences in Guatemala: i) PCI (Project Concern International), ii) Project HOPE, iii) CARE, iv) University Francisco Marroquin - Experience in San Juan Sacatepéquez, v) The MPHSA Health Area of El Quiché and vi) The MPHSA Health Area of Jalapa. These last two experiences have been carried out based on a UNICEF model and in El Quiché with their technical and financial support.

Activities and the analysis results were the following:

a) Identification of Similarities or Differences in the Sub-systems, their Objectives and their Content.

MPHSA did not have a clear definition of a "Community Health Program", which could be the basis for the community-based information sub-system. The only written description of this program was a proposed "Community Health Sub-system", prepared in July 1995 by MPHSA, with support from INCAP, PAHO/WHO and UNICEF.

The definitions in this proposal were the following:

- objectives: to reduce morbidity and mortality in children under five years of age and maternal mortality;
- conceptual framework: total coverage criteria and services provided effective management and control of diarrhea and cholera, timely immunizations and maternal and neonatal care;

- eight strategies: community participation, programmatic context, personnel training and supervision, roles and functions reorientation, health actions made horizontal, intra- and extra-sectoral coordination, efficiency and efficacy in resources use, and donor agencies coordination, and
- an implementing methodology: organizational sensitizing, selection of communities, problems and priorities preliminary identification, planning implementation and information system.

This proposal is so vague, general and traditional that it cannot be identified particularly as a "community health sub-system".

As a result of this lack of definition, it was not easy, and maybe it could even be inconvenient, to present a "community-based information sub-system" that could support actions, functions, persons, and resources dedicated to this matter.

In most of the other experiences analyzed, there was no clear definition of a sub-system or of specific objectives. However, all of them gather information about activities provided by community health personnel in the maternal and child health area: Community Oral Rehydration Units (CORU), vaccinations, births, deaths, reproductive health, and vaccine ordering. Some gather information for other activities (like environmental sanitation) and for other age groups.

b) General Operation of the Community Health Sub-system.

The period of operation of the Community Health sub-systems that were analyzed varied from 3 months to 6 years. The level of implementation varied from being in a test stage to having automated forms and management by a computer. In general, sub-systems with wider scope worked less well than the more specific ones.

c) Interpretation and Use of the Information Provided by the Community Health Sub-system.

There was only one of the studied cases in which there was a guide for analysis of the information. In the rest, there was some use of the information for specific tasks, such as management control or recording performance, but there was no written guidance for interpretation.

d) Consolidation and Processing of the Information.

Most of the sub-systems were manual, but some were beginning to use computers to record their information; some were using statistical packages like EPIINFO for the presentation of analysis and charts.

e) Data Collection.

As has been customary in the health sector, the primary effort of design and implementation has been in the capture of information. Sub-systems may use one detailed form or several forms for gathering information. These forms were filled in by community health personnel. The less forms used, the more successful was the data collection. In some cases, the forms were done in pictorial formats to simplify the task.

f) Other aspects of the sub-system.

It was not possible to determine the validity of the data obtained. However, in most cases dependence on community personnel was mentioned and this was considered difficult to control.

The main conclusions of the analysis were the following:

1. MPHSA has not clearly defined a "Community Health Sub-system or Program"; so, it is difficult and may be inconvenient to propose a "community-based information sub-system" to support a non well defined activity.
2. Other experiences reviewed found diversity among the efforts to develop community based sub-systems of health information in Guatemala, with wide variation in magnitude, development and operation.
3. In general it could be said that the better sub-systems were the simplest, which collected limited data, that was processed locally and used for control, planning or other decisions locally.
4. More complex sub-systems were in process of implementation. However, some time will be required to determine their maturation, but it may be difficult for them to achieve full operation.
5. In almost all of the sub-systems studied, there was an absence of guidance for interpretation and use of the information. The most developed stage was design and implementation of forms.

Although it was previously stated that it is difficult and maybe inconvenient to establish a "community-based information sub-system" (CBIS), C&M proposed to design a CBIS module of SIGLO, with the characteristics of simplicity, staged development, flexibility and the possibility of being automated in the future.

Although there is no Community Health "System" or "Program", the SIGLO module would be focused to give responses to actions, activities and resources used by community, directly or indirectly, for maintenance and improvement of health status and situation.

The main contents of the sub-system would be the following:

- a) In a first stage, recording morbidity of prevalent diseases, particularly in maternal and child health, as an element for detection of outbreaks.
- b) In a second stage, recording of vaccination activities and coverage monitoring.
- c) In future stages, additional recording of activities in regard to the census and population records, mortality, environmental activities, resources and information from other sectors, depending on the sub-system acceptability.

It will be beneficial to coordinate work activities to develop an information sub-system with UNICEF based on this design, in order to reach technical agreement and possible development of the sub-system in a combined form.

An approach that C&M recommends is to use RAS, as described in subsection e) of this Section, as a periodic information source documenting community health knowledge, practices and coverages to be preferable to initiating a complex and uncertain process of systematic information gathering. The RAS alternative could be attractive, because its implementation would not depend on any other information system module; its cost would be low and its sustainability very high due to availability in Guatemala of enough trained and experienced personnel in this methodology.

4.3.4 HMIS IMPACT AND OUTPUTS ACHIEVED.

The HMIS component impact measurement is more difficult than previous ones, because it is almost impossible to quantify, due to the short time of implementation; however, some achievements are summarized as follows:

- Reduction, from more than 20 to 11, the number of the data collection instruments.
- Adoption by the MPHSA, and with the support of USAID, PAHO/WHO and UNICEF, of the Information System for Local Management (SIGLO in Spanish).
- Development of an integrated information system, customized for the Guatemalan MPHSA, with modules for Opening, Human Resources, Suppliers, Supplies, Goods and Equipment, Budget, Statistics (SIIS) and Planning.
- System design for a relational data base manager in FoxPro 2.6, appropriate to MPHSA's needs.
- System totally implemented in two Health Areas and partially implemented in the rest of Health Areas.
- Personnel trained from 27 Health Areas, as a key foundation for system implementation.

- Preparation and implementation of a SIGLO User's Manual with 8 modules, technical instructions for the handling of the equipment and use of the microcenter, instructions for installing SIGLO, and daily routines for use of the computer, anti-virus and the SIGLO main menu.
- Establishment of data processing micro-centers in the headquarters of 24 Health Areas with furniture and equipment and distribution of equipment to 3 new Health Areas. In Health Areas a total of 116 computers, 42 printers and 24 novell software networks were installed; these equipment were purchased by C&M with project resources following USAID regulations.
- Maintenance, for more than two years, of the MPHSA "Informatica" Unit's computer equipment; equipment purchased with USAID funds had required guarantees.
- Development of a Series of "Basic Guidelines for Health Information Use" on topics of Basic Mathematics, Calculation of Populations and Indicators, Graphing Information, Preparation and Use of Maps and Information for Management: Monitoring, Evaluation and Decision-Making. 47 San Marcos Health Area persons participation in initial testing and 316 same Health Area personnel training.
- Bulletin "Advances in Maternal and Child Health" - 3 issues published.
- 20 RAS surveys in 19 Health Areas, training approximately 300 MPHSA persons; findings were converted into recommendations and concrete actions to improve child survival activities at local level. In response to methodological questions raised by experts, an evaluation of the RAS methodology was carried out.
- Diagnostic study and preliminary design of a community-based information sub-system.

A brief analysis on accomplishment of objectives supports additional conclusions, as follows:

Regarding the objective to facilitate appropriate decision-making at all levels by developing and utilizing an adequate national information system was accomplished in a high proportion; system was developed, personnel was trained, developed system begun to be used and, sometimes, it facilitated decision-making.

Due to administrative emphasis of the system, it could be said that now there are bases to achieve the objective to provide for a better utilization of available resources; personnel, goods and equipment and budget modules, if well used, should provide better resources rationalization.

The objective of reinforcing local programming and coordination of the health sector at this level was accomplished in the first aspect -programming-, but not in the second. Planning module, recently developed and initially being implemented, will be a key element for this objective accomplishment. In relation to local coordination, complementary mechanisms to information system implementation are

necessary to achieve this objective; for example, meetings and decisions on planning issues, responsibilities in implementation of programs and activities and use of resources.

The last objective, to provide valid information which is beneficial to users within the health sector and to others involved in the development process was also accomplished in the first aspect -to provide valid information. However, there is no concrete evidence of benefits for users inside and outside the health sector. Maybe in the future such measurement could be done and documented.

In summary, although great progress was achieved, the short period for system implementation did not allow the development of a "use-of-information" "culture"; because of this, achievements should be qualified as "fragile".

Some reflections are presented in section 6.2 c) of this report on how to overcome constraints and to assure maximum sustainability of project achievements.

4.4 IMPROVED ADMINISTRATIVE SYSTEMS (IAS) COMPONENT.

This section presents information on the Improved Administrative Systems (IAS) component: objectives, strategies, interventions to accomplish the objectives, and, finally, a summary of impact (goal and purpose) and contract outputs achieved.

4.4.1 IAS OBJECTIVES.

The IAS "purpose level" targets were the following:

1. Implement a high priority management and administrative reforms at all levels of the Ministry of Health so that project resources will be well utilized.
2. Support the development of sub-systems associated with administrative information.
3. Institutionalize administrative systems so that they will continue after contract termination.

4.4.2 STRATEGIES TO ACHIEVE IAS OBJECTIVES.

C&M, following the terms of the contract, adopted the following strategies to achieve IAS objectives:

1. To support the review, improvement in design and implementation of systems for planning, financial administration, personnel administration, and logistics.
2. To support the review and propose improvements to the design of systems for documentation, files, costs and internal control.
3. To improve, through training, MPHSA personnel management.

4. To incorporate to the system rapid assessments methodologies for the management process.
5. To place C&M personnel at the 24 Health Area headquarters to support transfer of technology and to carry out project resources management.

4.4.3 INTERVENTIONS TO IMPROVE ADMINISTRATIVE SYSTEMS.

Interventions were carried out following the previously described strategies; details are presented as follows.

- a) **Interventions to Support the Review, Improvement in Design and Implementation of Systems for Planning, Financial Administration, Personnel Administration, and Logistics.**

C&M analyzed, proposed design improvements and supported adjustments and implementation of planning, financial administration, personnel administration and logistics systems, as follows.

Planning system.

C&M began contract execution in 1992, when MPHSA had already prepared the 1993 Annual Operative Plan (POA in Spanish). MPHSA requested primarily funding assistance from C&M to restructure the POA for 1993. C&Ms provided funds to MPHSA for the restructuring; no C&M technical assistance was provided at this time.

C&M did not participate in 1993 in the development of the POA for 1994. However, MPHSA requested that C&M be involved in the restructuring of the POA and in providing financing for POA activities. C&M provided technical assistance to MPHSA adding to the POA document the chapters on i) Health status in Guatemala as the basis for resource allocation, ii) Causes of health problems, iii) Health Policies 1994-1995 (purpose, objectives, strategies), iv) a synthesis of high priority health problems and actions to be carried out, v) a synthesis of high priority programs, budget and the MPHSA intent to monitor and evaluate the POA. C&M worked closely with MPHSA providing personnel and technical assistance to give the POA a program budget approach.

C&M worked actively in 1994 with MPHSA in to develop the POA for 1995, participating in Area and District personnel training. For this, a document was prepared, containing the following: i) conceptual framework, in which various topics were presented - planning as a basis for administration, planning definitions, principles, characteristics, purposes, stages, limitations, and a plan preparation methodology; ii) methodological framework, including diagnosis, objectives, strategies, levels of consolidation, programmatic and budgeting stages, basic components for follow-up and monitoring and evaluation processes; iii) operative framework, including working process and instruments to develop the POA, for programming, costs calculation, and budget preparation. The budget preparation

required considerable technical work to make MPHSA health programs compatible with the Ministry of Public Finance's budgeting programs.

This document was the basis for technical assistance development and tried to relate programming of activities together with budgeting.

C&M worked closely with MPHSA in 1995 on the POA for 1996, using the 1995 POA methodology with some refinements and additions. POA 1996 added socio-economic variables, epidemiological profiles, and a human resources inventory. POA 1996 refined the planning, including for the first time, assignment of responsibilities, time lines to execute activities and specific targets by activities. MPHSA played a strong role in developing a strengthened institutional capability at local level; C&M reduced its technical assistance participation, but continued to provide financial support for POA preparation.

Toward the end of 1995, to prepare POA 1997 process, C&M participated in a technical workshop with USAID and PAHO/WHO, to review past experiences and to develop the basis for a participative local programming process in Health Areas. These basis were discussed early in 1996 in a new workshop held with MPHSA workers. The workshop conclusions included the following:

1. To continue the same POA methodology used in previous years.
2. To initiate a process which included: a) broad participation of the health sector, b) active community participation, c) strengthen the decentralization process, d) strengthen results orientation and team work, and e) scheduling POA implementation and community (social) control and evaluation as part of the planning process.

C&M continued giving financial support for POA preparation. The final support for POA 1997 finally overcame the traditional concept of the POA on only being an annual plan; this process was transformed into a concept that it is necessary to have a general planning process, with the previous mentioned characteristics.

C&M supported the manual aspects of POA preparation and tried to transform the planning process from a mechanical process of specifying figures into a real exercise of reflection and decisions. C&M developed in 1996, computerized modules for planning and generation of formats, as part of SIGLO. Although contract only asked for "automation of the principal forms used by the Health Areas to develop their POAs", it was opportune to go beyond this obligation and automate the complete planning process.

Financial administration.

C&M begun technical assistance on this field in 1992, preparing a document to analyze administrative processes in which the public sector basis its administrative-financial activities.

In this document, the conceptual aspects analyzed provided a framework for the development of a technical proposal to be presented to the Ministry authorities. A careful review was done regarding MPHSA procedures in the following areas: a) budget administration system, the cost recovery system ("ingresos privados"), and goods and services purchasing system.

Based on this analysis, procedures were implemented to improve financial administration in 1994-1996. Emphasis was placed on budget administration and procurement of goods and services, implemented via SIGLO, as it was explained in Section 4.3.3 of this report.

System improvements were made to the following aspects: in the goods and equipment module, the possibility to register goods and equipment with their main characteristics and to assign responsibility to an employee for their handling and custody; in the budget module, to manage and control budget movements (allotments, ceilings, additions, cuts and transfers) related to budget expenditures and adjustments and to issue and control official purchasing and payment order in continuous forms.

In the case of the cost recovery system, in 1994 and 1995 the possibility to develop a SIGLO module was analyzed but in the end it was not done.

For internal administration of the project's funds, between 1992 and 1994, a special computer program was implemented, which performed regular controls of cash, accounting, budgets and obligations and generated reports. C&M also carried out, during the total contract period, internal audit functions, with review and control activities, in order to guarantee probity, transparency and proper use of project funds administered by C&M.

Personnel administration.

