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INITIAL SITE VISIT TO GUATEMALA

October 10-17, 1989

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CONTENTS

	Contents	
	Acronyms	
	Executive Summary	1
1.	Purpose of Visit	5
2.	Activities	6
3.	Background	7
4.	Findings	8
	INCAP's Current Work in Maternal and Neonatal Health and Nutrition	8
	Plans to Develop Interventions and Demonstration Projects	16
	Potential for MotherCare Input in the Area of Communications	20
	Decentralization of INCAP Assistance Within the Region	22
	INCAP Units that Could be Tapped and/or Strengthened	24
	USAID/Guatemala	27
5.	Suggestions for Potential Collaboration Between MotherCare and INCAP	29
6.	Follow-up Planned	32
	Appendix A - List of Contacts	34
	Appendix B - Background on Guatemalan Health Situation	35
	Appendix C - Perinatal Clinical History, MOH	38

ACRONYMS

DHS	-	Demographic Health Survey
IMR	-	Infant Mortality Rate
INCAP	-	Instituto de Nutricion de Centro America y Panama
LBW	-	Low birth weight
MCH	-	Maternal and child health
MOH	-	Ministry of Health
ORT	-	Oral rehydration therapy
PAHO	-	Pan American Health Organization
PHC	-	Primary health care
PVO	-	Private voluntary organization
ROCAP	-	AID Regional Office for Central American Programs
SILOS	-	Local health system
TBA	-	Traditional birth attendent
UNICEF	-	United Nations Children's Fund
USAID	-	United States Agency for International Development
WHO	-	World Health Organization

TRIP REPORT: GUATEMALA, OCTOBER 10-17, 1989

EXECUTIVE SUMMARY

MotherCare staff traveled to Guatemala at the invitation of the AID Regional Office for Central American Programs (ROCAP) to investigate potential MotherCare assistance to the Instituto de Nutricion de Centro America y Panama (INCAP). Specific objectives as defined by ROCAP were to: 1) collect information about INCAP's on-going projects in maternal and neonatal health and nutrition, 2) explore the potential for MotherCare assistance to INCAP, specifically in the area of communications and in the organization's regional efforts, and, 3) determine the potential for involving INCAP staff as consultants to MotherCare.

Discussions were held with Dr. Hernan Delgado, who will assume the leadership of INCAP in early 1990, and selected Nutrition and Health Division staff working under the ROCAP-financed TRO Project. The TRO Project is a regional Child Survival effort to promote and strengthen programs in oral rehydration therapy, growth monitoring and child survival education. Since 1988, the project has also supported applied research in maternal health and nutrition.

INCAP is carrying out important and in some cases pioneering work to identify risk factors and causes of maternal and neonatal mortality. Applied research projects of particular interest to MotherCare include:

Department of Quetzaltenango

- Dr. Eric Boy: Validation of maternal and neonatal indicators of risk, including several new anthropometric indicators, and the development of appropriate screening tools that incorporate these indicators for community, health clinic and hospital use. (data collection on-going)

- Dr. Barbara Schieber: Investigation of TBA and health provider knowledge and practice related to the identification and management of high risk pregnancies and neonates. (data collection completed)

- Lic. Teresa Gonzalez-Cossio: Measuring the effects of nutritional supplementation during lactation on milk production of malnourished women and their infants' growth. (data collection on-going)

- Measuring the level of smoke in homes with and without ventilated cooking/heating fires and its effect on pregnancy outcome, especially birth weight. (Initial data collection on smoke levels complete, principal investigator left INCAP.)

Village of Santa Maria de Jesus, Sacatepequez:

- Dr. Alfred Bartlett: Case-control study of intrapartum and neonatal deaths to determine associated risk factors and causes. (Completed 9/88)

- Dr. Alfred Bartlett: Prospective study of intrapartum, neonatal and early post-neonatal deaths, with community detection and treatment of life-threatening conditions of the neonate. (10/88-10/89)

Hospital San Juan de Dios, Guatemala City:

- Dr. Eric Boy: Study of issues in the obstetrics service, including high risk screening and treatment practices. Study led to the design of a computerized perinatal information system, including a perinatal record which has been adopted by the hospital. (completed)

National:

- Thesis Candidate: Study of maternal mortality in 26 government hospitals throughout the country to document rates and causes of death. (Data collection completed.)

INCAP will develop a series of maternal and neonatal health interventions based on findings from these studies. In the Department of Quetzaltenango, INCAP is working with the Departmental Health Office, the University Teaching Hospital and local PVOs to develop an integrated maternal/child health demonstration area in which maternal and neonatal interventions will be emphasized. In Santa Maria de Jesus, an intervention targeting the most frequent causes of intrapartum and neonatal death will be developed. Both projects will train TBAs and health providers to use a risk approach to the detection and management of problems.

USAID/Guatemala is currently developing a maternal/neonatal health strategy and recently held a symposium to present and discuss studies that have been carried out in the country. USAID/Guatemala funded the earlier case-control and prospective studies in Santa Maria de Jesus and has committed funding for two of the three components of the follow-on intervention; the expanded case-control study to determine utilization of oxytocin nationally has not yet been funded and

it is not clear at this point whether or not the Mission will support it. USAID/Guatemala is also interested in the Quetzaltenango intervention and will probably include funding for it under the new bilateral project to begin in 1992. Procurement restrictions may, however, hamper interim funding. INCAP is also discussing funding for this demonstration area with the MOH.

While INCAP is positioned to develop technologies and interventions of international significance, its researchers may require assistance in their efforts to translate research findings into workable service delivery models. They could be expected to benefit from carefully-structured technical assistance during the development and evaluation of their intervention strategies (i.e. TBA/health provider training curriculum, information system, evaluation design). Input in the area of communications would also be useful. Initial studies have identified specific problems that may be amenable to a communications approach, i.e. community demand for oxytocin during labor, family and TBA failure to recognize and seek treatment for danger signs of pregnancy, labor and sickness during the neonatal period. The active participation of INCAP's Applied Anthropology and Documentation Units would be critical to the utilization of this type of input.

On the basis of this short visit, it appears that INCAP and MotherCare have many common areas of interest and expertise where collaboration could benefit both agencies. The following list of suggestions for potential MotherCare assistance was presented to Dr. Delgado and Melody Trott for consideration:

- **MotherCare support for INCAP attendance at selected conferences and seminars, enabling researchers to present the findings of on-going research and learn from experiences in other countries.** INCAP is involved in pioneering work that deserves and would benefit from wider dissemination. Participation in three up-coming conferences will be explored: the Jamaica Perinatal Symposium (Jamaica MOH, February 1990), the Maternal Anthropometry Symposium (MotherCare and WHO, April 1991), and the Risk Assessment Workshop (Population Council, February 1990).

- **MotherCare technical assistance to INCAP during the design, implementation and evaluation of demonstration and/or applied research projects.** As mentioned above, these might include consultancies in training design for TBAs and auxiliary nurses, development of community information and education efforts, and development of intervention-specific indicators and evaluation plans.

- **MotherCare funding and technical support for demonstration or operations research projects developed by INCAP.** If USAID/Guatemala or MOH funding is not possible over the short-term, the intervention project proposed by Dr. Barbara Schieber in Quetzaltenango (TBA/health provider training and development of support systems) could be presented to MotherCare for funding consideration. Other such projects could also be considered.