In 1994 and 1995 C&M analyzed the convenience to include some personnel administration aspects in the SIGLO's Human Resources module. C&M worked in direct coordination with the MPHSA Research Department of the Human Resources Division, and with PAHO/WHO consultants and with Guatemala's National Civil Service Office (ONSEC in Spanish) technicians.

As it was mentioned in Section 4.3.3 of this report, system made it possible and easily to register, control and follow-up institutional employees and voluntary personnel, and to automatically approve personnel movements.

Logistics.

The logistics system, mentioned previously in this report as supplies system, was analyzed in 1994 and 1995 by C&M, together with PAHO/WHO, emphasizing basic supplies for the project components (EPI, ORT, ARI) and medicines.

The analysis showed that MPHSA had a fragmented system for management of supplies. C&M supported design and implementation of improved procedures and instruments which facilitated better

organization, systematizing, and distribution of the elements of the system. The recording of receipts at the level of consolidation was organized too. This work produced a manual system and support through an automated system for supplies that was incorporated into SIGLO, as explained in detail in Section 4.3.3 of this report.

In summary, improvements were oriented to achieve an adequate management of warehouses, including general inventories and pharmaceutical products, through records and control for inventories, for movements of the inventory and render accounts. A suppliers module was implemented, to register and control persons and institutions offering goods and services to the MPHSA.

Implementation, Supervision and Follow-up.

As mentioned in Section 4.3.3 of this report, systems implementation was carried out in four stages, as follows: the first was a 2-day workshop in which a theoretical explanation of the system was done and then a practical exercise, in order to familiarize personnel with system and equipment; the second stage was carried out at the work sites in the Health Area with in-depth explanation of handling the system by officials in charge, and tests and fictitious exercises. The third stage was also carried out in the Health Area level and was the initial registration of information for modules. The last stage was carried out during the entire project to give support, follow-up and supervision, as well as to attend all requests received for technical assistance. Implementation started late on 1994 and continued until the contract ended in 1996.

Supervision and follow-up was done mainly by C&M "gestores" in Health Areas. These "gestores" gave full support to keep Health Area personnel updated on the processes that were being carried out. Likewise, mechanisms of cross supervision were developed with visits, training, meetings and monitoring of C&M consultants in charge of the components. Monitoring of the information produced was carried out and some central level units began to use the information. This work was done throughout the project, but with greatest emphasis in 1994 to 1996.

Professional presentation were made on the results obtained by total systems implementation in the Health Areas of Chimaltenango, Jutiapa, Retalhuleu, Sacatepéquez and Suchitepéquez. These presentations were made by the members of Health Area technical teams. All presentations were made in 1996.

These events were considered evaluations, because they showed that the training and in-service teaching were received, understood, accepted and used as a working tool, thus institutionalizing the received technical assistance.

Operational Research.

C&M carried out a local operational research in 1996, to determine the extent in which administrative manuals were used properly. These manuals dealt with improved administrative systems supported by C&M: financial administration, personnel administration, supplies administration, and goods and equipment administration. This research included the phases for study design, data collection, information processing and analysis, and presentation of results and recommendations.

The management procedures that were studied were the following: 1) Financial Management, 2) Human Resources Management, 3) Management of Supplies, 4) Management of Goods and Equipment.

C&M designed an instrument with 8 standardized questions, which was used in 5 Health Areas in which the implementation of SIGLO was most developed, i.e. Amatitlán, Chimaltenango, Jutiapa, Retalhuleu and Sacatepéquez. C&M's "gestores" collected the data through interviews to the officials responsible for the operation of the process. Data were processed manually and analyzed together with direct observations by the information collectors.

The main results were related to the use, by the Health Areas core staff of various manuals, particularly those prepared by the Ministry of Public Finance and the National Civil Service Office (ONSEC). The frequency of use of the manuals varied daily or weekly or monthly, depending on specific needs. An important observation was that the MPHSA had not developed its own administrative manuals; instead, they produced written communications, such as administrative circulars, notes, etc.

The study conclusion was that an absence of MPHSA specific administrative manuals was detected; main recommendation was to use documents prepared and published by the Project to overcome this deficiency.

b) Interventions to support the review and propose improvements to the design of systems for documentation, files, costs and internal control.

Documentation, files, costs analysis and internal control systems were reviewed in 1995 and 1996 and some improvements were proposed; implementation efforts were not done. A brief description of the work performed is described briefly.

Documentation and Files.

During the process of technical assistance to the MPHSA, many visits and interviews were carried out to analyze administrative systems existing procedures, and instruments for documentation and files in order to propose improvements. A manual system was identified at the Central Level for recording an entry in a control book, which allows an adequate follow-up of documentation received in and sent by Directorate and Subdirector General of Health Services. For documentation follow-up, a double control card is prepared for each document.

Each administrative unit also had its own document archiving system and did not require an authorization or approval from the Directorate General or Sub-directorate General.

In Health Areas, a manual records system was used, recording documents in a book that facilitated the control and follow-up of the documentation received in and sent by the Health Area.

The development of this system would have required a great deal of effort, resources and personnel. C&M did not proceed because it was not considered to be a high priority system for the Child Survival Project.

Costs and MIG-PAHO/WHO.

A potential duplication of efforts was identified based on C&M's knowledge of actions by PAHO/WHO in Guatemala regarding costs calculations for health activities and programs. Since PAHO/WHO was doing the design and implementation of the Management Information System (SIG in Spanish), C&M did not do additional activities in this field from 1995 on except in connection with SIGLO.

PAHO's SIG was a computerized instrument to analyze and to develop productive capacity and the management processes of health facilities. SIG also provides information on institutional productivity, performance, costs and resources in the institution to identify inefficiencies and search for solutions.

At present time, SIG is installed and functioning in 10 Guatemalan hospitals and personnel have been trained in SIG from the Health Areas of Amatitlán, Alta Verapaz, Chiquimula, Escuintla, North Guatemala, South Guatemala, Huehuetenango and El Quiche.

Due to MPHSA progress in this effort supported by PAHO/WHO, C&M agreed to keep open the possibility of integration between SIG and SIGLO, using SIGLO information as an input to produce indicators required by SIG.

Internal Control.

In this effort, in 1995 a conceptual proposal was done, but there were no appropriate counterparts in the MPHSA to discuss the proposal. The basic internal control carried out in the MPHSA was performed separately in each one of the administrative systems.

Therefore, results achieved in this topic were only those already described as part of the SIGLO modules for control, i.e. goods and equipment control, budget control, personnel control, supplies control and suppliers control.

c) Interventions to Improve, Through Training, MPHSA Personnel Management.

In the first phase of the Project in 1992 and 1993 to support the planning and budgeting process. C&M provided training to the accounting staff in topics related to the modernization of the accounting systems. The subjects included Income Tax, Value Added Tax (IVA in Spanish), Fiscal Stamps ("Timbres" in Spanish) and budget preparation. With the presence of the 24 Health Area chiefs and accountants, this training process was carried out in four regional workshops.

The strategy to integrate training into the working culture of the participants led to the following phases: analysis and diagnosis of training needs; definition of training curriculum; coordination with the MPHSA on the training programs; training schedule preparation; selection of the training instructors or facilitators; preparation of good training material; selection of the staff to be trained; logistics and implementation of training sessions with work in addition to theory, evaluation of the training and follow-up in the working place.

Officials from the MPHSA supported this training and in most cases directed the training process. C&M provided technical and administrative support.

From 1994 to 1996, Officials from the MPHSA Department of Research of the Division of Human Resources also coordinated the process of follow-up and in-service training on issues related to human resources for MPHSA employees and volunteers. This training process was also useful in providing validation for the catalogs and procedures used by the public sector approved by the National Civil Service Office (ONSEC in Spanish).

Throughout the contract -from 1992 to 1996- the staff was regularly trained regarding the Financial subsystem and Goods and Equipment subsystem. Training courses on these subjects were provided by C&M "gestores" and other C&M consultants. This improved the technical management of these systems to satisfy the legal procedures of Guatemala.

In this component 5,187 were trained, from which 13% were doctors, 13% were nurses, 12% were auxiliary nurses and 15% were health technicians; the rest were administrative personnel, other professionals and volunteers.

125 training events were carried out. 65 of them were on POA, 49 were on SIGLO modules and subsystems, 10 were on other administrative issues, and one was on management process.

The staff was trained in 1996 on specialized management for NOVELL networks, in order to have one person for each Area capable to assist technically on this network system.

The material produced consisted of: purchase order and payment forms, supply cards, monthly inventory balances, kardex, claim and shipping forms and a book on the health services network.

In 1996 C&M also finished the manual for all SIGLO components; they were distributed for reference and as future teaching materials for training sessions in all the departments of the MPHSA. Norms and guidelines were also developed to operate the software and hardware and to manage microcomputer centers.

d) Interventions to incorporate to the system rapid assessments methodologies for the management process.

In cooperation with PAHO/WHO and BASICS, C&M developed and tested a methodology for the analysis of the management context, both regarding organizational changes and for the development of managerial processes. The objective was to identify barriers and obstacles that could prevent the adoption by MPHSA of the technology developed by external cooperation agencies and to search for solutions to make international technical assistance received more effective.

Three tools were adjusted or designed or modified for development of the "Rapid Assessment of Management":

- a) A form to analyze the institutional management process, covering the following 11 administrative and information processes with 121 questions: Planning, Organization, Training, Supervision, Human Resources, Finance, Logistics, Quality Control, Information Systems, Community Participation and Cultural Diversity. This form was modified from other forms which had been applied in health sectors from other countries with good results.
- b) A form to analyze the "organizational climate", which was divided in 4 variables: Leadership, motivation, reciprocity and participation, and subdivided into 16 elements. This format was modified for Guatemala from another one previously developed and applied by PAHO/WHO in other Latin-American countries.
- c) A form to obtain information on the results of the operations, with 10 indicators, including the percentage of budget execution, immunizations coverage in children under 1 year of age and pregnant women, and "percentage of Health Centers and Posts that were supervised in the last 6 months". This form was developed exclusively for Guatemala.

The tests were made in the Health Area of Chimaltenango in 1995 with excellent results; with relevant adjustments, the field work was carried out in 1996 in the Health Areas of Sololá and Totonicapán, in the following stages: i) data collection with the forms above described; ii) data tabulation in automated form, with an available computerized program on organizational climate and another developed exclusively for the management process study and iii) presentation and discussion of results with participants from the Area and District, in special workshops.

The main results were the following: i) in financial administration, it was necessary to speed the budget execution and the decentralization of resources; ii) in human resources, it was important to include a plan with incentives and to define the duties of the personnel as well as to evaluate performance; iii) in

the area of quality control, it was suggested to define standards to be applied in each program and iv) in supervision, it was necessary to develop guidelines and to schedule the visits.

In the area of organizational climate, the following activities were considered as high priority interventions: i) regarding leadership, the leader should be knowledgeable, be able to guide and inform his/her staff, as well as to be approachable; ii) in motivation, all efforts should be recognized with a written note or public praise for their contributions; iii) in work conditions improvement, provide the worker with all the resources needed for his/her work and iv) in the area of supervision, it was suggested that supervision must be constant and with clearly defined objectives.

The indicators in both Health Areas show that budget execution was relative low. The coverage levels for Polio and DPT immunizations reached 75% but these levels were not reached in other types of immunization. The supervision of Health Centers and Posts were not systematized; the cold chain functioning was over 80%; F-4 and F-8 forms of the information system were used in 100% of the facilities, and the vehicle operation was low in Health Areas headquarters and almost absent at District Level.

The main conclusions were that the forms were a good instrument to identify problems in the Health Areas, that the methodology was very well accepted and the decision to share results with local level personnel was very much appreciated.

The most important recommendations were the following: i) to integrate the POA-Annual Operative Plan with these instruments; ii) to add indicators that evaluate team work, such as those included in the organizational climate analysis, to the indicators the MPHSA used to evaluate work of the Areas and iii) due that the human factor is critical, it is important to work with managers in the training, to create and to strengthen positive attitudes toward the good implementation of the management processes.

In an early stage of the study -first quarter of 1996-, a consultancy support on capabilities development was received through BASICS. The consultant conceptualized that capability development is based on straightening personal knowledge, skills, qualities and aptitudes. He pointed out that the last two characteristics are not taken into account in traditional training processes and, thus, changes in personal behavior were not achieved. With consultant's support, main capabilities to be improved in Health Area personnel were identified, in order to solve detected problems. Further development in this matter would have to come after the end of the C&M contract.

e) Interventions to Place C&M Personnel at the 24 Health Area Headquarters to Support Transfer of Technology and to Carry Out Project Resources Management.

A strategy defined in the original contract between USAID/G-CAP and C&M was to locate a person, initially called "Administrator" and then "Gestor" ("Promoter of Improved Health Administration Systems"), in each one of Guatemalan 24 Health Areas.

C&M took this strategy from the beginning of the contract and hired and maintained -at least for one year- one Gestor in each Health Area.

Main "Gestor" functions in the project's first stage -from June 1992 to July 1994- were the following: to manage project funds for activities in Health Areas; to provide technical support to Health Area administrative personnel, to improve their performance; to maintain a strict control of supplies and equipment acquired with project funds; to maintain adequate local expenses and procurement documentation; to support Health Area in managing project resources for maintenance of vehicles, cold chain equipments, and other equipment acquired with project funds.

During the project's first stage, C&M contracted professionals and technicians from various disciplines, particularly accountants and medical doctors, recruited from the same Health Areas; however, in some Areas in which it was not possible to find appropriate persons, Gestores were relocated from other Areas.

Main results during this stage were wide variation in "Gestor" performance as well as in acceptance from Health Area personnel. In some cases, the "Gestor" was accepted as another Health Area technical team member. In some other Areas, he/she not well accepted as an "auditor" or "controller" on behalf of USAID/G-CAP. In spite of this situation, the assigned functions were well performed by most of Gestores.

During the second phase of the project -from August 1994 to June 1996-, the Gestor work was reorganized, because many original tasks of the project were finished at that time and that Gestor role could be more focused on support to technical transfer of skills than to logistic activities. Then, a reduction in the number of Gestores from 24 to 8 was decided, with a function more focused on training and implementation of the systems, methodologies, and processes generated by the project.

Three Gestores groups were formed, as follows: 3 Gestores were in charge of 10 high priority Health Areas, those with more needs and less development, they were located in Alta Verapaz, San Marcos and Sololá. 2 Gestores were in charge of the rest of Health and 3 were dedicated to specialized technical support to all Health Areas in HMIS and IAS components.

General Gestor functions, besides the above mentioned, were oriented to implement improved administrative and information systems, to support improved immunization coverage, cases management and control for diarrhea and ARI and to support in POA preparation for the Health Areas.

C&M's office in Guatemala City gave technical and administrative support to "Gestores" performance and so contributed to greater MPHSA efficiency. For that, C&M implemented supervision and technical assistance procedures, in order to accomplish project programmed targets in each Health Area. Also, it established a more flexible and better communication between Gestores and C&M's Guatemalan City office personnel.

In this stage, Gestores role diversification was important, because direct support to Health Areas was reinforced, and Gestores became real experts in topics they dealt with.

Gestores acceptance and work from Health Areas was much better in this phase, because it was understood that their role was more technical, less administrative and never as controller. In the Health Areas the Gestor's support role was understood, without replacing administrative functions of the Health Area staff, as initially was misinterpreted.

In summary, the strategy to locate support personnel in the decentralized Guatemalan level -Health Areas-, was very useful to project success; an objective strategy analysis, suggests highlighting strengths and weaknesses as follows.

Main strengths were:

- Possibility to have technical support, almost continuously, to Health Areas and C&M gave prompt responses to problems that appeared, related to implementing products and particularly to the information system.
- Gestor acquaintance with Health Area personnel, as well as their knowledge about the health situation of Areas contributed to developing a very professional and respectful relationship among technicians of the two institutions.
- Administrative support provided for most of Gestores guaranteed prompt programming and activities implementation, plus coherent and integrated project activities.
- The able resource management by Gestores contributed to transparency, effectiveness and efficiency of C&M, to achieve increasing credibility from MPHSA and USAID/G-CAP authorities, and to obtain respect and appreciation for the project, its actions and its actors.

Main weaknesses were:

- Initial confusion in some Health Area chiefs, who considered gestores, in a positive way, as a human resource that could replace somebody of his/her administrative staff or, in a negative way, as a controller that came to audit the use of the assigned project resources.
- Difficulties in some Gestores performance, because of low acceptance from Health Area personnel, administrative constraints being advisor or, in some cases, lack of previous experience in the health sector.

Overall, weaknesses were overcome and C&M considers that the strategy was very successful.

4.4.4 IAS IMPACT AND OUTPUTS ACHIEVED.

The IAS component impact measurement is difficult to assess, because of short time for implementation. However, the results in each administrative system suggest that impact of the component on the MPHSA administrative functioning, is promising.

A brief summary of achievements supports this judgment:

- In the planning system, an approach that only an annual plan should be prepared was overcome; now it is understood that a general planning process should be developed, with the characteristics of broad participation of the health sector, active community participation, strengthening the decentralization process, strengthening results orientation and team work, and including POA implementation and community (social) control and evaluation as part of the planning process.
- Development of computerized modules for planning and forms generation, to transform the planning process from a mechanical action of filling numbers into a process of real reflection and decision-making.
- Improvement in the financial administration system, in terms of goods and equipment recordkeeping, as well as budget administration, modernization and control.
- Improvement in the personnel administration system, in terms of recordkeeping, control and follow-up of institutional employees and voluntary personnel, as well as automatic approval of personnel movements.
- Improvement in the logistic system, in terms of having an adequate warehouse management for general inventories and pharmaceutical products, by inventory registration and control, managing movement of the inventory, and rendering of accounts.
- Operational research implementation, in which a lack of specialized administrative manuals was detected, then recommending to use documents prepared and printed by the project.
- Training of 5,187 persons in 125 events, in different topics dealing with in the component. Required didactic material prepared.
- Development and testing in the Health Area of Chimaltenango, with PAHO/WHO and BASICS, of a methodology for the analysis of the management context, organizational changes and in the development of managerial processes; methodology application in the Health Areas of Sololá and Totonicapán.

- Planning and successful implementation of locating Gestores in 24 Health Areas, with functions of technical, administrative and logistic support, technological transfer and project resource management.

Having trained personnel in all Health Areas for the management of improved procedures and instruments of improved administrative systems, facilitated a faster improvement in the MPHSA management functioning. The progress is delicate, so it requires political, technical, and administrative decision and support.

A complementary analysis of the IAS component's achievements, suggests the following: the objective to implement high priority management and administrative reforms at all levels of the Ministry of Health and ensure that project resources were well utilized, was satisfactory accomplished. In the first stage of the contract, MPHSA administrative systems were studied and analyzed, major difficulties were identified and reforms and modernization were achieved. Project resources were well used, but always managed by C&M; a further stage, to enable MPHSA to manage external cooperation funds was not attempted.

The objective to support to the development of interrelated sub-systems of administrative information was very successfully accomplished, because SIGLO not only associated but integrated the administration systems: personnel, supplies, goods and equipments and budget. Furthermore, and it is equally important, these systems were integrated with SIGLO's services provision and health statistics modules, as it was explained in section 4.3.3 of this report.

The last objective, to institutionalize administrative systems so that they will be "sustainable" after contract termination, could be said to be partially accomplished. Institutionalization was not uniform in all Health Areas; achievements after contract termination depends greatly on MPHSA's policy, technical, administrative and operative decisions, and it goes far beyond technical assistance responsibilities and efforts.

As it was expressed for HMIS component, tremendous progress was achieved during the short period of implementation of administrative systems, in particular, and of management process, in general. Nevertheless, there is still not an administrative and management "culture" in the MPHSA; therefore, this component achievements also could be characterized as still "fragile".

Some reflections to overcome constraints and to assure maximum sustainability of project achievements are presented in Section 6.2 d) of this report.

5. MAIN CONSTRAINTS.

The main constraints faced during contract implementation can be classified in two types: i) constraints common to all components and ii) specific constraints by component.

5.1 CONSTRAINTS COMMON TO ALL COMPONENTS.

Common constraints fit in categories, as follows:

a) Human Resources.

In the MPHSA Central Level the shortage of permanent counterparts was a problem, due to the big amount of activities designated personnel should do. There were not enough persons to dedicate more time to project's activities.

Another important aspect was the difficulty to change a traditional centralized orientation from strengthening only the Central Level, to the decentralized emphasis included in the contract. Some times, there was inadequate coordination among MPHSA offices and also between these offices and international cooperation agencies, although improvements were achieved in this matter.

When new technologies were developed in most components, there were not permanent technical personnel at MPHSA for its adoption and further development; this situation was more evident in systems programming and computer networks management aspects.

In Health Areas, it was clear that the personnel will need help to improve capability and guarantee sustainability of the technologies transferred; help will be required to strengthen the Health Areas to "sustain" achievements and for improvement in the future.

In both levels, an aspect to be highlighted is the need for a "culture" of information use for management and administrative decision-making. This kind of culture change would guarantee that personnel adopt methodology, incorporate it in their daily work and develop it on their own initiatives. This kind of cultural change has just begun.

b) Logistic Support and Financial Resources.

The main constraints in these two aspects was inadequate resources, not only for supplies required for activities, but for MPHSA personnel travel expenses, estipends, transport and fuel.

c) Policy decisions.

In a sense, the lack of formal adoption of processes, methodologies or systems by Central Level, makes them more vulnerable in the future; at Health Area Level, there was limited commitment for processes, methodologies or systems implementation, and success in applying and using the new technology and the technical assistance depends greatly on the goodwill -sometimes on the personal motivation- of the Health Area chiefs.

5.2 CONSTRAINTS BY COMPONENT.

The main constraints by component are summarized.

- a) In EPI component, the main constraint was the EPI program structure which at national level was managed with very centralized conception; this conception limits Health Areas development and vaccination actions outside the public sector. Also, it was not possible to solve an inadequate administration system at Central Level for vaccines, syringes and other supplies, because of lack of policy decision for its acceptance; as a consequence, there is not an adequate estimation of logistic support needs. In the Health Areas, on the contrary, there are two supplies control systems: one, is derived from statistical records (F8) and the other was implemented with C&M support.
- b) In ORT/ARI component, insufficient interagency coordination was noticed, although progress was achieved, for the development of coherent strategies and actions; there still is a lack of integration between training and supervision norms.
- c) In HMIS, the main difficulties were: on the one hand, personnel problems at Central Level, that did not allow the "Informatica" Unit to develop in harmony with Health Areas achievements; on the other hand, there were technical problems, such as incomplete module interrelation for outputs, lack of human and financial resources for maintenance of software, hardware and computer networks, and continuous equipment "failures", due to inadequate equipment handling.
- d) In the IAS component, the main problem was the absence of MPHSA-specific administrative manuals, that could help personnel accomplish their missions and functions in the institution.

6. REFLECTIONS FOR THE FUTURE.

In order to overcome the above presented constraints, to strive for project achievements "sustainability" and to manage the transition after contract termination, C&M offers some reflections derived from the 4-year C&M experience in the Guatemalan health sector.

6.1 REFLECTIONS TO OVERCOME CONSTRAINTS AND TO STRIVE FOR SUSTAINABILITY OF PROJECT ACHIEVEMENTS.

Some suggestions to overcome the above described constraints are briefly developed as follows.

- a) To Continue Decentralization Support, with Supervision.

The project contributed to strengthen the Health Areas level, through development and implementation of decentralized administrative and information systems, and also through training to improve

management capability of health area human resources. However, these achievements are still fragile; so, it is necessary to continue giving support to the process and carrying out, from Central Level, a "trainer and motivating supervision role" providing Health Areas technical assistance they need.

- b) To Continue Development of MPHSA Management and Administrative Capability with Training, Follow-up and Technical Assistance.

The C&M approach followed one of contract's organizing principles, to provide technical assistance through intensive training and further follow-up to MPHSA workers, particularly from 24 Health Areas. The implicit purpose was to reinforce decentralized institutional capacity development to sustain project activities after contract termination. This effort should be continued, as it was above stated, with a more technical support from the Central Level and more support for actions concentrated at Local Level.

- c) To Maintain a Close Interagency Coordination.

MPHSA achievements to promote a close coordination among agencies and institutions supporting the Guatemalan health sector, must be maintained. In this sense, C&M contributed, making an effort to avoid duplication and looking for institutions more stable than a time-defined project; as PAHO/WHO collaborated in joint achievements, and maybe important for continuity later.

Furthermore, achievements diffusion to entities and persons not directed involved in project activities but having interest and future responsibilities in health sector development, such as the Executive Unit of the Sector Reform Program, partially supported by the IDB, encourages C&M that sustainability of achievements maybe more feasible.

- d) To Finance Gradually Project Components Costs with National Budget.

An aspect to be highlighted in sustainability matters, generated by the project, was the GOG decision to assume gradually project activities costs, specially in the EPI component. In the beginning, almost all component costs were financed by the project, but currently MPHSA covers 80% of program costs. If this decision was made for other project components, sustainability and future improvement of achievements would be more feasible; special emphasis should be made on maintenance, supplies, and effective and controlled personnel travel, in support to the improved management processes, methodologies and systems. One alternative to be considered is to contract for services, such as maintenance, with existing suppliers in Guatemala.

Funds for high priority programs are most likely to receive funding; for that, it would be important to continue dialogues between external cooperation agencies and the Ministry of Finance. An arrangement that the agencies and institutions may accept is that MPHSA assume recurrent costs, such as fuel and estipends, leaving for international support the special costs of training, monitoring, evaluation and operations research. A special recommendation is that requests for support be done in a technical and concrete manner and that calculation of costs, even if estimated, needs to be done.

- e) To Adopt Formally Promising Systems (SIGLO), Methodologies (RAS) and Strategies (Continuous Vaccination).

It will be ideal to have a high level policy decision in the MPHSA, supporting adoption of systems, processes, methodologies, strategies and activities carried out during contract implementation. This could happen in policies definition, the issuing of official declaration like Ministerial Action ("Acuerdos"), the issue of specific instructions on systems implementation and activities maintenance, requests for periodic reports on implementation situation and follow-up of such reports, among others.

- f) To Establish National Coordinators of Activities, Systems and Modules.

Another crucial decision for sustainability is the need to appoint, in the Central Level, responsible persons to direct, develop, follow-up and control activities, systems and modules. Before C&M's departure, a training course in depth with designed personnel was offered, to give MPHSA formally all the technical elements developed; unfortunately, the course was not carried out, because of unavailability of the appropriate personnel.

Other feasible idea was to allow outstanding Health Area persons to participate in management of processes, methodologies or systems, as implementation facilitators in the rest of the country, as an stimulus to his/her performance.

- g) To Contract Technical Personnel for Specialized Topics.

The need to contract technical personnel in specialized aspects, such as computers, software and networks maintenance, is another high priority topic. Guatemalan project advisors who work for C&M represent an immediate and available resource for MPHSA to guarantee a less difficult transition between C&M support and the MPHSA self sufficiency, given their familiarity with the work already done. Contracting could be temporary or long term.

- h) To Continue Project Components Integration.

As it was above presented, a principle of C&M technical assistance was to be open to new tendencies and knowledge in health aspects, with emphasis in project components; with this aspect and the new WHO and USAID ideas on Integrated Care for the Child, C&M integrated training in ORT and ARI components. This initiative could be followed-up with the adoption, in the near future in Guatemala, of an integrated approach for sick and healthy children.

6.2 SPECIFIC REFLECTIONS BY COMPONENT.

Some specific reflections by component follow.

a) Sustainability of Achievements for the Expanded Program of Immunizations (EPI) Component.

Main reflections of EPI component to overcome the constraints mentioned in Section 3.2 and to strive for maximum sustainability of project's achievements, are the following:

- Transform the MPHSA's Central Level EPI group into advisors and trainer supervisors for the Health Areas, to contribute to design and implementation of technical assistance plans oriented to reinforce planning, monitoring and evaluation capabilities of district level actions as well as vaccination activities for other health sector institutions.
- Offer continuous immunization services in all MPHSA facilities, in order to provide services during the whole working day; furthermore, mothers' daily and weekly schedules should be studied and immunization services schedules should be adjusted to times that are convenient for mothers. It probably would mean offering immunization services that do not conflict with traditional working hours, such as evenings, nights, Saturdays, Sundays, and holidays.
- Establish a clear policy for maintaining and repairing cold chain equipment, through contracting of qualified personnel, or still better, to use present installed private sector maintenance capability in most Guatemalan departments. This is the best and quickest response to preventive and corrective maintenance needs of health facilities and a good opportunity to support local enterprises development. A key factor for this proposal to succeed will be ensuring that the Health Areas have adequate budget resources for equipment maintenance and repair.
- Target efforts for improvement of immunization coverage efforts on high risk and less accessible population; the socioeconomic disadvantaged, indigenous children, remote rural villagers and poor children from urban zones. This effort must be based on a better understanding of and a greater attention to beliefs and practices of mothers and other persons in charge of children. A special consideration should be given to indigenous population, so important in Guatemala. A useful model for improved promotion of immunizations was the ethnographic work to improve communications that were done under the C&M contract regarding ARI in the "Altiplano". New communications studies in the Altiplano will be useful for ensuring that the immunization strategy to be used in indigenous communities will be effective and sufficient.

The Metropolitan Region deserves special attention now. There has been much progress in the rural areas, which must be continued and supported; however, the low coverage in the Metropolitan Region was documented in the DHS survey of 1995 and the Rapid Assessment Survey in North Guatemala City. A targeted innovative approach tailored to the specific needs of the Guatemala City Metropolitan Area should be prepared, funded and carried out.