- **MotherCare assistance to INCAP for a pilot communications program directed at reducing prenatal, intrapartum and neonatal risk factors and related mortality.** This would best be developed with either the Quetzaltenango or the Santa Maria de Jesus project. An in-depth assessment would be required to determine the parameters for MotherCare assistance.

- **Production by INCAP of training modules for use with health professionals in other Latin American and Caribbean countries.** This would be carried out under subcontract to MotherCare, and include topics on which INCAP has special expertise, i.e. prevention and treatment of low birth weight, nutrition supplementation during pregnancy and lactation.

Dr. Delgado's reaction to the above list was positive, as was ROCAP's. He encouraged MotherCare's involvement in Guatemala but, for a variety of reasons, was not enthusiastic about the potential for collaborative efforts in other Central American countries.

Follow-up discussions with Dr. Delgado and Melody Trott will be held during their planned visit to Washington in November. At that time, priorities and next steps will be defined. In the interim, MotherCare will contact USAID/Guatemala and the AID-LAC Bureau to better define their view of the opportunities for MotherCare involvement.

1. PURPOSE OF VISIT

MotherCare staff member Patricia Taylor visited Guatemala from October 10-17, 1989, with the concurrence of the AID Regional Office for Central American Programs (ROCAP). The purpose of this visit was to meet with the Instituto de Nutricion de Centro America y Panama (INCAP) about their on-going work in maternal and neonatal health and nutrition and to explore potential areas for MotherCare/INCAP collaboration.

In an initial meeting, Melody Trott, ROCAP Advisor outlined the specific areas of interest to ROCAP and recommended the following activities during this first visit:

- Collection of information about INCAP's on-going work and future interests in the areas of maternal and neonatal health and nutrition.

- Investigation of possible MotherCare assistance, through the Manoff Group, in the area of communications. This is an area ROCAP considers to be of great importance but one that is generally felt to be weak.

- Investigation of possible MotherCare assistance to INCAP for activities outside of Guatemala, particularly in El Salvador where the potential for maternal health interventions appears to be high. This was seen as a way to help INCAP strengthen its assistance and image in the Member Countries, a priority identified in the evaluation.

- Investigation of the possibilities for MotherCare purchase of technical assistance and other services from INCAP.

INCAP Member Countries, and ROCAP, have identified the application of research findings to action programs as their top priority. Melody emphasized that, above all, proposed involvement with MotherCare should help INCAP to develop its core staff of young researchers and its ability, as an organization, to apply research findings to service delivery programs.

A more in-depth assessment for potential MotherCare assistance in Guatemala was originally proposed. At this initial stage, however, ROCAP requested that MotherCare restrict itself to discussions with INCAP's director and staff. Both ROCAP and USAID/Guatemala have recently evaluated their child survival programs and are in the process of revising and/or planning for new projects. USAID/Guatemala is renegotiating the terms of its current bilateral project and has begun planning for the expansion of its efforts in maternal health under a new

bilateral initiative which should begin in 1992. ROCAP will begin planning for a new five year project with INCAP in the coming months. Both entities expressed an interest in working with MotherCare in the future, but both were also concerned that MotherCare interviews outside of INCAP could create unrealistic expectations before the final directions for their new programs are clear.

2. ACTIVITIES

During this visit meetings were held with Dr. Hernan Delgado, the current Director of INCAP's Nutrition and Health Division who will assume the leadership of INCAP in January, and the following members of his staff:

Dr. Barbara Schieber, Researcher, Quetzaltenango
Dr. Alfred Bartlett, Child Survival Advisor, Johns Hopkins University
Dr. Eric Boy, Researcher, Quetzaltenango Projects
Dr. Adan Montes, INCAP Representative to Guatemala
Lic. Magda Fisher, INCAP Documentation and Public Relations Coordinator
Lic. Veronika de Palma, TRO Project Documentation Coordinator
Lic. Elena Hurtado, Applied Anthropology
Lic. Isabel Nieves, Food Support, Women's Programs
Dr. Jorge Hermida, Operations Research, TRO Project
Dr. Rosa Amurrio, Operations Research, TRO Project
Dr. Teresa Gonzalez-Cossio, Nutrition Supplementation, Quetzaltenango
Dr. Rebecca Arrivillaga, Training
Dr. Francisco Chew, Clinical Nutrition Unit

I also accompanied Dr. Bartlett and Elena Hurtado to Santa Maria de Jesus, Sacatepequez, the site of Dr. Bartlett's perinatal mortality study and other TRO Project research into the epidemiology of chronic diarrhea. During this visit, I was able to attend an interesting meeting with the town's 13 TBAs and received a briefing on the findings of the prospective study of neonatal morbidity and mortality, which is just coming to a close.

An initial briefing and several interim meetings were held with Melody Trott, the ROCAP Officer who is most closely involved with INCAP's Nutrition and Health Division and the TRO Project.

A briefing with USAID Guatemala Population Officer, Jane Lyon and Health Officer, Lynn Gorton was also held. Liliana Ayalde, head of the health and population office of USAID/ Guatemala, was out of Guatemala during this visit.

Dr. Alfred Bartlett, Child Survival Advisor to INCAP on the TRO Project, coordinated my visit and provided invaluable information about INCAP's on-going and planned activities in maternal and neonatal health and nutrition.

3. BACKGROUND

Instituto de Nutricion de Centro America y Panama (INCAP)

INCAP was founded in 1949, to serve the countries of Central America and Panama. INCAP's mission is "to contribute to the development of the nutritional sciences, promote their application and strengthen the capacities of the Member Countries... to solve their food and nutritional problems." (INCAP, "Promoting Child Survival Activities") While INCAP is administered by the Pan American Health Organization (PAHO), the organization maintains an independent board of directors made up of the Ministers of Health of the Central American countries and the Director of PAHO. In the 1960s and 70s, INCAP carried out historic research on childhood malnutrition and its relation to infection and growth and development. Prior work has also addressed the identification of risk factors for LBW and infant mortality.

INCAP's current director is Dr. Luis Octavio Angel. Dr. Hernan Delgado, the current director of INCAP's Nutrition and Health Division, will assume the position of INCAP director when Dr. Angel retires early in 1990.

The organization's research, training and technical assistance activities are carried out by three technical divisions: Nutrition and Health, Food and Nutrition Planning, and Agricultural Sciences. These divisions work with the coordinating offices (Training and Human Resources Development, Technical Cooperation, and Investigation) to support projects and other activities in the Member Countries. Planning, Administration and Documentation Units support the work of the divisions and the coordinators.

INCAP is supported by contributions from its member countries, PAHO, AID and a variety of other funding agencies and foundations. At present, over 50% of INCAP's budget is provided by AID, primarily through ROCAP. ROCAP currently funds two large projects - the TRO Project, a 6 year, $6,000,000 effort to support ORT, growth monitoring and child survival education throughout Central America and a food policy support project, dealing with research on donated commodities, food policy, etc.

The TRO Project, which is under the direction of the Nutrition and Health Division, is of specific interest to MotherCare. Major project strategies in support of child survival include:

1. Promotion of effective national strategies and plans
2. Strengthening of the health service delivery and information systems
3. Improving professional, paraprofessional and community workers' skills and public education
4. Disseminating scientific and technical information
5. Quality control of oral rehydration salts
6. Applied and basic research

The TRO Project is comprehensive in scope, calling for INCAP to work with both public and private organizations and to support them in various ways. It reinforces two region-wide initiatives supported by PAHO, UNICEF and AID - the decentralization of planning and management to the Health Area or Sistema Local de Salud (SILOS) and the establishment and support of reference training centers (generally teaching hospitals) and units within each of the Central American countries. TRO Project assistance is directed towards strengthening and working with these entities on multi-center studies and projects.

The TRO Project should result in the transfer of new child survival technologies and information to the member governments of Central America and the application of this technical knowledge to programming in MCH and child survival. While the project's principal areas of focus are ORT, growth monitoring and education, in 1988 these were expanded to include applied research into low birth weight and maternal and neonatal mortality. This element of the project is discussed below.

4. FINDINGS

INCAP's Current Work in Maternal and Neonatal Health and Nutrition

INCAP is carrying out important and in some cases pioneering research on maternal risk factors related to low birth weight (LBW) and on intrapartum and neonatal risk factors of infant mortality. This includes development of indicators, screening tools, and risk scales for use at community, health post, and hospital levels.

The applied research component of the TRO Project includes five studies, initiated in 1988, "to investigate the

biological, environmental and socio-cultural factors related to high-risk pregnancy and low birth weight in infants." (INCAP) Most of these are being carried out in Quetzaltenango. In addition, other USAID/Guatemala-funded studies in Santa Maria de Jesus, Sacatepequez are investigating the causes and associated risk factors of intrapartum, neonatal and early post-neonatal infant mortality. All of these studies are designed to produce findings that can be applied to intervention programs. A number of other smaller studies are also being carried out by graduate students working for INCAP. INCAP's current studies include:

a. **Validation of Indicators of Risk of Low Birth Weight and the Development of Appropriate Technologies for Evaluating Fetal Growth,** Principal Investigator, Dr. Eric Boy. Funding, ROCAP/TRO Project.

This study is being carried out in Quetzaltenango with a hospital-based and a community-based sample of newborns. It involves collecting a series of maternal anthropometric, clinical and socio-demographic variables to identify the most important maternal risk factors and clinical measurements for low birth weight and neonatal mortality. It is also attempting to test the predictive value of specific anthropometric indicators of risk in the newborn. In several cases, new anthropometric measures are being tested. The community cohort and a portion of the hospital cohort are monitored during the first month of life to measure morbidity and mortality. A separate cohort of healthy pregnancies are also being monitored using ultrasound to establish reference standards for fetal growth in this indigenous, highlands population. The most useful indicators identified through this study will be used to develop tools for high risk screening at the community, health center and hospital levels. According to Dr. Boy, the most hopeful anthropometric measurements being tested and the approximate cutoff points are:

Maternal Indicators

Community:	Lower leg (calf) circumference (felt to be a surrogate for weight for height, cutoff to be determined through study)	
	Height	<145 cm
	Head circumference	<50 cm
	Arm circumference	<24 cm
Clinic:	Fundal height (monitoring)	

Uterine girth (monitoring)
Skin fold (suprailliac, paraumbilical)

Hospital: Ultrasonography; a variety of measures including fetal foot length

Neonatal Indicators

Community: Foot length (as a surrogate of gestational age, cutoff to be established)
Circumference of thorax <29 cm
Arm circumference <8.5 cm

Researchers report that maternal lower leg circumference (a new measure being tested in this study) appears to be the strongest predictor of poor pregnancy outcome in this population. In the rural setting, lower leg circumference is a practical measurement that can be taken easily using a tape similar to the MUAC tape. The researchers feel that this measurement reflects both chronic and acute undernutrition as well as workload.

Neonatal foot length is another measure that is showing strong predictive value and that researchers hope to transfer into pictorial tools that can be used by TBAs and health promoters in the communities. At the clinic (health post) level, it is anticipated that screening tools will include graphs for estimating gestational age from fundal height and position from uterine girth and for monitoring weight gain. The findings of this study should be complete by early 1990.

b. **Maternal Mortality in National Hospitals,** Funding - ROCAP/TRO Project:

This is a study of rates and diagnoses of maternal mortality in 24 government-run hospitals throughout the country. It involves review of hospital records and is thesis research for a local medical student. Findings appear to contradict MOH figures which estimated maternal mortality to be 11/10,000 live births in 1988. Initial analysis shows a rate closer to 22/10,000 with the principal causes reported to be sepsis, hemorrhage and eclampsia. Study results should be completed by early 1990.

c. **Case-control study of intrapartum and neonatal mortality,** Principal Investigator, Dr. Alfred Bartlett. Funding - USAID/Guatemala:

This study was carried out in Santa Maria de Jesus, Sacatepequez, a rural municipality of 10,000 people, close to the town of Antigua. The purpose of the study was to identify the risk factors and causes of intrapartum and neonatal death by comparing cases (families experiencing an intrapartum or neonatal death) in 1987 and 1988 with controls (families with live births during the same period). A total of 61 controls were studied. Univariate and multivariate analysis were used to identify the following variables associated with:

Intrapartum Deaths*	-	Intramuscular injection of oxytocin by the TBA during labor
	-	Performance of 3 or more vaginal exams by TBA during labor (This is felt to be associated with the occurrence of abnormal labors and not a direct cause of intrapartum death)
Neonatal Deaths**	-	Mother's estimate of infant as "smaller than normal"
Both	-	Maternal Illiteracy
	-	Primagravida
	-	Failure to use "modern" prenatal care
	-	Inter-birth interval <14 months

Birth asphyxia (72%) and asphyxia with trauma (17%) were the most frequently suggested causes of intrapartum death. Sepsis (66%) was the most frequently suggested cause in the neonate after day 1, by reported signs. No neonatal tetanus was detected. Less frequent medical events associated with extremely high risks of neonatal mortality included prematurity, prolonged rupture of membranes, abnormal fetal presentation and twins.

Notes:

* Intrapartum deaths are defined as all infants either stillborn (without signs of life) or dying in the first day of life.

** Neonatal deaths are defined as all infants dying during the first month of life, after the first 24 hours.

d. **Prospective study of intrapartum, neonatal and post-neonatal infant deaths.** Principal Investigator, Dr. Alfred Bartlett. Funding - USAID/Guatemala:

This a follow-on to the case-control study described above, which has been carried out from September 1988 to September 1989, in Santa Maria de Jesus. Specific objectives are to 1) obtain more precise information about morbidities and causes of intrapartum, neonatal and early post neonatal deaths, 2) identify risk factors, 3) measure rates of prematurity and low birth weight in this community and their contribution to morbidity and mortality, 4) identify specific interventions to reduce morbidity and mortality in these groups, and 5) validate the methods and findings used in the case-control study.

To date, over 200 pregnancies have been included in the sample. Pregnant women and women who have recently delivered are identified by the village TBAs and visited by a physician and a trained health promotor who collect information about the pregnancy in prenatal visits and about the delivery and the condition of the newborn in a visit to each woman's home as soon after birth as possible. During this visit, the newborn is weighed and measured and weight, length, and head circumference are recorded. The physician also estimates the gestational age using the Capurro method and examines the newborn. After the first postpartum visit, the mother and infant are visited by the promotor once each week during the first month and bi-weekly during months 2 and 3. Weight, length and head circumference are recorded at each visit.