- Analyze each immunization facility and service and adapt different strategies to improve productivity and efficacy. Among other measures that could be used are the following: to inform all services providers strategies for control and vaccination improvement; to develop programs with MPHSA personnel and midwives to improve quality of care; to improve and guarantee the convenience of immunizations; to strive for client satisfaction; to reinforce private institutions and NGO participation in vaccination services provision and to promote vaccinations in private services for women's care; to develop and apply mothers and children follow-up mechanisms to complete protection schedules; and, finally, to support development of organizations and community networks to identify unprotected population and to do follow-up and promotion so the high risk population will demand vaccinations from public and private services.
- Continue and reinforce the administrative support for immunizations, encouraging continuation of GOG budgetary resources for buying vaccines and supplies, promote and support GISS, private sector and NGO participation in the purchase, distribution and application of vaccines in their health programs; establish and monitor indicators of unusable vaccines with timing and responsibilities, in each district.
- Regarding immunizations for neo-natal tetanus protection, this aspect of the Child Survival efforts in Guatemala should be reexamined in the plans for future projects, including considerations on its proper priority within public health programs for Guatemala, the indicators to be selected for setting performance targets and for monitoring progress taking into consideration the technical issues mentioned in the text, setting realistic objectives for improving "coverage", and providing for operations research and practical strategies to reach the high risk groups.
- Use sampling surveys, such as RAS of low cost and feasible to be applied by local level, to monitor vaccination coverages at district and higher levels. These surveys, annually or every second year, could provide information with good accuracy, on total coverages, taking into account MPHSA-served population, other providers served population and population without services. Furthermore, these surveys could be a complement or an alternative to MPHSA services records, because it would reduce data collection and processing costs and it would provide internationally recommended indicators, such as access rates and drop-out rates, among others.
- Improve use of coverages monitoring information, as follows: monthly monitoring in the health facility; quarterly aggregation, analysis, supervision and support at Health Area level and evaluation at Central Level twice per year for identification of sites requiring supervision.
- Strengthen and decentralize, at Health District Level, the epidemiological surveillance of morbidity and mortality caused by immuno-preventable diseases, given the characteristics of the eradication and elimination programs. It is necessary to set norms and develop mechanisms and procedures for quality control and coverages for recordkeeping that assure reliability and

validity of information to be used in Health Districts and aggregated in Health Areas and the Central Level.

- Adjust the vaccination data collection form, to be used as true record for each child's immunization activities, without the characteristics of the present report form. This new form would allow follow-up of the individual child to ensure full child immunizations and to give information on fully immunized children that were served by the MPHSA.
- b) Sustainability of Achievements for the Oral Rehydration Therapy/Acute Respiratory Infections (ORT/ARI) Component.

The main reflections to overcome constraints mentioned in Section 3.2 and to strive for maximum sustainability of project's achievements, are the following:

- Transform the program Central Level groups for ORT and ARI in the same way proposed for EPI, to become advisors and trainer supervisors to the Health Areas, to contribute to design and implementation of technical assistance plans to reinforce planning, monitoring and evaluation capabilities of districts as well as other health sector institutions' pediatric diseases control activities. Integration of the ORT and ARI programs could be initiated, with one group of persons responsible and all present programs represented.
- Continue integration of child care, looking for a basic patient service package (curative and preventive) for children, instead of going on with vertical activities for ARI, diarrhea, nutrition, malaria and immunizations. These basic services should have performance standards indicators of quality of care by providers, to develop control mechanisms and to assure that these basic standards be uniform throughout the country. The proposal for Integrated Child Care (healthy and sick), developed by USAID/G-CAP with support from BASICS and C&M and other institutions, was a good beginning and deserves future support.
- Expand role of support and technical and financial assistance from MPHSA to private health providers, GISS and NGOs, because a big part of the population needs their care. This is a very complex job that requires special technical teams; to assume this job, MPHSA must improve from its traditional methods of functioning and operations.
- Continue reinforcing management skills of Health Areas and Districts personnel, in knowledge and in practical actions. Continue support and reinforce positive attitudes to use new methods and management instruments to develop more efficient work and care. This could be done through the implementation of continuous education activities, oriented to develop skills and initiatives, to modify attitudes and improve performance of managers of child care programs and services.
- Strengthen the critical mass, already created, of health workers who use information and who now need more technical help. Improve instruments and equipment to give a better health care

to the population; for that, it is necessary to continue creating discussion spaces and mechanisms that facilitate improvement, and generate a process and a more productive "culture" regarding information management.

- Reinforce disease control efforts through epidemiological surveillance, with professionals concerned about practical tasks for medical care for patients and also thinking as public health professionals managing the health problems of groups and population. This probably will require a specialized training program in epidemiological surveillance for development of local capabilities. To implement this suggestion, it will be necessary to get technical and financial support.
 - Continue nationwide implementation of Standardized Case Management (SCM) in two simultaneous processes: in Health Areas where training was carried out, maintain a minimum level of performance and quality health care through continuous education activities. Provide training for various types of personnel (medical doctors, nurses, auxiliary nurses and others) and continue with evaluations twice per year on performance in each health district of the trained personnel. In Areas where SMC has not been introduced yet, the process should start with the integrated protocol, as was proposed in the last BASICS visit to Guatemala in May of 1996.
 - Continue and, if it is possible, extend the communication on pneumonia activity from the western part of the country (San Marcos and Totonicapán). This is a high priority public health problem in Guatemala and there is a methodology feasible to be implemented at local level and with an effect on the population. More specifically, San Marcos and Totonicapán could continued to maintain achievements and to produce new ARI messages. Another option is the extension of the methodology to new child survival activities, such as immunizations and diarrhea. Also, the methodology and materials could be implemented promptly -adapted to specific local conditions- in the rest of highlands Health Areas; personnel from the Altiplano Health Areas would visit San Marcos and Totonicapán as observable models to take into account. Later the methodology could be extended to the entire country, with necessary adaptations.
- c) Sustainability of Achievements for the Health Management Information System (HMIS) Component.

The main reflections to overcome constraints and to strive for maximum sustainability of project's achievements in this component, are the following.

- Redefine the functions the "Informatica" Unit with a new approach. This Unit would compile and process data from the decentralized levels, so that information can be used and interpreted by Central Level users. The "Informatica" Unit would provide technical assistance to strengthen information process and would administer a computer network at Central Level, with direct availability to Central Level users (Minister's Office, DGHS, Units, Divisions and

Sections); this computer network could be connected to present Health Area networks, to form a national MPHSA network in Guatemala.

- Continue and reinforce support to the implementation of SIGLO. In a first stage the Retalhuleu and Suchitepéquez experiences could be used, where all SIGLO modules implementation was finished at relatively low cost and with a minimum of outside technical and financial support. The most motivated Areas to finish SIGLO implementation were Amatitlán, Baja Verapaz, Chimaltenango, Jutiapa, Sacatepéquez y Zacapa; these could be supported as high priority Areas to continue SIGLO implementation efforts.

The second stage for the information system development should include the following aspects, among others: in Human Resources, finish and implement the training module; in Supplies, develop and implement the procurement processes and link it to budget; in Goods and Equipment, finish development and implement the preventive and corrective maintenance module; in Budget, finish the annual closing process and the simultaneous handling of budgets for two fiscal years; in Statistics (SIIS), adapt data collecting forms to the new MPHSA realities, taking advantage of SIGLO achievements; and in Planning, adapt the module to MPHSA progress and include other health sector actors and community participation, strengthen decentralization and include implementation and social evaluation aspects. Link and integrate all modules.

The third stage, should finish modules development for management and administration of human, physical, financial and planning resources. New modules can be improved, such as the community-based information sub-system, to be developed from the C&M work in 1996 and the modules of supervision and complementary information including the RAS data described in this report.

- Strengthen computer equipment and accessories maintenance with technical and financial resources, managing existing equipment guarantees, and providing budget to those machines presently non-covered; this could be done through contracting qualified personnel, or still better, to contract with Guatemalan organizations for maintenance and repairs.
- Reinforce implementation and use of the Basic Guidelines for Use of Health Information, available in the Health Areas, to achieve better data interpretation and presentation and to support more adequate, timely and decentralized administrative and management decisions, to deal with important problems.
- Support RAS methodological improvements, mentioned in Section 4.3.3 e) of this report and continue carrying out RAS studies in those areas where they were not performed yet. Support some Health Areas initiatives, such as in Zacapa, where there is interest in carrying out new studies, following-up activities implemented as a result of the first RAS performed. Sustain the efforts and disseminate the results achieved. This could be supported with the already trained MPHSA personnel with little or no technical assistance or funding.

d) Sustainability of Achievements for the Improved Administrative Systems (IAS) Component.

The main reflections to overcome constraints and to strive for maximum sustainability of project's achievements, are the following:

- Continue support to the Sectoral Planning Unit (USPAS in Spanish) in its efforts to develop the planning system. Reinforce the leadership role this Unit has been assuming, to implement and improve MPHSA administrative and financial systems in the Health Areas.
- Continue improvements in the finance, personnel and logistics administrative systems as mentioned in the HMIS component. Give emphasis to Health Areas where the sector reform supported with IDB resources is beginning, i.e. Alta Verapaz, Chiquimula and Escuintla.
- Use documents prepared and produced by the C&M project, to prepare and implement specialized administrative manuals for MPHSA, for strengthening administration and financial management in Health Areas.
- Use the Rapid Assessment of Management methodology in all Health Areas, together with the planning work carried out by USPAS; RAM will help to detect and solve problems regarding personnel motivation, commitment and performance. Efficiency and effectiveness of management processes can be improved -planning; human, physical and financial resources management; information; supervision, etc.). Continue the work with BASICS to prepare programs, materials and training to improve the performance of key Health Area personnel.

6.3 REFLECTIONS FOR MANAGEMENT OF THE TRANSITION

MPHSA has asked USAID/G-CAP to continue its technical and financial support to child survival activities in Guatemala. Unfortunately, the time frame for design and approval of another contract for technical assistance is long and would leave MPHSA with a gap in the requested support.

C&M has been pleased to provide professional services to USAID and MPHSA from 1992 to 1996 and is very proud of the Child Survival Project achievements, which is now ending. C&M would be pleased to providing professional services to Guatemala when there are opportunities that fit into the plans and priorities of USAID/G-CAP and MPHSA.

USAID has had discussions with MPHSA. INCAP has been suggested as an appropriate organization to provide technical assistance to MPHSA and to manage project funds. This could be done through a "buy" in mechanism.

BASICS has also provided technical support to the project through a buy-in mechanism. USAID plans to request that BASICS continue to provide support through this mechanism. It is planned that BASICS will increase its TA in the future. In addition to TA to MPHSA, during this transition

BASICS will provide specific TA to INCAP to strengthen its capabilities in technical and project management.

PAHO/WHO has provided TA to MPHSA throughout the project by itself and in coordination with C&M. This TA probably will continue or will be increased.

It is planned that the four major technical aspects of the Project will continue. However, the balance between components may change. It is possible that MPHSA and USAID will define geographic priority Areas to focus the technical components (EPI, ORT-ARI). This selection may need to be done due to declines in the level of project funding.

The administrative and information systems should be continued in all Health Areas. In the future, additional TA will be needed to strengthen the Central Level of MPHSA in these fields.

As part of the transition, several steps can be anticipated:

- * C&M's final report provides an analysis of the status of the components and recommendations for the future.
- * C&M organized all major documents, manuals, files and other documentation in hard copy and diskette form. Clear instructions for accessing any data system, file or other computer generated document accompanied the documents.
- * These documents, files and other information are available for USAID/G-CAP, MPHSA, BASICS, INCAP and others.
- * C&M could be willing to participate in transition workshops for USAID, MPHSA, PAHO/WHO, INCAP, BASICS and others. The workshops could include technical review and comments on the progress, achievements and status of project components. This will allow all parties to fruitfully use the outputs of the Project. C&M could explain the systems, how they work, problems, future opportunities for expanding or improving the systems, and technical and clinical issues. These workshops could focus on the four components of the project (EPI, ORT-ARI, HMIS, IAS) and allow C&M to discuss in depth the Project experience.
- * As a second phase of transition, MPHSA, USAID and the partners, could hold a second workshop to hold in-depth discussions of the respective roles of the INCAP as the new partner and changes in the roles of other partners (PAHO/WHO, BASICS).

The best mechanisms should be identified for INCAP services and the relationship of BASICS, PAHO/WHO and others to MPHSA. These workshops would focus on respective roles of the partners, management, communications, reporting and relationship mechanisms and information. This is a new start and the management, communications and relationships need to be redefined.

- * For each of the workshops, MPHSA and USAID could designate a staff member or institution to record the information transferred during the workshops. This would formalize and document this information which could then be circulated to all parties involved in the workshop. This information could then be presented in a project newsletter distributed to Health Area staff to give them information on the transition and answer their concerns about what and how project activities will be continued.

- * In addition to these workshops, MPHSA and USAID could form a temporary task force which could call upon "National Advisors" to meet periodically to provide further information to new partners. It is possible that some Guatemalan TA Advisors, coming from C&M team, could be invaluable to INCAP to continue the Project work.