Early identification and treatment of infant morbidities are part of this study. Sick infants are primarily identified by parents and the TBAs, who are being trained to recognize danger signs. Parents are also encouraged to bring their infants to the project clinic if they notice abnormal changes or are concerned. If treatment is indicated, it is started immediately in the community and the infant is then referred to the hospital in Antigua (approximately 15 miles away).

Through June, there were 19 intrapartum deaths recorded in the community, for a rated of 64/1,000 pregnancies carried to delivery (298 pregnancies). Abnormal presentations with and without the use of oxytocin were associated with the majority of these deaths. The use of oxytocin alone was the next most frequently associated factor with intrapartum death. As in the case-control study, there appears to be a continuing association between the use of oxytocin and intrapartum deaths, however, the prospective sample is as yet too small to show statistical significance. In the case-control study, 54% of mothers of infants dying in the newborn

period, and 50% of the control mothers giving birth in the community received intramuscular oxytocin during labor.

Only 4 neonatal deaths (approximately 9/1,000 live births) had been reported as of June in the 225 families taking part in the study. This is compared to an approximate neonatal mortality rate of 39/1,000 during 1986 and 1987 in the same community.

This dramatic reduction in neonatal mortality is undoubtedly due to the project's aggressive efforts to detect and treat all potentially life-threatening conditions in the neonatal period. The most frequent morbidity of this type in the project area is sepsis neonatorum, either alone or with other localized infections (i.e. meningitis). In the case-control study, sepsis was the apparent cause in 66% of the reported neonatal deaths. While premature and LBW infants are at greater risk of sepsis, this study is showing that is also occurs in normal infants. Since there are more normal than LBW neonates in this community, the number of normal neonates who have developed sepsis is similar to the number of LBW infants who have been diagnosed with this condition.

Dr. Bartlett has estimated that eliminating the use of oxytocin during labor and identifying and transferring women with delivery complications to the hospital, could result in a reduction of intrapartum mortality from over 60 to approximately 20/1,000 pregnancies carried to term. The next phase of activity in Santa Maria de Jesus will address these two needed changes and community detection and treatment of neonatal sepsis.

e. **Study of maternal and infant care provided by TBAs and options for improving this care.** Dr. Barbara Schieber. Funding - ROCAP/TRO Project:

This project which is being carried out in Xelaju, Quetzaltenango includes a study of TBA knowledge and practice and a diagnosis of the health system's support and interaction with the TBAs. An intervention which will include a reviewed training curriculum for the TBAs, inservice training for health providers, and the development of support and management systems related to the work of the TBAs is currently in the planning phase. (Described in the next section.) The INCAP team is working with the Quetzaltenango Health Office and the Medical School on this project. Quantitative and qualitative techniques were used to collect information from the TBAs, families and health workers about what is known about and what is done with high risk

pregnancies and neonates. The studies helped to identify the following problems:

TBAs
- have no concept of risk
- do not relate problems in earlier pregnancies to risk in the next
- do not relate similar problems in different women with common circumstances or conditioning factors
- when faced with a problem, often do not know what to do
- training is too long (15 days), often too far from home and not practical or problem-orientated

Health Post

- auxiliary nurses and nurses also do not know how to manage risk
- do not use records for decision-making
- do not have appropriate equipment for basic assessment i.e. blood pressure cuff, scales, anemia diagnosis

The district nurses reportedly recognize that the current ways of training and working with TBAs are not functioning and they have asked for help from the researchers to improve what they are doing. The results of this study should be in written form by the end of the year. The intervention phase should begin as soon as funding is secured.

f. **Maternal supplementation and effects on lactation.**
Principal Investigator, Teresa Gonzalez Cossio (Doctoral research).
Funding - TRO Project:

This is a double-blind study in which groups of undernourished, lactating women are given high and low energy biscuit supplements daily, beginning in the 5th week postpartum. Breast milk production and composition are measured 4 times over a six month period and the caloric value of the breast milk consumed by the infants is estimated to determine the effects of the energy supplements. Infant growth is also measured. Consumption of the supplements is monitored and maternal dietary intake is estimated through a modified 24 hour recall developed by INCAP. Maternal and neonatal health and nutritional status and other biological and socio-demographic variables are measured as potential confounding variables. The study is being carried out in Quetzaltenango. The sample was drawn from communities included in Dr. Boy's study of

maternal anthropometry. Sixty-six women with weight for height less than 81% of the standard are included.

g. **Effects of household smoke on birth weight.** TRO Project Funding:

This study is also being carried out in Quetzaltenango. It follows an earlier study that showed markedly lower birth weights in infants whose mothers were exposed to high carbon levels from cooking and heating fires. The study was conducted in Quetzaltenango and includes measuring contamination in houses with and without ventilated cooking stoves. The study was originally intended to detect the effects of this source of contamination on pregnancy outcome. This phase was abandoned however, when the principal investigator left INCAP earlier this year.

h. **Improving prenatal and birthing services at Hospital San Juan de Dios,** Principal investigator, Dr. Eric Boy:

This was an earlier effort which included 16 studies carried out by hospital residents on different topics related to maternal services, an anthropological study investigating client satisfaction with existing services, and a diagnosis to identify deficiencies in services, personnel, and the management of high risk cases. These resulted in development of several interventions including a "Perinatal Record" (attached) and a set of norms for the management of high risk prenatal, intrapartum and postpartum cases (still being developed). Two intervention trials are planned: 1) the introduction of the "Perinatal Record" and an information system built around it that will allow hospital residents to compile and analyze their own data on perinatal risk, management and outcome, and 2) the introduction of the "Partogram", a special chart for recording and evaluating labor and delivery.

While all of these studies are of interest and should be followed as they progress, those elements that are "new" deserve closer review and future dissemination.

Dr. Eric Boy's work to develop new indicators and instruments that can be used for identifying high risk mothers and neonates at community, health facility and hospital levels is important for Guatemala, but also of global significance. Both the methodologies used to determine the predictive value of indicators and the indicators and tools themselves will

contribute to discussions of maternal and neonatal anthropometry and risk.

Dr. Schieber's and Dr. Bartlett's work have provided important information about community practices and other factors associated with risk of early infant mortality and the specific causes of that mortality. They have also shed light on TBAs' and health providers' knowledge and perceptions of risk and its management. The use of the case-control methodology to investigate causes and risk factors associated with perinatal and neonatal deaths has been particularly successful in these studies. (INCAP plans to use it again on larger samples of neonatal and maternal deaths.) The use of anthropological techniques to explore TBA and health provider perceptions of risk should also be further developed and disseminated.

Dr. Bartlett's work to identify and treat neonatal sepsis at the community level is at the forefront of international attention to this important cause of infant death. The protocol for case-finding, presumptive diagnosis and treatment should be studied closely as it is developed and implemented in Santa Maria de Jesus, then tested in a larger area and disseminated.

His finding oxytocin is used by TBAs in over half of the community deliveries and that its use is associated with high rates of intrapartum fetal death demands further investigation. Initial follow-up of this finding indicates that oxytocin is available in pharmacies throughout the country at low cost and is often demanded by the family because of the belief that it will give the mother more "force" and speed up the labor. Dr. Bartlett proposes to repeat the case control study in 8 randomly selected sites in Guatemala to measure the use of oxytocin in other areas and its relationship to intrapartum deaths. Interestingly, the widespread use of oxytocin seems to be a known problem in Guatemala and other parts of Central America and Mexico. A carefully thought out strategy should be developed to 1) document its use and harmful effects in a larger area, 2) reduce the community's demand for its use, and 3) restrict its sale through retail pharmacies.

Plans to Develop Interventions and Demonstration Project Areas in Guatemala

On the basis of the research described above, INCAP will develop and test a number of interventions to reduce maternal and neonatal morbidity and mortality. Proposals for projects in Quetzaltenango and Santa Maria de Jesus have been prepared and submitted to USAID/Guatemala for funding consideration.

Additional studies to further define causes and risk factors associated with maternal mortality (non-hospital), oxytocin use in a larger sample of communities, and reasons for compliance and non-compliance with referral by TBAs are also anticipated in conjunction with intervention projects. Proposed projects and studies include:

a. Quetzaltenango Demonstration Area

INCAP proposes to establish a demonstration area for integrated MCH services and applied research working through the Reference Training Center in the highland department of Quetzaltenango. Findings from the above studies will be used to develop intervention strategies that can be tested in Quetzaltenango and, if successful, disseminated throughout Guatemala and Central America. Maternal and neonatal health will be a strong component of the integrated MCH strategy. (Note: "Reference Training Center" is the term used to describe the marriage between health training and implementing organizations. In Quetzaltenango these include the University Medical School and Teaching Hospital, the Departmental Health Office and the PVOs working the department.)

Dr. Barbara Schieber is developing an intervention based on the findings of her study on health provider practices and those of Dr. Eric Boy's on maternal and neonatal indicators of risk. The principal objective will be to teach a risk approach to the management of pregnancy, delivery and the neonate at all levels - TBA, health post, health center and hospital. As this project will be implemented by the Quetzaltenango Reference Training Center, it will be carried out in close collaboration with the university teaching hospital, the Departmental Health Office and INCAP. It is a relatively complex project that will require training at each level of the service delivery system, community education and an adequate surveillance system to measure impact.

The operational costs for the project are to be included in a proposal to USAID/Guatemala. This proposal is currently being prepared and will be sent to MotherCare for review. A supplementary proposal for two additional pieces of research (maternal mortality and reasons for compliance or non-compliance with referral by TBAs) and a baseline study in the project area has also been presented to USAID/Guatemala and is in MotherCare's file.

INCAP sees Quetzaltenango, the area of Dr. Schieber's proposed intervention, as an important demonstration

project where it will develop and test new methods and technologies for later transfer to other Central American countries. According to Dr. Delgado, funding for the entire integrated MCH project in Quetzaltenango (of which maternal and neonatal care are one component) is currently being discussed with USAID/Guatemala and the MOH. Possible sources of direct and indirect USAID funding are: 1) the bilateral child survival project slated to begin in 1992, 2) in the interim, reprogramming of existing bilateral monies or, in essence, MOH purchase of technical and project assistance from INCAP with bilateral funds, and/or 3) use of local currency that is available to the Mission.

At present, Dr. Schieber's and Dr. Bartlett's (discussed below) proposals for USAID funding have been prepared with local currency funding in mind. In theory, this is a ready and relatively quick source of funding; however, in the case of Dr. Schieber's project USAID faces contracting problems that may take some time to resolve.

Establishing a contractual arrangement with the MOH, which could be continued under the 1992 bilateral project, appeared to be Dr. Delgado's preferred option. Besides covering INCAP's operational costs, this arrangement would give the MOH ownership and, thus, a greater commitment to applying project findings in other areas. Because it depends on political considerations, however, such a decision by the MOH could mean lengthy delays in the approval process and the need to renegotiate any agreement after next year's change of government.

The Quetzaltenango demonstration area could be an exciting field laboratory for improving maternal and neonatal health. It offers opportunities for combining and building on the work of Drs. Bartlett, Schieber, Boy and Gonzalez-Cossio and for testing service delivery and communications strategies designed to inform and promote utilization of services in a severely disadvantaged area of Guatemala.

As it was described, this project fits MotherCare's mandate for long-term assistance. If secure funding is not available from USAID/Guatemala or the Guatemala MOH, and INCAP is interested in our involvement, MotherCare should consider funding the development and implementation phases of the maternal and neonatal components of the Quetzaltenango demonstration area.

b. Santa Maria de Jesus - "Reduction of Intrapartum, Neonatal, and Early Post-Neonatal Infant Mortality in a Traditional Rural Indigenous Community: An Intervention using Community Resources"

This project, a follow-on to the case-control and prospective studies of intrapartum and neonatal mortality carried out by Dr. Al Bartlett, has been proposed and will be funded shortly by USAID/Guatemala. This is a one-year project that will attempt to reduce perinatal and early infant mortality by:

1) Training TBAs to recognize and refer problems during pre-natal, delivery and neonatal periods. Training will be oriented towards the problems identified in the earlier studies.
2) Promoting utilization of prenatal care and health facilities, mostly through the TBAs.
3) Training a small group of TBAs or other community agents as neonatal specialists who can recognize problems, particularly LBW, sepsis and respiratory problems, and refer for treatment. In the case of sepsis, this agent would initiate antibiotic therapy in the community prior to referral.
4) Continuing surveillance of pregnancies and neonates to track project impact.

(The proposal also includes a case-control study of births and the use of oxytocin in 8 communities throughout Guatemala to follow-up findings of the earlier studies. It is not clear whether this portion of the project will be funded by USAID/Guatemala.)

Dr. Bartlett and his assistant on this project, Dr. Elizabeth Paz de Bocaletti, have been working with the TBAs in Santa Maria de Jesus for the past year. This new project will allow them to develop training that focuses on specific problems identified during the earlier studies and to experiment with mechanisms for interaction between TBAs and the health system.

c. Population-based Maternal Mortality Study

Dr. Delgado stated that INCAP will carry out a community study of maternal mortality to determine rates and causes. This would be the first such study in Guatemala, as previous work was based on hospital deaths. Unfortunately, I did not get information on the intended scope or the proposed funding for this study. It is possible that the Quetzaltenango maternal mortality study

proposed by Dr. Schieber in conjunction with her TBA intervention may be part of this effort.

Both Dr. Bartlett and Dr. Schieber, who are working closely together, expressed the need for outside technical assistance during the development of their project interventions. Both propose to train TBAs and health providers to screen and manage high risk cases. Both will attempt to establish effective links between TBAs and the health services. While both researchers have a good idea of the problems they must address, neither has experience in training nor program evaluation (versus applied research). They identified the need for technical assistance to develop training curriculum and to identify appropriate indicators for the evaluation of program interventions. Dr. Schieber stated that she felt this type of TA would also be important to increase the visibility of the work and the acceptance of its findings. Technical assistance is not included in either the Santa Maria de Jesus or the Quetzaltenango project proposals, as presented to USAID/Guatemala. This is certainly one area in which MotherCare could be of assistance to INCAP.

Potential for MotherCare Input in the Area of Communications

ROCAP specifically asked that MotherCare investigate communications opportunities with INCAP. According to ROCAP and to a number of individuals interviewed at INCAP, the organization's capabilities in this field can be described as follows:

- Health educators and educators are the largest single category of professional at INCAP, however, they are spread throughout the organization and thus do not functioning as a coordinated unit;
- Health education programs supported by INCAP are not always under INCAP's control since educators often act as advisors to the country ministries and, thus, are not able to impose their ideas when country counterparts disagree;
- While INCAP has basic printing equipment and an artist on staff, the organization lacks expertise and physical facilities for materials design and production.
- As a group, INCAP educators do not use up-to-date social marketing or behavioral change methodologies for the development of educational interventions, even though according to several individuals at INCAP they have received orientation and training on various occasions in these techniques.