ANNEXES

126

ANNEX 1

GUATEMALA CHILD SURVIVAL PROJECT

LOGICAL FRAMEWORK

LOGICAL FRAMEWORK

IMMUNIZATION AND ORT SERVICES FOR CHILD SURVIVAL

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumptions
<p>Goal: To reduce morbidity and mortality throughout Guatemala caused by the common early childhood diseases, preventable by immunization and due to or related to diarrheal diseases.</p>	<p>Measures of Goal Achievement: Reduction in proportion of childhood mortality (under 5 years old) attributable to the common early childhood diseases.</p>	<ul style="list-style-type: none"> ● MOH Records ● DHS ● Local diagnostics 	<p>Child Survival interventions will support decrease infant mortality.</p>
<p>Project Purpose: Support of strengthening the MOH's capacity to deliver child survival services. Increase up to 70% immunization coverage against the 6 immunopreventable diseases and increase up to 70% ORS use coverage for children under 5 years of age. In addition apply tetanus toxoid, vaccination to 60% of pregnant women.</p>	<p>EOPS</p> <ol style="list-style-type: none"> 1. Increase to 70% the immunization coverage of children under 5 years of age. 2. Increase to 60% the neonatal tetanus vaccination protection of pregnant women. 3. Increase to 60% the oral rehydration therapy coverage of children under 5 years of age. 	<ul style="list-style-type: none"> ● Local surveys ● MOH records 	<p>The MOH will be capable of implement different methodologies to achieve targets.</p>
<p>Outputs:</p> <ol style="list-style-type: none"> 1. Rehabilitation up to 95% the cold chain system. 2. Strengthening of the Health Management Information System. 3. Enhancement of MOH administrative and financial institutional capacity for resource execution. 4. Local production capacity of ORS enough to cover MOH needs. 5. Adequate capacity for diarrheal, acute respiratory infections and immunopreventable deceases. 	<ol style="list-style-type: none"> 1. Repair, installation and/or maintenance of at least ___ cold chain equipment. 2. 24 Health Areas will be able to maintain epidemiological indicators for decision-makers. 3. 24 Health Areas will be able to increase up to 60% the execution of their budgets. 4. Production of at least two million of ORS packages per year. 5. Creation of at least 9 ORUs. 	<ol style="list-style-type: none"> 1. Local surveys for cold chain equipment and supervision. 2. Quarterly reports and visits. 3. Annual reports. 4. # of ORS produced. 5. Visits. 	<ul style="list-style-type: none"> ● MOH will gradually assign enough resources attain sustainability of child survival activities. ● MOH will incorporate the administrative, financial and accounting systems generally accepted.
<p>Inputs:</p> <ol style="list-style-type: none"> 1. Procurement of 150 refrigerators, 10 freezers, 150 thermometers, and 2.500 vaccine carriers. 2. Procurement of 80 PCs, 30 printers, software and supplies. 3. ● Training of MOH staff (central and area levels personnel) in financial and administrative procedures, computers, programming and planning of resources. ● Restore transportation system originally purchased with project funds. 4. Remodelation of LAPROMED facilities, including equipment, raw materials and technical assistance for production and marketing. 5. Training and creation of at least 9 ORUs. 	<ol style="list-style-type: none"> 1. US\$325,000.00 2. US\$250,000.00 3. ● US\$100,000.00 ● US\$100,000.00 4. US\$1.4 million 5. US\$60,000.00 	<ol style="list-style-type: none"> 1. Contractor records. 2. Contractor records. 3. Contractor records. 4. Contractor records. 5. Contractor records. 	<ul style="list-style-type: none"> ● MOH will coordinate other-donor resources to ensure successful of child survival activities, with the technical assistance of Clapp & Mayne ● MOH will establish an adequate logistics system for project activities. ● Transfer of management skills and knowledge from Clapp & Mayne to MOH through in-job training will be successful

ANNEX 2

**GUATEMALA CHILD SURVIVAL PROJECT
MAIN EVENTS OF THE PROJECT AND THE CONTRACT**

Annex 2

EVENT	DATES	DESCRIPTION
Signing of the Project	August 1985	\$ 6.7 million are allocated for the Project.
Amendment No. 1 to the Project	July-August 1986	<ul style="list-style-type: none"> • The project is expanded to include the ORT component. • Three Health Areas of the Guatemalan City are added. • More funds are allocated (\$ 3 million). • The life of the Project is extended until August 31, 1989; twelve months.
First external audit by Peat Marwick.	April 1988	19 recommendations were made for the period of October 1, 1986 to September 30, 1987.
Intermediate Technical Evaluation	July 1989	\$ 6.5 million of the \$ 16.4 million available for the Project, have been used to implement the Project and has contributed significantly to increase the coverage levels in immunizations and ORT.
Second external audit	January 1990	This external audit covered the period of October 1987 - June 1989. In February it was reported that there was a lack of documentation to support \$ 2 million in expenditures for the project.
Interruption of disbursements	March 1990	
Reimbursement of funds	Year 1991	
Signing of the contract with C&M	June 1992	The funds were allocated to the main four components: Immunizations, oral rehydration therapy, Management Information Systems, and administrative and financial systems.
Amendment No. 3 to the Project	July 1993	The project is expanded to include the ARI component and monitoring and evaluation; improving the quality of the standard management of cases (SMC) of pneumonia nationally achieving a coverage of 60% for SMC in 8 to 10 high priority Health Areas.

Amendment No. 4 to the Contract	November, 1994	This amendment, includes in the contract with C&M, the ARI component and the monitoring and evaluation systems.
Amendment No. 5 to the Contract	April, 1995	More funds to the project and requires progress reports.
Amendment No. 7 to the Contract	July, 1996	<ul style="list-style-type: none"> • Continues training programs for care providers in SMC for ARI and ORT, revising the materials and classes and to include 5 more Health Areas. • To finish the design of the communications program for ARI, including the elaboration of messages, the selection of pilot communities and the design of the research. • To complete the implementation of Rapid Assessment Surveys (RAS) and to prepare a report on the effectiveness of the studies at local levels. • To provide technical assistance in Health Areas for the POA of 1997; focusing on child survival programs (at Central Level, Health Areas and Districts) and to automate the main forms used.
Amendment No. 8 to the Contract	September, 1995	<ul style="list-style-type: none"> • To purchase and install 7 computers for 3 new Health Areas and 4 branches at the central level. • To complete the integration of SIIS into SIGLO. • To develop the final version of the managerial guidelines for distributing and training of the staff • To promote institutionalization of the methodology for the RAS and to increase the use of the information. • To promote the institutionalization of the development of the brochure "Advances in Maternal Child Health." • To design in cooperation with UNICEF a community health information system. • To design a logistics system for Oral Rehydration Salts that will guarantee its continuous availability in the community.

ANNEX 3

GUATEMALA CHILD SURVIVAL PROJECT

SIGLO APPROVAL COMMUNICATIONS

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Guatemala,
24 de enero de 1995.

Licenciado
Carlos E. Mancos
Edificio de Finanzas Públicas
Ciudad

En forma atenta me dirijo a usted para hacer referencia a nuestro Oficio Número 2565, en el cual se solicita autorización para la impresión en forma continua a través de la firma Consultora de CLAPP & MAYNE Inc. de las órdenes de compra y pago, permitiéndose adjuntar 2 fotocopias, una contiene el formato en blanco y la otro contiene una prueba efectuada para determinar que la información se adhiera a los espacios. El documento será impreso en papel sensibilizado y forma continua tamaño 95x11.

Sin otro particular me suscribo como su atento y seguro servidor,

Dr. Zoel Leonardo Paredes
Director General


Amanda Rivera de Sántiz
Secretaría General

Dirección de Establecimientos del Estado
Departamento Administrativo y Financiero

RECEPCION DE DOCUMENTOS
A las 11:00 hrs.

DG 55



DSSS

2779

Oficio No. DCE/014/95
Ref. CEMM/lucy

DIRECCION DE CONTABILIDAD DEL ESTADO
MINISTERIO DE FINANZAS PUBLICAS
8a. Avenida y 21 Calle, Zona 1, 4to. Nivel
Tels: 514173 - 81011 - 80837 - 84946

Guatemala, C. A.

DIRECTOR GENERAL
SERVICIOS DE SALUD
MINISTERIO DE SALUD PUBLICA
GUATEMALA, C. A.

Febrero 9, de 1,995

Doctor
Zoel Leonardo Paredes
Director General
Dirección Gral. de Servicios de Salud
Ministerio de Salud Pública

Señor Director:

En relación a su oficio No. 117 de fecha 24 de enero del año en curso, me permito informarle que esta Dirección no tiene ningún inconveniente en aprobar el formato propuesto, en vista que llena todos los requisitos legales, y que el mismo servirá para mejorar los procedimientos en el Ministerio de Salud Pública.

Sin otro particular me suscribo de usted,

Atentamente,



Lic. CARLOS ENRIQUE MENCOS MORALES
DIRECTOR
Dirección Contabilidad del Estado

DIRECCION GENERAL DE SERVICIOS DE SALUD
DESPACHO DEL DIRECTOR

RECEIVED
13 FEB 1995
A LAS _____ POR _____

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Al contestar sírvase mencionar el
Número de referencia de esta nota

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RECCION GENERAL DE SERVICIOS DE SALUD

GUATEMALA 13 DE Febrero DE 19 95

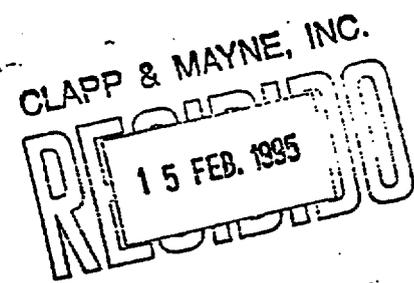
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ASUNTO LICENCIADO CARLOS ENRIQUE MENCOS MORALES, DIRECTOR, DIRECCION CONTABILIDAD DEL ESTADO, INFORMA QUE ESTA DIRECCION NO TIENE INCONVENIENTE EN APROBAR EL FORMATO PROPUESTO, YA QUE LLENA LOS REQUISITOS LEGALES Y SERVIRA PARA MEJORAR LOS PROCEDIMIENTO EN EL MINISTERIO DE SALUD PUBLICA.-----

De manera atenta pase al DOCTOR RODRIGO BUSTAMENTE, DIRECTOR DE LA FIRMA CLAPP & MAYNE, INC., para que se sirva enterar de lo manifestado por el Licenciado Carlos Enrique Mencos Morales, Director, Dirección Contabilidad del Estado.

Doctor Oscar Zoel Leonardo Paredes
Director General

Amanda Rivera de Sierra
Secretaria General



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135



CONTRALORIA GENERAL DE CUENTAS
Av. Simeón Cañas 5-38, Zona 2.

Guatemala, C. A.

Oficio No. A-091-96

Guatemala,
9 de abril de 1996

Ingeniero
Marco Tulio Sosa Ramírez
Ministro de Salud Pública
y Asistencia Social
Palacio Nacional
SU DESPACHO

Señor Ministro:

Tengo el agrado de dirigirme a usted, en relación con los términos del Of. No. 012-85 de fecha 28 de febrero de 1995, dirigido a este Despacho, por el Dr. Gustavo Hernández Polanco, ex Ministro de Salud Pública y Asistencia Social, mediante el cual se solicita la incorporación de un -- Contralor de Cuentas al equipo técnico que se integró para conocer el Sistema de Información para la Gestión Local, SIGLO; y en su caso, que la -- Contraloría General de Cuentas autorice su implementación y utilización en las Jefaturas de área de salud a nivel nacional.

Es el caso indicar a usted, que el oficio en mención fue recibido - en la Secretaría General de esta Institución el 6 de marzo de 1995, fecha en la cual se inició el conflicto que dio lugar a problemas de toda índole y que en buena manera influyó en el estudio de este sistema de información con involuntaria demora.

Congruente con lo anterior, se comisionó a la Subjefatura de Auditoría Gubernamental y a la Unidad de Supervisión, para que procedieran al -- análisis, estudio y revisión del sistema, lo que en materia de fiscalización corresponde a la Contraloría General de Cuentas.

Como resultado del análisis, se pudo establecer que SIGLO cuenta, - entre otros, con un subsistema financiero que ha sido diseñado para el control de las asignaciones presupuestarias, tanto en su ejecución, como en sus modificaciones generadas por ajustes de transferencias y/o ampliaciones. Cuenta también, con un subsistema que contempla el control de los bienes del sector salud, el cual puede ser utilizado tanto para propósitos de registro de activos no corrientes, como para el registro de inventarios.

Asimismo, el análisis del sistema reflejó, en términos de ejecución y control, que el mismo puede ser sujeto de una auditoría que llene los -- requisitos mínimos para poder realizarse técnicamente por la Contraloría General de Cuentas, a la luz de la función institucional que por mandato constitucional le corresponde; y se concluyó que el sistema SIGLO es factiblemente auditable.

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CLAPP & MAYNE, INC.
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Oficio No. A-091-96

CONTRALORIA GENERAL DE CUENTAS
Av. Simeón Cañas 5-38, Zona 2.

Guatemala, C. A.

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En razón de que como es de su conocimiento, ya se han iniciado las acciones para llevar a cabo un proceso de centralización y desconcentración a nivel nacional, dentro del cual ya se contempla la implementación de un Sistema Integrado de Administración Financiera -SIAF- y de un Sistema de Auditoría Gubernamental -SAG-, se realizaron reuniones entre funcionarios de la Compañía Consultora CLAPP & MAYNE INC., y personeros que tienen a su cargo la implementación del SIAF, habiéndose concluido también que el SOFTWARE de SIGLO puede compatibilizarse con el SOFTWARE que en su caso se establezca para el Sistema Integrado de Administración Financiera ya mencionado.

En tal virtud, esta Contraloría General de Cuentas con fundamento en la literal j) del artículo 13 del Decreto 1126 del Congreso de la República, Ley Orgánica del Tribunal y Contraloría de Cuentas, considera que los controles para la ejecución presupuestaria que se realizan actualmente en forma convencional, pueden llevarse a través de la utilización del Sistema de Información para la Gestión Local -SIGLO-, propiciando así el uso de la informática para propósitos de auditoría.

En consecuencia, y con el objeto de oficializar los resultados en el proceso electrónico de la información, deberá cumplirse con los requisitos establecidos en el Decreto Gubernativo 2084 que contiene las normas para autorización de libros, tarjetas y cualquier otro mecanismo de control, en este caso, el contemplado por SIGLO.

Aprovecho la ocasión para presentar a usted las muestras de mi consideración y estima,

E. J. J.

ANNEX 4

GUATEMALA CHILD SURVIVAL PROJECT

LIST OF ACTIVITIES

ANNEX 4

GUATEMALA CHILD SURVIVAL PROJECT

LIST OF ACTIVITIES

The activities summarized below come from various contract documents prepared over more than four years; consequently the organization and sequencing of the activities sometimes do not follow a single logical structure

Expanded Program of Immunizations (EPI) Activities in the Original Contract of 1992:

COMPONENT 1: IMMUNIZATION

1. Cold Chain:

- Update the current status of cold chain equipment and maintain it up-to-date throughout the Life of the Project.
- Coordinate, participate in and support the updating of a cold chain functional diagnosis.
- Procure, store, ensure adequate handling and distribution of required equipment and supplies for Health Areas (e.g. kerosene, syringes, spare parts, tools) (AID to procure).
- Provide financial/administrative support for in-service training activities for Health Area Maintenance Technicians to ensure that the cold chain equipment is properly functioning.
- Provide the necessary support to locally procure minor supplies and spare parts.

2. Transportation:

- keep a strict control of gas used by project vehicles found in the various MOH implementing units. Design a system for controlling same. It is suggested that USAID/Guatemala forms be adapted for this purpose.
- Provide gas to vehicles which are being used to accomplish project objectives, in most cases project purchased vehicles. [Amendment 4 indicated the Project should stop paying for gasoline.] Vehicles should have functional odometers.
- Ensure that project vehicles are well maintained, measures should be taken to give priority to preventive maintenance of project vehicles.
- Train drivers of project vehicles in aspects of project maintenance norms to optimize vehicle use and prevent untimely deterioration.
-

-
- Incorporate vehicle data into an electronic data system, in order to evaluate driver use and maintenance vehicles.
- Decentralize, as possible, the purchase of gasoline, preventive and corrective maintenance, to facilitate the accomplishment of field activities. [Amendment 4 indicated the Project should stop paying for gasoline.]
- Maintain sufficient spare parts to guarantee that project vehicles do not remain out of service for prolonged periods of time and that project activities are unduly delayed.

Analysis of MOH vehicles financed earlier from the project and prepare recommendations regarding repairs, maintenance, and operation. [This does not appear in the written documentation of the contract, but it was needed and it was done.]