An exception to the final point above seems to have been the recent development of several client education photonovelas

and an audiocassette under the TRO Project. These materials, produced by Elena Hurtado (Applied Anthropology) and Veronika de Palma (TRO Project Documentation Coordinator), focus on ORT, growth monitoring and care of the newborn. (Copies of photonovelas are in MotherCare files.) Additional client education pamphlets are planned or currently being prepared on nutrition and prenatal care.

The method used for development of the above materials involved RAPID assessment techniques (i.e. participant observation and key informant interviews) in prenatal and postnatal clinics and oral rehydration units and the subsequent development and testing of the client education materials. In each case, changes in counseling techniques and educational messages were also recommended and implemented through the re-orientation of hospital staff.

An evaluation of the audio-cassette on post-natal care was carried out through follow-up visits to mothers to assess their understanding and acceptance (adoption) of the educational messages. This same type of evaluation has also been attempted to assess client education received in ORT Units.

Elena reported specific problems that have had a negative impact on the effectiveness of these materials. Hospital staff, for example, insisted on multiple messages in the post-natal audio-cassette and several messages that were not appropriate given the resources of women delivering at the hospital. The evaluation indicated that while most messages were understood by the women, many were not adopted because they were not feasible. In the case of ORT, INCAP's evaluation found that 1 liter containers are no longer readily available in most homes, making it difficult for women to follow the instructions given in the ORT Units and in the photonovela which are for a 1 liter packet of rehydration salts. New versions of the ORT photonovela will take this finding into consideration.

The INCAP staff who were involved in production of these materials recognize that educational messages and recommendations should be tested to make sure they are feasible for the intended target group, prior to final printing and dissemination. In the above cases, however, they seem to have been under considerable pressure from their "clients" to include certain content. Perhaps because of their own inexperience using these techniques, they were unable to convince the client and had to depend on the evaluation of already finalized materials to prove that content should have been limited.

Elena Hurtado is currently in the process of adapting the ORT photonovela for use in Santa Maria de Jesus. In this process, new photos of Indian women will be substituted for those used in the hospital version. Interestingly, their work with the Indian population indicates that photographs of real people are preferred over line drawings which tend to result in misunderstandings and distractions. Elena is also working with a linguist to develop appropriate messages in the local language that will subsequently be tested through individual interviews and focus groups. She also mentioned INCAP's desire to develop a new "Mother's Card", similar to the WHO Growth Card for children. Such a card would incorporate prenatal care and nutrition messages appropriate to specific stages of pregnancy with a graph for monitoring weight gain during pregnancy.

The type of materials development described above is the model that Dr. Delgado intends to have INCAP follow in the future. His plan is to consolidate all IEC activities at the central level under the Information and Documentation Unit Coordinator, Lic. Magda Fisher. Educators currently working in the Nutrition and Health and Food and Nutrition Planning Divisions will, for the most part, be assigned to the new country offices. The Information and Documentation Unit will provide support for their work at the country levels. The Applied Anthropology Unit will also work closely with the Information and Documentation Unit to supervise the research required for development of educational messages and materials.

Dr. Delgado said that he would welcome assistance from MotherCare to help develop the new communications capability described above. If he is able to bring about the intended changes in structure, and both the Documentation and the Applied Anthropology Units have sufficient time and personnel to devote to developing and testing a maternal/neonatal communications strategy, this is obviously an area in which MotherCare could be of significant assistance to INCAP.

Decentralization of INCAP Assistance Within the Region

During the next few years, INCAP will intensify its assistance to Member Countries. This will include developing and disseminating standardized protocols for studying the problems of maternal and infant mortality (quantitative and qualitative) and providing assistance to the countries for the development of intervention projects that address locally identified problems.

According to Dr. Delgado, it is the organization's goal to transfer new technologies to INCAP Member Countries through

multi-center studies and demonstration projects in which health care providers and managers can learn innovative intervention strategies first-hand. Under the TRO Project, one of the goals was to assist the countries to develop and implement national child survival programs. While plans have been developed, in most cases these have not been translated into action due to lengthy delays and debates within the central level MOHs and, to some extent, the limited INCAP presence in each of the countries. To improve its effectiveness at the level of the Member Countries, INCAP plans to:

- Shift its focus and assistance from the national ministries to the area/departmental level, where problems can be identified, and interventions developed and tested more effectively. This is consistent with the region's stated commitment to the decentralization of health care management to the area level or the sistema local de salud (SILOS).

- Support multi-center studies, or similar applied research projects in the Member Countries. INCAP will encourage and support these studies through the development and dissemination of standardized protocols for investigating problems of maternal and infant health at hospital and community levels and through technical assistance to the countries during the development, implementation and evaluation of program interventions. Multicenter studies will be carried out by the Reference Training Centers in each country.

- Promote an integrated MCH service strategy, helping countries to rationalize the many vertical child survival activities and programs found in most cases, and placing greater emphasis on maternal health than in the past. Efforts to develop and disseminate a risk-approach to pre-natal, delivery and infant care will be part of this effort.

- Strengthen its presence in several of the Central American countries during the next year. In El Salvador, for example, 5 INCAP staff will be assigned. These will include 2 MDs, 1 educator/trainer, and 1 food assistance advisor. There is currently only one INCAP advisor in each of the countries.

ROCAP encouraged MotherCare to consider assistance to INCAP in support of its planned activities in other countries, specifically El Salvador where a high level of interest in maternal health issues exists. Dr. Delgado, on the other hand, expressed his feeling that if other Central American countries are of interest to MotherCare, we would be better

off working through the individual USAID Missions. INCAP faces an up-hill battle as it decentralizes and strengthens its presence in the countries. This will include improving its relations with the Missions, some of which feel that INCAP Representatives have not always worked in consort with the Mission agenda, as well as establishing itself as a credible, non-threatening entity among the many multi and bi-lateral assistance organizations working in each of the countries. Given the time-frame for MotherCare and the difficulties envisioned, this is obviously wise advice.

INCAP units that could be tapped and/or strengthened in efforts to improved maternal and infant health and nutrition:

a. Documentation and Dissemination Unit

The INCAP Documentation Unit is an important resource to the Central American countries. The Unit is headed by Lic. Magda Fisher. Lic. Veronika de Palma, who works under Lic. Fisher's supervision, is the Documentation Coordinator on the TRO Project. In addition to its involvement in the production of IEC materials, this unit plays an important support function for researchers, technical advisors and countries by making literature searches available to them, compiling resource packets and monographs on specific issues for training programs and seminars, and distributing INCAP publications. Under TRO, INCAP publishes a newsletter, "Avances en Supervivencia Infantil" (Advances in Child Survival), which includes up-dates on technical areas, news from the countries and descriptions of new books and resources available. Over 8,000 subscribers currently receive this publication. INCAP also distributes "ARI News" and "Mothers and Children" in Spanish.

b. Applied Anthropology Unit

INCAP is one of the only organizations I have seen where anthropologists are recognized and used on a regular basis in both research and intervention programs. At present, this Unit is staffed by two anthropologists and directed by Lic. Elena Hurtado, co-author of the RAPID Assessment Procedures technique with Susan Scrimshaw. Besides being called on as consultants to many of INCAP's projects, the Anthropology Unit is also conducting several interesting investigations of its own, including an assessment of behaviors associated with the availability and use of water and the impact of a new water system in Santa Maria de Jesus. Elena Hurtado has also been assisting Hospitals San Juan de Dios and Roosevelt in Guatemala City to improve the their pre and postnatal counseling services.