3. Training:

Provide financial and administrative support to train the staff in immunization services in accordance with local programs.

4. Promotion:

- Provide financial and administrative support to support and participate in local promotion and health education activities in accordance with local programming.
- Contract local radio broadcasting and procure promotion materials. [The purchasing of local radio program time was prohibited later.]

5. Supervision and Evaluation:

- In coordination with the MOH, PAHO, UNICEF, and USAID, identify appropriate indicators to measure project achievements, e.g.: Immunization coverage of children under 5 years of age; cold chain equipment working; reduction of morbidity and mortality rates.

COMPONENT 2: ORAL REHYDRATION THERAPY AND ACUTE RESPIRATORY INFECTIONS COMPONENTS.

Oral Rehydration Therapy (ORT) Activities in the Original 1992 Contract:

Oral Rehydration Therapy (ORT) Component:

Phase A: Appropriate management of the programs with the objective of motivating the personnel of Hospitals and Health Centers.

1. Participate in the revision, selection and approval of proposals for the creation of Oral

2. Provide administrative and financial support for the implementation of ORUs.
3. Monitor the adequate use of resources provided by the project.
4. Participate in the evaluation committee to determine the development of ORUs against established plans/indicators.

Phase B: Effective Diarrheal Case Management in all Health Centers and Posts:

1. Participate in the revision and approval of the National Plan for the Control of Diarrheal Disease presented by the Maternal Child Health Department.
2. Purchase educational material required for the training of institutional and community personnel (manuals on norms for the Effective Management of Diarrheal Disease). This material is available from WHO.
3. Receive, transport, warehouse and distribute ORS in sufficient quantities (in response to local programming) for each Health Area so that they are responsive to their local coverage areas. [Amendment 3 changes this task to " help the Health Areas to receive, transport, warehouse, and distribute ORS in sufficient quantities (in response to local programming) in a manner such that each Health Area responds to its local needs.]
4. Provide administrative/financial support to training activities (review and approval of stipend plans, payment of stipends to community personnel, purchase educational materials, provide pens, paper, etc.).
5. Review and implement forms and programs for data management which will permit each Health Area to have effective control of the distribution, availability and needs of Oral Rehydration Salts (ORS).

Phase C: Promotion of the Service:

1. Provide administrative/financial support to Health Areas who present local promotion plans to ensure their implementation. Tasks may include, but not be limited to: (contracting radio space, contracting printing services). [Amendment 3 stopped contracting of radio space.]
2. Participate, jointly with the evaluation committee, in revising results based on programmed activities.
3. Monitor the appropriate use of resources provided by the project by local plans.
4. Inform AID, MOH and Chief of Party of any problems encountered in the implementation of local program plans.
5. Suggest appropriate mechanisms to improve the implementation of the plans.

Phase D: Improve Access::

- Design an appropriate mechanism to provide ORS in an opportune and systematic way to community personnel.
- Evaluate the appropriateness of forms presently utilized to compile information on ORT as applied to voluntary personnel.
- Participate in the revision/adjustment/formulation of logistic norms which provide for the distribution of salts to community personnel.

Phase E: Mass Media and Local Education and Promotion by Health Personnel:

- Administrative/financially support the education and promotion of the appropriate management of diarrheal disease at the household level. Resources should be programmed based on concrete plans presented by local levels. This support will consist of: contracting services to print pamphlets, calendars with health messages, interpersonal education.
- Administratively/financially support the evaluation of systematic sampling of communities to measure impact, coverage and change of practices and attitudes of the population who received services.

ORT Activities in Amendment 8:

Clapp and Mayne should design an ORS logistics system that will ensure continuous availability of ORS at the community level. The system should be initiated in at least three highlands health areas - including training materials and actual courses as well as the design of monitoring tools to monitor the effectiveness of the system at all levels (e.g. central, area, district and community). If necessary or appropriate, Clapp and Mayne could design an operations research (OR) activity to compare the effectiveness of different logistics systems, although the actual OR study could not be carried out as part of this contract because of time limitations.

ARI Activities in Amendment No. 4: Addition of Control of Acute Respiratory Infections (ARI) to the ORT/ARI Component

ARI Activities- Phase 1: Comprehensive Pneumonia Control Activities and Operations Research in 4 Priority Areas. September 1993-December 1994.

- a. Prepare National Plan of Action: This plan will incorporate inputs committed from USAID, PAHO, UNICEF and the MOH, and will include a plan for policy reform and reduction of barriers to ARI Standard Case Management (SCM) in Guatemala. Subject to USAID/MOH approval, the contractor will propose indicators to determine progress toward training, logistics, access and utilization. These indicators should be measured from readily available information sources such as training reports, supervisory visits, clinical records and logbooks, pharmacy registers, and equipment distribution records.
- b. Incorporate pneumonia control questions [into] the Demographic and Health Survey to be conducted in 1993.. This will require a careful selection and sequencing of relevant questions, adaptation to allow for local terminology and concepts, and the possible

addition of cost per treatment variables to the standard DHS module.

- c. On a regular basis, provide USAID with current information on the status of ARI activities so that pneumonia control can be included as a regular topic in the meetings of the Interagency Coordinating Committee for Maternal Child Health.
- d. Establish a clinical ARI training center at the national level: The clinical training of pediatricians and Area trainers must be conducted in a site where a sufficient number of pneumonia cases area are seen to allow for practice in standard case management and counseling. The Roosevelt or San Juan de Dios General Hospital in Guatemala City, major government training and referral facilities, might be good sites. The Director and staff there are ready to establish their own internal ARI training program and this could easily be expanded to include Area physicians and nurses on a rotation basis.
- e. Rapid Health Area Assessments: Conduct rapid facility assessments to determine training (ARI diagnosis and treatment practices) and support system needs, including antibiotic availability. These studies will be carried out by personnel of the Health Areas and Health Districts, supplemented by field workers hired by a local research firm under subcontract to Clapp and Mayne. Technical assistance will be provided by the AID/Washington BASICS Project. Questionnaires will be adapted from those used by INCAP for the study of physicians' diagnosis and treatment practices. Data will be hand tabulated at the Area level and analyzed further by the subcontractor and the MOH. Ideally, assessment findings will be presented at the national State-of-the-Art Workshop described below and used by the Area managers to develop their operational plans for pneumonia control. These Health Area assessments may include a rapid household survey to complement the ethnographic research described below.
- f. Conduct limited ethnographic research to provide information for revision of training and promotional materials, and eventual use with UNICEF and others to develop communications messages and materials. A short field study should be sufficient to validate the findings of INCAP's earlier ethnographic studies (Saenz de Tejada) and to detect regional and linguistic variations in terms and concepts.
- g. Conduct national Pneumonia Control State-of-the-Art workshop which will be attended by the MOH, IGSS, NGOs, training institutions, the pediatric association and collaborating international agencies: The purpose of this workshop will be to present information from recent studies of ARI in the country, to discuss changes in the WHO/PAHO norms and the technical basis for these changes, and to present the proposed strategy and program for pneumonia control. Studies to be presented could include the: study of physician diagnosis and treatment of ARI (Chew), study of treatment of ARI with Vitamin A (Chew/Gadomsky), ethnographic studies of beliefs and practices surrounding ARI (Saenz de Tejada), Area assessments of ARI knowledge and practice and program support systems (see above).
- h. Revise existing ARI training and communications materials according to new WHO norms and findings of formative research: This will begin as soon as the ARI Component is approved, but it will not be completed until after the findings from the ethnographic studies and Area assessments are available. Materials to be revised include: ARI training manuals, reference materials, flipcharts, posters, almanacs, and flyers.

- i. Revise existing ARI information registers and reports for use at each level of the system. This process is already in progress but it may require additional inputs in order to bring it to a satisfactory conclusion.
- j. Conduct ARI Management Training for Area teams: The pneumonia control program management training should build on the WHO Program Managers Modules, and include the review of the national ARI Plan of Action. It is currently planned that PAHO will support this type of training, but it is unclear whether the schedule and participants developed earlier will correspond to the needs of the USAID ARI Component. Discussions should begin immediately with PAHO and the MOH to guarantee that managers from the 4 Areas targeted by USAID are included in the first training course.
- k. Develop Health Area Pneumonia Control Operational Plans: Each Health Area will use the findings of its assessment and the national ARI guidelines to prepare a 12 month plan of action that, once approved, will be supported by USAID under the Clapp and Mayne contract. Ideally, this will be started in a workshop setting.
- l. Train Area trainers at the National Clinical Training Center: Appropriate selection of Health Area trainers will be a critical element of a successful program. A minimum of two clinical trainers (Area or District hospital staff) and two Health Area supervisors should be selected per Area. (See Discussion of Training Issues).
- m. Establish Health Area training programs: This will entail the Area trainers equipping an appropriate classroom and clinical instruction area in their referral hospital, notifying trainees of the dates for their training and adjusting their own schedules to accommodate the needs of the training program.
- n. Train physicians and nurses (hospitals and health center staff) in revised SCM protocols, counseling/promotional skills and techniques for training and supervising lower level workers.
- o. Train health post personnel in the revised pneumonia SCM norms, counseling and supervision techniques to use with Health Promoters. This level of training would be conducted at the District Health Center by the staff with assistance from the Area Training Team.
- p. Train health promoters to detect and treat pneumonia according to SCM protocol and to counsel and to educate the community about the danger signs of pneumonia. This training will be carried out by the District Health Center staff (nurse, physician, rural health technicians(TSRs), with assistance from the Area Training Team. This training will be carefully monitored and evaluated under the Operations Research activities described [below.]
- q. Operations Research: Through a local subcontractor, plan and conduct operations research studies to investigate key service delivery questions, including the effectiveness of (1) training approaches and training materials; (2) alternative treatment protocols at the promoter level; (3) alternative approaches at the Area level to improve access to low-cost treatment, including antibiotic supply; (4) promotional messages and materials. Specific operations research studies will include small sample surveys and other techniques for

collecting pre and post intervention data about the effectiveness of specific aspects of the BASICS Project to develop study protocols, to train and standardize investigators and field workers, and to process and analyze study findings.

- r. **Supervision/Monitoring:** Develop and test instruments and methods to facilitate the use of epidemiological, service and population-based data to monitor and evaluate pneumonia control activities. These may include: 1) simplified quality control protocols; 2) revised daily and monthly registers and reports; 3) formats and procedures for compiling, analyzing, reporting and using routine service statistics for program monitoring and evaluation.
- s. **Evaluate Training of Facility-Based Personnel:** Shortly after training courses for physicians, nurses TSRs and auxiliary nursing staff are completed in each Area, these training experiences will be reviewed and modifications in the training and support systems relevant to these workers will be made accordingly. Pre and post training tests of knowledge and surveys of clinic records should be used to assess training results, as well.
- t. **Evaluate Training of Promoters:** Operations research will be carried out during Phase 1 to assess the effect that the proposed training and support strategy have on Promoter knowledge, skills and practice of SCM. Once training has been completed in the 5 areas, an evaluation workshop will be held to review the findings of the operations research and to make recommendations for modifications in the norms, training and support for Promoters. Most importantly, this evaluation will determine whether Phase 3 will be carried out or whether alternatives for increasing access to pneumonia SCM should be pursued.
- u. **Develop a system for ARI monitoring and quality control:** The contractor will validate through field studies at the facility level potential alternatives regarding the indicators to be tracked. The national ARI Program has not established a system for monitoring program activities or progress towards goals and operational targets. The national health information system currently collects information on a number of important ARI control variables, but this information is presented in numerical form and does not appear to have been used to assess program trends or achievements in any meaningful way. Indicators can be constructed from the service statistics that are currently available. While service statistics provide admittedly imperfect data, generating and tracking a few indicators of ARI access, diagnosis and treatment on an on-going basis would be useful. The current effort to revise the ARI reporting forms that are used at the Promoter, clinic and Area levels should be carefully coordinated to guarantee that the information collected is useful to managers at all levels. At present, the proposed forms (initial drafts) do not match from one level to the next; the amount of information collected is excessive; and, the proposed use of the information is unclear. Based on the experience in other countries, only a few (four or five) key indicators [need to] be generated through service reports.

ARI Activities- Phase 2: Expand Training of Facility-Based Health Personnel in 4-6 Additional Health Areas, August 1994-August 1995.

- a. **Revise pneumonia control training materials and curricula for hospital, health center and health post levels based on initial results in the pilot Health Areas.**
- b. **Print sufficient quantities of revised materials and forms for additional Health Areas.**

- c. Conduct management training for Area ARI managers.
- d. Develop Area operational plans.
- e. Train Area Trainers at national clinical training center according to revised training strategy.
- f. Prepare Area Training programs.
- g. Train physicians and nurses.
- h. Training auxiliary nurses and rural health technicians.
- i. Supervise and monitor pneumonia control services as part of integrated supervision of health facilities.

ARI activities in AMENDMENT No. 7:

Complete the design of the pretest of the ARI communications program including message development, selection of pilot communities, and research design.

ARI Activities in AMENDMENT No. 8:

- Continue to implement training programs for health care providers (physicians, nurses, auxiliary nurses, and rural health technicians) in Standard Case Management of diarrheal disease and ARI. To date, Clapp and Mayne has carried out this training in 10 health areas. During this 7 month extension, Clapp and Mayne should revise training materials and courses based on the results of the BASICS Project review of medical barriers to applying SCM and the ongoing internal evaluation of the SCM training. Staff from the 10 Areas should be given continuous training (or retraining) as indicated by the results of these assessments. Clapp and Mayne should incorporate an additional 5 Areas into this training program.

COMPONENT 3: HEALTH MANAGEMENT INFORMATION SYSTEM (HMIS) AND MONITORING AND EVALUATION COMPONENTS.

HMIS Activities in the Original Contract of 1992

Health Management Information Systems:

- Process and interpret data on Oral Rehydration Therapy, Immunization, Acute Respiratory Infections and Hospital Costs.

- Process and interpret vital statistics (deaths, births, diseases).
- Develop a mechanism for monitoring voluntary personnel within the Information System.
- Develop a manual to analyze, interpret and use the information (1,200 copies for all levels).
- Publish 3 bulletins with information collected from local level health personnel that can be used for decision-making purposes (2,000 copies each).
- Develop a modified system which can be validated in a number of areas or a region to be applied at the national level.

In collaboration with the Information Unit of MOH:

- Incorporate into the system improvements and changes derived from the work realized by the previous contractor in 1991. Incorporate into the software changes which reflect user needs and which will ensure an adequate epidemiological view of the country as well as the administrative process in the MOH structure.
- Purchase computer and computer printers for installation in the Health Areas. The specifications for the equipment will be discussed with and approved by the Information Unit and AID. Equipment must be compatible with already existing equipment.
- Design and implement a computerized program for the efficient management of financial and accounting information at all levels of the MOH.
- Participate in and support the development of Manual of Norms and training for all levels of the MOH with the objective of ascertaining a better understanding of the multiple advantages to be derived from such an information system.
- Train, supervise and evaluate personal responsible for the levels: management of the information system at the local level, related to financial and accounting aspects.
- Provide technical assistance to the Implementing Units (MCH, IU, DC) relative to the development and use of other programs that help to obtain information which will meet the objectives of the Project.
- Support the design, production, transportation and distribution of forms for registering information at all levels of the MOH. These forms should permit the evaluation of: Impact, coverage, costs of all activities implemented in order to reach the objectives of the Project.
- Support the development of local surveys following the Systematic Sampling of Communities (technical assistance to be provided by UNICEF) in order to obtain complementary information on population groups who do not have direct access to health services.
 - Procure spare parts and maintenance services for all hardware and ensure that the system is functional at all times. Procure additional supplies, paper, etc
 - [Amendment 3 changed this item to: During phase I of the project, funds will be

used to purchase paper and supplies as well as spare parts, maintenance services for the equipment to ensure a continuous uninterrupted performance of the project.. During Phase II, the contractor should support the MOH in the planning

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- and budgeting for paper, spare parts and maintenance services in such way that after December 31, 1994, the funds of the project would not be used for these recurrent costs.]

HMIS Activities in AMENDMENT No. 7:

- Finish the implementation of the local rapid health assessments. The contractor shall prepare a final report on the effectiveness of the rapid assessments at the local level with particular attention to the following questions:
 - Can the health areas and districts institutionalize the methodology on their own (without external technical assistance in study/sample design, interviewing, analysis and report generation)?
 - How can the findings of the assessments be converted into concrete recommendations and actions for improving child survival activities at the local (area/district) level?
 - Given the lengthy delays in finishing the assessments nationwide, how can the planning and implementation process be accelerated? What were the barriers in conducting the planned number of assessments in a timely manner?
 - Should the methodology be institutionalized? If so, what should its objectives be and how should institutionalization be achieved? Can the areas afford to implement the methodology on a continuing bases?

HMIS Activities in AMENDMENT No. 8:

- Procure and install 7 pentium-style microcomputers, printers, software and peripherals as follows: 1 for the Ixcán Health area, 1 for each of the new Health Areas in the Peten, and 1 each for Human Resources, Administration, Epidemiology and Programming to bring these Health Areas and/or Central Level administrative units in line with the capabilities of the other Health Areas.
- Finalize the integration of the SIIS system with the SIGLO management information systems for 27 health areas. This includes finishing the networking software, manuals and staff training.
- By November 30, the results of the pretest of the 6 new management manuals (sample of about 50 users) will be available. The results of the management assessment to be conducted jointly by Clapp and Mayne and BASICS in October-November, 1995, will also be available. Therefore, Clapp and Mayne should integrate the findings of these two studies to develop the final version of the manuals, to disseminate them and to train users in their use.

- Based on the results of the evaluation of the "Rapid Assessment Methodology" that will be conducted as part of Modification No. 7 to the contract, Clapp and Mayne should implement the findings to promote greater institutionalization of the methodology and greater use of the information, thus improving the effectiveness of the child survival program.
- Clapp and Mayne should work with the Division of Human Resources and the Maternal-Child Health Department to institutionalize the capacity to continue producing the "Advances in MCH" Bulletin. This includes developing counterpart resources to cover the production costs in the future.
- In conjunction with UNICEF, design a community-based information system to track child survival activities at the community level. As a first step, Clapp and Mayne should review existing work being done by NGOs to develop community based information systems.

HMIS Activities in Amendment No. 4: Includes Monitoring and Evaluation

- Develop a two year plan (September 1993-August 1995) for local monitoring and evaluation activities. The plan will include a proposed list of small studies that will serve as a critical tool to verify the quality of the epidemiological information system and serve to assist the health areas to better their efforts to increase immunization and ORT coverage.
- Assess other process indicators such as inventory records, flow of local expenditures, flow of vaccines and oral rehydration salts (ORS) packages to validate local management and financial systems.
- Using the concept of "technical assistance as training", develop a strategy for institutionalizing local monitoring and evaluation activities including, but not limited to training health area epidemiologists and chiefs to use the HMIS as well as supplementary monitoring/evaluation data to reinforce local programming and utilization of resources.
- Design and implement a monitoring and evaluation plan for the ARI component that would include measurements of the access of the population (in pilot areas) to SCM and the quality of SCM as well as the knowledge and practices of mothers. This activity is closely linked to the Rapid Health Area Assessments described in Phase One of the ARI Component.
- Perform an analysis of the completeness of vital statistics on ARI and estimate the extent of under-reporting and misclassification in registered causes of ARI death.

COMPONENT 4- IMPROVED ADMINISTRATION AND FINANCIAL MANAGEMENT [ALSO REFERRED TO AS IMPROVED ADMINISTRATIVE SYSTEMS (IAS)]

IAS Activities in the Original Contract of 1992:

The Contractor shall develop, but not be limited to, the following activities:

Revise and propose revisions to the MOH norm (Ac. Gub. No. 741-84), in relation to the delegation of authority to operational level MOH personnel, such that planning, programming, service delivery, promotion and logistical support will be carried out at the local level.

Review, evaluate, and improve the following administrative systems: (fundamentally as related to AID donated funds for the project and government counterpart funds for the project).

Budget and accounting; financial administration; personnel administration; Logistics: Commodities, inventories, projection of needs, supplies, distribution, control of vehicles, etc.; Cost analysis of Health programs; Files; Internal control system, documentation.

Design and implement administrative systems compatible with the systems of the Ministry of Health and AID. Manuals and forms should be developed and used and their results as outlined above should be incorporated into an electronic data system.

Administer project funds on behalf of the Ministry of Health and AID. Appropriate registers should be kept and coordinated with the appropriate office of the Director General of Health Services so that they are incorporated into the official MOH records.

Support and participate in the formulation, presentation, analysis and approval of the annual operation plan of the central level implementing units, with emphasis in the four project components. These plans should include a corresponding budget; purchase plan and time schedule for implementation.

Coordinate and participate in the consolidation of a National Operation Plan which will be derived from the local level Health Area plans.

Coordinate, support and participate in the review and updating of Health Area data on their communities, focusing on areas at greatest health risk so that resources may be allocated based on need and therefore more effectively and efficiently utilized.

Select, recruit, train, supervise and evaluate the performance of the 24 administrators who will institutionalize the administrative, financial management system at the Health Area level. Do the same with other personnel supporting project management, support and implementation. (Financial Officer, 2 Financial Management Assistants, 1 Procurement Official, 1 Procurement Assistant, support staff, one computer specialist).

Coordinate, support and participate in training activities which will ensure the institutionalization of administrative and management as well as Health Information Systems.

Provide in-service training to the operating units of the Ministry of Health, Maternal - Child Health Department, Information Unit, Department of Epidemiological Surveillance and Control (central level) and 24 Health Areas as related to administration, financial management, accounting systems such that they function in accordance with AID regulations and the laws of Guatemala.

150

Coordinate, support and participate in:

- Development, monitoring, supervision and evaluation of the administrative process.
- Review, design, implement manuals on the norms of administrative procedures to be used by all levels of the Ministry for the appropriate use of project funds.
- Carry out operations research at the local level to determine that the manual are being used appropriately. Make the necessary adjustments in the manuals and MOH personnel training to improve the system.
- Periodically evaluate the achievement of the project in terms of impact, cost, and coverage, in relation to costs as well as projected achievement of goals and objectives.
- Purchase, contract, warehouse, distribute and provide goods and services required by the implementing units of the Ministry, adjusting them in accordance with AID and MOH procedures.
- Coordinate all activities with the implementing units of the project. Administrative systems, accounting, budgeting and internal control systems should be functioning 180 days after signing the contract.

IAS Activities in AMENDMENT No. 7:

Provide technical assistance to the Health Areas for the development of the 1997 Annual Operational Plans (POAs). The focus of this technical assistance will be to emphasize child survival activities (at the central, area and district levels) and to automate the principle forms used by the health areas to develop their POAs.

ANNEX 5

GUATEMALA CHILD SURVIVAL PROJECT

**LETTER OF INTENT TO WORK JOINTLY ON DEVELOPMENT OF
SIGLO**

152

CARTA DE INTENCION PARA EL DESARROLLO DE TRABAJO CONJUNTO ENTRE EL MINISTERIO DE SALUD PUBLICA Y ASISTENCIA SOCIAL, (MSPAS) LA AGENCIA PARA EL DESARROLLO INTERNACIONAL (USAID), LA ORGANIZACION PANAMERICANA DE LA SALUD/ORGANIZACION MUNDIAL DE LA SALUD (OPS/OMS) Y EL FONDO DE LAS NACIONES UNIDAS PARA LA INFANCIA (UNICEF) EN EL SISTEMA DE INFORMACION DE SALUD DE GUATEMALA.

En el proceso de coordinación de acciones que vienen desarrollando la USAID, la OPS/OMS y el UNICEF, conjuntamente con el Ministerio de Salud Pública y Asistencia Social, se han definido actividades conjuntas en el Sistema de Información de Salud, orientadas a evitar la duplicidad de esfuerzos, potencializar el trabajo de las tres Agencias, elaborar esquemas que permitan una mayor factibilidad de sostenimiento futuro de las acciones y dejar, como objetivo básico, un solo sistema de información para el país.

La base del trabajo es, en primer término, el Sistema de Información para la Gestión Local (SIGLO) desarrollado por la OPS/OMS, dividido en 22 módulos y orientado hacia la administración hospitalaria; en segundo lugar, el avance que han logrado el Ministerio de Salud Pública y Asistencia Social y USAID en el desarrollo del Sistema Integrado de Información en Salud (SIIS) y, finalmente, el desarrollo de indicadores y de información de base comunitaria realizado por UNICEF.

Los módulos que se ha acordado desarrollar y poner ejecución conjuntamente son: suministros, inventarios, mantenimiento, mortalidad, recursos humanos e información local para atención primaria de base comunitaria.

Las labores específicas que se han identificado para cada Agencia son:

USAID terminará el diseño manual de cada uno de los módulos y colaborará en la definición de los informes básicos (salidas) que se requieren.

La OPS/OMS hará la adecuación del módulo computarizado de SIGLO para los propósitos del trabajo (atención primaria) y también colaborará en la definición de los informes básicos (salidas) que se requieren.

El UNICEF aportará los indicadores y el sistema de información de base comunitaria que ha diseñado e, igualmente, colaborará en la definición de los informes básicos (salidas) que se requieren.

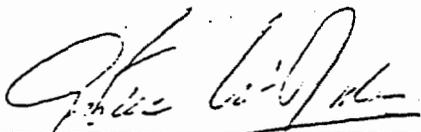
CARTA DE INTENCIÓN MSPAS-USAID-OPS/OMS-UNICEF

Página -2-

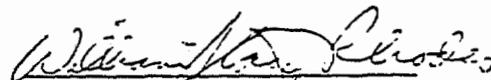
El Ministerio y las tres Agencias harán en forma conjunta la relación entre los dos aspectos (manual y computarizado) de cada módulo, la prueba del módulo en Areas escogidas y el plan de ejecución en la totalidad de Areas de Salud del país.

El Ministerio de Salud Pública y Asistencia Social, la USAID, la OPS/OMS y el UNICEF elaborarán el plan detallado de trabajo para el desarrollo de estos compromisos.

Guatemala, Marzo 16 de 1994



GUSTAVO HERNANDEZ POLANCO
Ministro de Salud Pública
Y Asistencia Social



WILLIAM STACY RHODES
Director USAID/Guatemala



JACOBO FINKELMAN MORGENSTEIN
Representante OPS/OMS



THIERRY DELRUE
Coordinador de Programas
UNICEF - Guatemala

ANNEX 6

GUATEMALA CHILD SURVIVAL PROJECT

**LIST OF DOCUMENTS PRODUCED DURING THE CONTRACT, BY
COMPONENT**

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
LIST OF DOCUMENTS
EXPANDED PROGRAM OF IMMUNIZATIONS COMPONENT

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTA- TION		LANGUAGE		AUTHOR
			paper	disk	spa	eng	
PAI 1	Diagnóstico funcional de la cadena de frío	Diciembre 1995	X		X		L. de Fuentes J. Pecks
PAI 2	Administración de equipo e insumos/Soporte para adquisiciones locales	Diciembre 1995	X		X		J. Pecks
PAI 3	Capacitación en servicios a técnicos de mantenimiento-Resumen evento	Diciembre 1995	X		X		M. A. Pacajó
PAI 4	Manual de Administración de vehículos	Marzo 1996	X		X		M.A. Pacajó
PAI 5	Capacitación sobre técnicas de mantenimiento preventivo a pilotos del MSPAS	Junio 1996	X		X		M.A. Pacajó
PAI 6	Elaboración de un sistema electrónico de datos (control de vehículos-SIGLO)	Noviembre 1995	X	X	X		OPS-C&M
PAI 7	Reparaciones efectuadas a vehículos y equipo de cadena de frío en Talleres Departamentales del país	Diciembre 1994	X		X		M.A. Pacajó
PAI 8	Descentralización del mantenimiento correctivo y preventivo	Diciembre 1994	X		X		J. Pecks
PAI 9	Reporte de consultoría de Corto Plazo en mantenimiento y administración del Sistema de Transporte del MSPAS y plantear recomendaciones	Julio 1993	X		X		Lic. Carlos Pereira

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
 LIST OF DOCUMENTS
 EXPANDED PROGRAM OF IMMUNIZATIONS COMPONENT (Cont.)

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTATION	LANGUAGE	AUTHOR
PAI 10	Metodología para promoción local: Guías para educación alimentaria: - Educación, - Comunicación, - Conceptos Básicos		X	X	INCAP AID
PAI 11	Estudios para determinar: a) estrategias de prom. y manten. de coberturas b) organización comunitaria	Diciembre 1994	X	X	Grupo CGS
PAI 12	Manual de Normas del Programa Ampliado de Inmunizaciones: - Introducción - Vacunas del Prog. Nac. de Inmuniz. Manual de Vigilancia: - Enfermedades y su Vigilancia - Logística del Prog. Nac. de Inmuniz.	1995	X	X	V. Lara

151

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
 LIST OF DOCUMENTS
 ORAL REHYDRATION THERAPY - ACUTE RESPIRATORY INFECTIONS COMPONENT

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTATION		LANGUAGE		AUTHOR
			paper	diske	spa.	eng.	
TRO-IRA 1	Promoción local de uso correcto de SRO y líquidos caseros y soporte financiero-administrativo. a promoción local de TRO: Listado 1- Material de Promoción: - Estampas con info. s/cólera - Material audiovisual promoc. - Materiales de prevención y tratamiento del cólera - Cuadernillos de requisitos mínimos en ferías municipales - Cuadernillos del Acdo. Gub. del reglamento y venta de alimentos y bebidas no alcohólicas en la vía pública - Hojas de requisitos mínimos para casetas y carretillas. Rotafolios	1996	X X X X X X X		X X X X X X X		MSPAS/C&M MSPAS/C&M MSPAS/C&M MSPAS/C&M MSPAS/C&M MSPAS/C&M MSPAS/C&M

128

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
LIST OF DOCUMENTS
ORAL REHYDRATION THERAPY - ACUTE RESPIRATORY INFECTIONS COMPONENT (Cont.)