The Applied Anthropology Unit provides technical assistance in other countries and would obviously be an important resource in the development of an education/ communications intervention in maternal or neonatal health and nutrition.

c. Operations Research

Operations research is one of the more recent specialties to be added at INCAP. Within the Nutrition and Health Division there are two professionals specializing in this field, including Dr. Jorge Hermida and Dr. Rosa Amurrio. Dr. Amurrio is involved in a PRICOR-funded project to assess and improve the effectiveness of growth monitoring at the health center and health post levels. An underlying objective of the project is to train INCAP staff in the PRICOR methodology. Dr. Jorge Hermida, who joined INCAP last year, has been working with the Member Countries to develop small operations research activities directed at improving primary care. In each case, INCAP provides technical and limited financial support (approximately $10,000) for a diagnosis of a chosen service or management system, the identification of problems related to that system and the development of alternative solutions. Studies should be 6 months or less. Topics for studies currently underway include:

Guatemala	-	Use of the management information system
El Salvador	-	Study of the quality of care provided by the TBA. Sample includes 400 of 1,500 trained TBAs. A series of instruments for data collection are being tested.
Honduras	-	Management of ARI at the community level and factors affecting compliance with ARI referrals.
Costa Rica	-	Operational strategies for evaluating the coverage of multi-institutional nutrition programs
Nicaragua	-	Community action to increase the use of ORT and reduce deaths from diarrhea.
Panama	-	KAP of community and health providers regarding diarrhea treatment

All of these projects are in the initial data collection stages. Most are expected to lead to interventions.

It is important to understand that INCAP, based on PRICOR input, defines "operations research" more narrowly than MotherCare might. At INCAP, the term "applied research" includes all types of research designed to develop or test technologies and strategies either in preparation for or during their application in service delivery programs. "Operations research", on the other hand, seems to include only those types of research directed towards improving the management of on-going services and programs.

d. Training

In the area of training for health providers, Dr. Rebecca Arrivillaga has been working with the Member Countries to prepare integrated MCH training modules for primary health services. While content varies from country to country, modules generally focus on diarrheal disease control, immunization, growth monitoring, prenatal care and nutrition. This work has been carried out in response to demands from the countries that INCAP focus more of its attention on helping them implement their ambitious PHC programs. In the process of preparing the modules, country teams prepared task and training analyses for all levels of health workers and they discussed and revised their norms and standards for PHC services. INCAP provided technical assistance and coordination for this work. While Dr. Arrivillaga is frank about the shortcomings of the modules, she feels that a great deal was accomplished during their development, i.e. revision of norms, coordination of national and international organizations, country ownership of finished products, participation by the SILOS in module development, and improved planning and training design skills in the countries. (Honduran manuals are in MotherCare files).

Veronika de Palma of the Documentation Unit also recently prepared a self-training module on malnutrition for physicians that was reportedly very well accepted.

A manual for physicians on the risk approach to managing pregnancy and delivery is currently being prepared for INCAP by Dr. Marco Tulio Negrero, a local obstetrician/gynecologist. This could also be used as the basis for a self-training course for both physicians and nurses.

USAID/Guatemala

Liliana Ayalde, head of the population and health office, was not in Guatemala during this visit. In her absence, I met with Jane Lyon, Population Officer, and Lynn Gorton, Acting Health Officer. Dr. Al Bartlett and Melody Trott also attended this meeting.

USAID/Guatemala has recently identified maternal and neonatal health as one of its priorities. A consultancy in February 1989, by Barry Smith and Pam Putney (supported by PRITECH) addressed the training and practice of TBAs in Guatemala and seems to have focused the Mission's attention in this area. Several weeks before MotherCare's visit, the Mission held a local symposium to present the findings of four studies in the area of maternal/neonatal care. The four studies were carried out in Guatemala with funding from a variety of different AID sources. They included:

Dr. Al Bartlett, INCAP - Intrapartum, Neonatal Mortality in a Traditional Indigenous Community in Rural Guatemala, case-control and prospective studies in Santa Maria de Jesus, Sacatepequez. Described above. Funded by USAID/Guatemala

Dr. Noel Solomons - Effects of Vitamin A during Pregnancy, location and source of funding not mentioned. Dr. Solomons is director of CESSIAM, working out of the Hospital Rodolfo Robles in Guatemala City.

Dr. Alfredo Mendez-Dominguez - Anthropological investigation of the perceptions and health service utilization patterns of primiparous, Indian adolescents in rural community near Guatemala City. Dr. Mendez is a professor of anthropology at the Universidad del Valle. ICRW funding.

Ms. Nancy Neil - Study of congenital infections and low birth weight. Ms. Neil is a Certified Nurse Midwife affiliated with the University of Alabama and this was apparently in conjunction with thesis research.

This symposium was reportedly well-received. It resulted in a list of topics for further investigation including:

1. National investigation of maternal morbidity and mortality

2. Effects of factors other than mother's health, nutritional and fertility status on maternal/neonatal mortality including maternal education, prenatal care, health experiences, empowerment of women, etc.
3. Refinement of high risk groups, e.g. breaking a category like primiparous into subcategories to determine those at highest risk.
4. What should the "low birth weight" cut-off point be in Guatemala? There is some indication that cut-off point of <2500 grams is not strong enough a predictor of neonatal risk.
5. Identification of specific interventions at different stages of pregnancy to decrease LBW.
6. Beliefs and practices related to use of prenatal care and pregnancy and birth.
7. Repeat studies like Dr. Bartlett's in Santa Maria de Jesus which was carried out with a relatively small and culturally distinct sample, in other areas.
8. Feasibility of Vitamin A fortification in sugar.

Barry Smith returned recently to Guatemala to assist the Mission with the development of its strategy for maternal/neonatal health programming. (I was not clear whether his visit was during the symposium or at a different time.) This strategy is being developed based on the experiences of the above studies and other on-going programs in Guatemala. Another such planning session is slated for early November, when the Mission also intends to have the consultant conduct follow-up visits to the programs visited in February. The Mission has requested both Barry Smith and Pam Putney for this exercise.

Jane Lyon stated that the Mission has its own "mini-MotherCare" program in mind for the future. Initially, they are attempting to fund interesting projects in this area using available local currency. A portion of the follow-on to the INCAP's project in Santa Maria de Jesus (Bartlett) will be funded in this way and a portion of their work in Quetzaltenango (Schieber) is also being considered for this type of funding. Contractual issues arrising with this type of non-competitive procurement seem to be a problem in this respect. Eventually, the Mission intends to incorporate the maternal/neonatal program emphasis within the new bilateral program which should begin in 1992.

While USAID/Guatemala expressed an interest in working with MotherCare in the future, they were not ready to specify how or in what types of activities. As this was an informational meeting and I did not have a chance to debrief the Mission prior to leaving the country, follow-up will include providing them with a copy of this report and a list of the potential ways in which the centrally-funded, MotherCare Project might be of use to the Mission as it develops its country strategy.