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTATION		LANGUAGE		AUTHOR
			paper	diske	spa.	eng.	
TRO-IRA 2	Capacitación de Personal: Listado 2- Material de capacitación:	1996					
	- Afiches: enfermedad diarreica aguda, niño con tos o dificultad para respirar, atención al niño con problema de oídos o dolor de garganta, paciente con diarrea.		X		X		MSPAS/C&M
	- Trifoliales: atención del niño con tos o dificultad para respirar, manejo de paciente con diarrea, Prevención y tratamiento de IRA		X		X		MSPAS/C&M
	- Cuadri-foliar: niño con infección respiratoria aguda		X		X		MSPAS/C&M
	- Módulos: Manejo del paciente con diarrea, prevención de la diarrea, atención niños con infección respiratoria aguda		X		X		MSPAS/C&M
	- Cassettes de control de IRA y evaluación del paciente deshidratado		X		X		MSPAS/C&M
	- Slides sobre entrenamiento en IRA			X		MSPAS/C&M	
TRO-IRA 3	UDAMIN	Abril 1996	X		X		V. Lara
TRO-IRA 4	Libro: Conferencia nacional sobre avances control IRA	Octubre 1994	X		X		MSPAS/C&M
TRO-IRA 5	Libro: Enfermedades diarreicas	sin fecha	X		X		MSPAS/C&M
TRO-IRA 6	Libro: Prevención de la diarrea	sin fecha	X		X		MSPAS/C&M

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
LIST OF DOCUMENTS
ORAL REHYDRATION THERAPY - ACUTE RESPIRATORY INFECTIONS COMPONENT (Cont.)

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTATION		LANGUAGE		AUTHOR
			paper	diske	spa.	eng.	
TRO-IRA 7	Libro: Manejo del paciente con diarrea	sin fecha	X		X		MSPAS/C&M
TRO-IRA 8	Investigación sobre experiencias de distribución de Sales de Rehidratación Oral a Nivel Comunitario por parte de Organizaciones No Gubernamentales	Marzo 1996	X		X		M.A. Pacajó
TRO-IRA 9	Libro: Control de infecciones respiratorias agudas	1994	X		X		MSPAS/C&M
TRO-IRA 10	Informe de evaluación de calidad de capacitación institucional y de voluntarios		X		X		Armando León
TRO-IRA 11	Material desarrollado: - Cartel motivador, cassettes, spot de radio, spot de televisión - Gráficos: Conversemos sobre pulmonía (Neumonía)	Abril-Mayo 1996 Marzo 22, 1996	X		X		MSPAS/C&M/ BASICS
	Estrategia del comportamiento de comunicación en la prevención de la mortalidad por neumonía en menores de dos años en cinco municipios del altiplano guatemalteco	Junio 1996	X		X		F. Puac/P.Barriga
TRO-IRA 12	- Diseño de mecanismos para promover SRO a nivel comunitario	1993-1996	X		X		M.A. Fión M.A. Pacajó
	- Diseño de un sistema de logística que garantice la disponibilidad permanente de SRO en la comunidad		X		X		M.A. Fión M.A. Pacajó

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
 LIST OF DOCUMENTS
 ORAL REHYDRATION THERAPY - ACUTE RESPIRATORY INFECTIONS COMPONENT (Cont.)

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTATION		LANGUAGE		AUTHOR
			paper	diske	spa.	eng.	
TRO-IRA 13	Sistema de información de voluntarios -SIGLO-	1996	X		X		D. Mejía
TRO-IRA 14	Libro: Semántica y Manejo Popular de las Infecciones Respiratorias Agudas (IRA) en Cuatro Areas de Guatemala	Febrero 1995	X		X	X	INCAP
TRO-IRA 15	Análisis Preliminar de la Integridad de las estadísticas vitales en infección respiratoria aguda	Junio 1996	X		X		MSPAS/C&M

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
 LIST OF DOCUMENTS
 HEALTH MANAGEMENT INFORMATION SYSTEM COMPONENT

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTA-TION		LANGUAGE		AUTHOR
			paper	dis	spa	en	
SIGS 1	Sistema de Registro de Personal Voluntario en las jefaturas de Area de Salud	Noviembre 1995	X		X		OPS/C&M
SIGS 2	Manual de guías para análisis, interpretación y uso de la información	Abril 1996	X	X	X		R. Bustamante
SIGS 3	Publicación de 3 boletines "Avances en Materno Infantil"	1995	X		X		MSPAS/USAID /C&M
SIGS 4	Bases conceptuales de Sistema de Información para la Gestión Local - SIGLO-	Marzo 1995	X		X		R. Bustamante
SIGS 5	Adquisición de computadoras e impresoras para las Areas de Salud y Unidades del nivel central	Junio 1996	X	X	X		D. Mejia
SIGS 6	Diseño e implementación de programa computarizado para manejo eficiente de la información financiera y contable (SIGLO).	Nov. 1995	X	X	X		OPS/C&M

162

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
 LIST OF DOCUMENTS
 HEALTH MANAGEMENT INFORMATION SYSTEM COMPONENT (Cont.)

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTA-TION		LANGUAGE		AUTHOR
			paper	dis	spa	en	
SIGS 7	Adquisición de repuestos y obtención de servicios de mantenimiento de equipos/Diseño, producción de Transporte y distribución de formas	Mayo 1996	X		X		L. Carranza
SIGS 8	Software y Manual de Usuario de SIGLO: Apertura: -Entorno Geográfico -Plan Operativo Anual-POA- -Instituciones -Organizacion Funcional Administrativo: -Recursos Humanos -Proveedores -Suministros -Bienes y Equipos Financiero SIIS Instrucciones Permanentes	Nov. 1995	X		X		OPS/C&M
SIGS 9	Manual de Usuario del Sistema Mecanizado de Contabilidad	Sin fecha	X		X		C&M

63

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
 LIST OF DOCUMENTS
 HEALTH MANAGEMENT INFORMATION SYSTEM COMPONENT (Cont.)

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTA-TION		LANGUAGE		AUTHOR
			paper	dis	spa	cn	
SIGS 10	Subsistema de Información de Base Comunitaria	Junio 1996	X		X		R. Bustamante
SIGS 11	20 EER en diecinueve (19) Areas: 1. Baja Verapaz 11. Amatlán 2. Suchitepéquez 12. Jutiapa 3. Jalapa 13. Santa Rosa 4. El Progreso 14. Izabal 5. Sololá 15. Totonicapán 6. San Marcos 16. Zacapa 7. Retalhuleu 17. Quetzaltenango 8. Huchucutenango 18. Alta Verapaz 9. Chiquimula, Chortí 19. Ixcán 10. Chiquimula, A. Perla 20. Guatemala	De agosto 1993 a mayo 1996	X	X	X		D. Mejía
SIGS 12	Revisión Metodológica de EER	Junio 1996	X	X	X		L. C. Gómez
SIGS 13	Sistema de Vigilancia Epidemiológica Revisión de Experiencias Nacionales	Febrero 1994	X		X		Oscar Cordón
SIGS 14	Investigación Operativa en Uso de Información de Salud a Nivel Local	Junio 1995	X		X		David Nelson

199

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
LIST OF DOCUMENTS
IMPROVED ADMINISTRATIVE SYSTEMS COMPONENT

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTA- TION		LANGUAGE		AUTHOR
			paper	disk	spa	eng	
SAM 1	Análisis del sistema presupuestario y financiero del MSPAS	Febrero 1993	X		X		Pedro Rosado
SAM 2	Presupuesto y Contabilidad: Manual de Administración Presupuestaria	Diciembre 1994	X	X	X		M.A. Fión
SAM 3	Administración financiera	Diciembre 1995	X	X	X		M.A. Fión
SAM 4	Sistema de Administración de Personal	Febrero 1996	X		X		Amilcar García
SAM 5	Admon. de los fondos del proyecto	Mayo 1996	X	X	X		D. Mejía
SAM 6	Logística (Suministros, inventarios, control de vehículos)	Abril 1995	X		X		M.A. Pacajó
SAM 7	Red de Establecimientos	Mayo 1995	X		X		R. Bustamante
SAM 8	Sistema interno de Control	Junio 1996	X		X		D.Mejía/M.Fión
SAM 9	Apoyo y participación en la preparación, coordinación, aprobación y consolidación del POA	Junio 1996	X	X	X		R. Bustamante
SAM 10	Procedimiento a seguir por los gestores de las Areas de Salud para el Control de las Operaciones Financieras	Mayo 1996	X	X	X		D. Mejía
SAM 11	Manual de Usuario de SIGLO	Nov. 1995	X	X	X		OPS/C&M
SAM 12	Uso apropiado de Manuales Administrativos	Mayo 1996	X	X	X		D. Mejía

12

CLAPP & MAYNE INC. - GUATEMALA CHILD SURVIVAL PROJECT
 LIST OF DOCUMENTS
 IMPROVED ADMINISTRATIVE SYSTEMS COMPONENT (Cont.)

INDEX ID #	TITLE OF THE DOCUMENT	DATE	PRESENTA-TION		LANGUAGE		AUTHOR
			paper	disk	spa	eng	
SAM 13	Capacitación en servicio a unidades del MSPAS y AS sobre sistemas administrativos, financiero y contabilidad: Programación de actividades. Taller de Información	Dic. y Junio 1994	X		X		M. A. Fión
SAM 14	Estudios Rápidos del Proceso Gerencial	Junio 1996	X		X		R. Bustamante
SAM 15	Manual de Compras	Sept. 1992	X		X		A. Guzmán
SAM 16	Informe de Capacitaciones Septiembre 1992 a Junio 1995	Junio 1996	X	X	X		M.A. Fión
SAM 17	Adquisición, contratación, almacenamiento, distribución y provisión de bienes y servicios requeridos por unidades MSPAS	Junio 1996	X	X	X		D. Mejía

165

ANNEX 7

**GUATEMALA CHILD SURVIVAL PROJECT
LIST OF PEOPLE EMPLOYED BY THE CONTRACTOR
(in alphabetical order)**

NAME	POSITION
Aguilar Duarte, Julia Raquel	Gestor (Promoter of Improved Health Administrative Systems)
Aguirre, Milton	Advisor
Aitken, Riita Liisa (MSH)	Advisor
Alonzo, Eusebio	Driver
Alvarado Sosa, Katia	Secretary Support
Arévalo Moreira, Zaira Jeanette	Secretary
Arriola Sandoval, Gildardo	Administration
Arriola Sandoval, José Antonio	Gestor
Auxila, Paul (MSH)	Advisor
Barillas, Angel	Driver
Barillas Salazar, Víctor	Driver
Barillas, Francisco de Jesús	Guard
Bustamante Alvarez, Rodrigo	Chief of Party (Resident International Advisor)
Cantillo, Marcio (MSH)	Epidemiologist
Cardona, Edwin	Gestor - Systems Analyst
Carranza G., Lesbia Leticia	Gestor
Castillo, Andrés	Gestor
Cifuentes, David	Gestor
Corado López, Raúl Darío (MSH)	Systems Programmer
Cordón, Oscar	Advisor
Cossich, Carmen Morales de	Secretary
Dávila, Walter E.	Gestor
Escalante, Pedro Ignacio	Systems Programmer
Figueroa Burgos, Jorge David	Gestor
Fión, Marco Antonio	Financial Assistant
Fuentes, Juan Leonardo (MSH)	Systems Programmer
Fuentes, Lucrecia Peinado de	Gestor - Regional and National Advisor
García López, Amilcar Efraín	Gestor
García, Felidey	Driver
Girón Flóres, Marwyn	Gestor
Girón Ligorria, Victoria	Administrator
Gómez, Luis Carlos	Advisor
Grueso, Reinaldo	Technical Director in Health C&M
Guzmán, Alida	Advisor
Haro, Arlette	Gestor
Hernández, Manuela	Gestor
Herrera, Julio	Gestor
Jacobs, Ericka	Gestor
Juárez, Rigoberto	Systems and Networks Technician
Lara, Víctor	EPI-ORT-ARI Advisor (Resident International Advisor)

NAME	POSITION
León, Armando	EPI-ORT-ARI Support
Leonardo Reyes, Julio Antonio	Gestor
Lepe, Claudia Patricia	Secretary
Lopera Vieco, Juan Guillermo	Information Systems Advisor
López Velásquez, Carlos Efraín	Gestor
López, Edgar	Cold Chain Data Entry
López, Edgar	Driver
López y López, Guillermo	Gestor
Mancilla, Oscar Rutilio	Guard
Manrique A., Leonardo	Gestor
Marroquín, Tereso	Guard
Martínez, Mynor	Gestor
Mejía Chamale, Jaime	Concierge
Mejía Pimentel, Danilo	Financial Advisor
Méndez Ronquillo, Oscar	Gestor
Montalvo, Moraima	Controller C&M
Monzón, María Luisa de	Gestor
Mora, Hugo	Gestor
Morales, María Rocio	Secretary
Morán, Ivonne E.	Translation
Nelson, David (MSH)	Advisor
Ortiz, Luisa Pineda de	Secretary
Pacajó, Miguel Angel	Financial Assistant
Paiz, Zeledón Gil	Gestor
Pastor, Juan Pablo	Microcenters Advisor
Pastor, Max Oswaldo (MSH)	Systems Programmer
Pecks, Jorge	Procurement
Peña, José M.	Chief of Party (Resident International Advisor)
Pereira, Carlos	Advisor
Pérez, Edgar	Gestor
Pimentel, Vilma Leticia	Officinst/Concierge
Pineda, José Francisco	Administrative Advisor
Posner, Lawrence	President C&M
Puac, Francisco	ARI Communication Advisor
Puente, Marlon Alfredo	Inventories
Quan, Carlos	ARI Medical Advisor
Reyes, Eugenia	RAS Support
Ríos Yambó, Ramón (MSH)	Senior Information Systems Advisor (Resident International Advisor)
Rodas, Mario Romeo	Gestor
Rodríguez, Julio César	Warehouser Control
Rosado, Pedro	Financial Management Advisor

NAME

POSITION

Ruano Guzmán, Geovanni Francis	Gestor
Santos, José María	Gestor
Servent, Ana Carolina	Systems Support
Sosa Rivera, Gilda de	Gestor
Stewart, Stephen Omer	Advisor
Tuy, Julio Alberto	Gestor
Urrutia, Juan	DDC/ORT Advisor
Valdés G., Mara Ivonne	Secretary
Vásquez, Héctor Manuel	Gestor
Vélez, Jorge Iván	Advisor
Watt, Margaret (MSH)	Advisor