5. SUGGESTIONS FOR POTENTIAL COLLABORATION BETWEEN MOTHERCARE AND INCAP

There are obviously a number of areas in which MotherCare and INCAP could collaborate. In my debriefing with Dr. Delgado and Melody Trott of ROCAP, the following possibilities for MotherCare involvement were proposed:

a. MotherCare support for attendance at selected conferences and seminars that will enable INCAP's researchers to present the findings of on-going research and learn from experiences in other countries.

Several specific possibilities are:

- Jamaica Perinatal Symposium, February 1990. The purpose of this conference is to present the results of Jamaica's recent Perinatal Mortality Study, to review the study's methodology and to recommend interventions that could lead to a reduction in peri-natal deaths. It will be sponsored by the Ministry of Health of Jamaica, with funding from IDRC. MotherCare is ready to provide funding for a representative from INCAP who would attend as an expert observer.

- Maternal Anthropometry Conference: MotherCare invites INCAP to nominate participants. This conference will be held in April 1990, in Geneva and will be jointly sponsored by WHO and the MotherCare Project. MotherCare is currently identifying experts in the field of maternal anthropometry who will be invited to attend. The goals of the conference are to review anthropometric indicators used to date, to agree on standards and cutoff points where possible and to develop criteria for evaluation of indicators. INCAP's work to identify maternal indicators of low birth weight and risks of infant mortality should be shared in this forum.

- Other Conferences: MotherCare is also willing to consider INCAP investigators for inclusion in panels organized for other international conferences (NCIH, APHA, International Congress of Nurse Midwives, etc.), if this is of interest to INCAP.

b. MotherCare technical assistance to INCAP during the design, implementation and evaluation of demonstration and/or applied research projects:

INCAP researchers in Guatemala and elsewhere propose to develop intervention strategies that focus on identified maternal and neonatal health problems and use simplified tools for screening at the community level. As INCAP researchers have limited experience in the design of such interventions, a few carefully-selected experts might help them to avoid "re-inventing the wheel". Areas suggested for technical assistance during my discussions with INCAP staff included:

- TBA training curriculum design
- auxiliary nurse training curriculum design
- community information and education
- development of indicators and evaluation plans

c. MotherCare funding and technical support for demonstration or operations research projects developed by INCAP.

MotherCare is prepared to consider proposals for projects that have the potential to develop and demonstrate innovative strategies for improving maternal and neonatal health.

If USAID/Guatemala is unable to provide funding for the project proposed by Dr. Schieber in Quetzaltenango, MotherCare is willing to consider this project for funding. The project is of interest to MotherCare because it has the potential to develop and disseminate a number of new technologies and approaches to reducing maternal and neonatal morbidity and death. A great deal is already known about risk in the target population and about the beliefs and practices that are related to this risk. Dr. Schieber also has the potential to incorporate and expand upon the findings and strategies to be developed by Dr. Bartlett's team in Santa Maria de Jesus.

Whether or not MotherCare becomes involved in the Quetzaltenango project, we recommend that INCAP attempt to secure funding for the development, implementation and evaluation of the maternal/neonatal component in a single package. This would allow the researchers and the project personnel to put their attention where it is needed, on the project, and free them from having to develop a series of proposals, and subsequently reports, for various donors or grants.

d. **MotherCare assistance to INCAP for a pilot communications program directed at reducing prenatal, intrapartum and neonatal risk factors and related mortality.**

Such a program would best be developed and tested in conjunction with one of INCAP's on-going projects. Several problems identified in the Santa Maria de Jesus and Quetzaltenango studies could be addressed through a communications program. These include:

- The use of intramuscular oxytocin by TBAs; the demand for this labor-inducing drug is said to be very strong in the community.
- The failure of families and TBAs to recognize and seek treatment for danger signs of pregnancy and labor.
- The failure of families to recognize and seek treatment for neonatal morbidities

MotherCare assistance to INCAP might include TA for development and testing of appropriate messages and design of educational products for use at the community level. INCAP's anthropology unit would be critical to the formative investigations and field trials necessary for message and product development.

If this of interest, MotherCare staff specializing in communications could conduct an in-depth assessment and project development exercise with INCAP at some point in the near future.

e. **Production by INCAP of training modules for use with health professionals in other Latin American and Caribbean countries. This could be carried out under subcontract to MotherCare.**

This work could be done on contract to MotherCare. Topics of greatest interest at present would be:

- The Prevention and Management of "Low Birth Weight"
- The Risk Approach in Prenatal, Delivery and Neonatal Care
- Nutrition Supplementation of Pregnant and Lactating Women

This list of possibilities was presented to Dr. Delgado for his study and our further discussion during his up-coming visit to Washington in November. During the course of the debriefing, he clarified a number of points pertinent to the above suggestions, most of which are incorporated in the "Findings" section of this report.

Specifically, he offered to continue to share the on-going experiences of INCAP's applied research programs with MotherCare and thanked us for offering to support presentations by INCAP's researchers at specific conferences.

For reasons mentioned above, he discouraged MotherCare from pursuing involvement with INCAP in other countries but encouraged our work in Guatemala. He emphasized that Guatemala, of all the Central American countries, is where maternal and neonatal health problems are the most severe and, thus, the most amenable to intervention.

In reference to the Quetzaltenango project, he explained his desire to have this demonstration project area funded as an integrated MCH project, and described his discussions with USAID and the MOH regarding potential funding. Until there is some determination from USAID/Guatemala and/or the MOH about how this larger project (and the smaller maternal/neonatal component) will be funded, it does not appear likely that INCAP will approach MotherCare for funding.

He again emphasized INCAP's interest in restructuring and developing their communications capability and welcomed MotherCare's assistance in this area.

In relation to the possible production of training materials, he confirmed INCAP's interest in providing this type of assistance to MotherCare but emphasized that commitments would be made only if he feels that a high quality can be assured. He also mentioned INCAP's interest in continuing and expanding it work under the TRO Project with PVOs and the potential for MotherCare assistance in that area.

6. FOLLOW-UP PLANNED

As follow-up to this visit, MotherCare will:

- Meet with Dr. Delgado, Melody Trott and other INCAP staff members in Washington in early November to discuss the above list of possibilities and define the next steps to be taken by both parties.

- Formally invite INCAP to nominate a participant observer to attend the Jamaican Perinatal Symposium in November and to identify the appropriate individual(s) for involvement in the Maternal Anthropometry Conference.

- Provide USAID/Guatemala with a copy of this report and offer assistance to them during the development of their maternal and neonatal health strategy, if this is desirable.

- Prepare short descriptions of INCAP's on-going research projects in maternal and neonatal health and nutrition which could be added to MotherCare's working papers.

- Conduct a search of the literature on oxytocin use and its relationship to negative outcomes of pregnancy. Attempt to identify other studies that have noted high levels of oxytocin use out-of-hospital and problems associated with this practice. Identify organizations and individuals who may be interested in or knowledgable about international regulations related to the marketing and distribution of this pharmaceutical. Send this information to Dr. Bartlett.

APPENDIX A - LIST OF CONTACTS

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APPENDIX B - BACKGROUND ON GUATEMALA HEALTH SITUATION

Guatemala: Maternal and Neonatal Mortality

A summary of available demographic and health indicators for Guatemala is attached to this report.

Due to the 1987 DHS and the many excellent studies carried out by INCAP during the past decade, health statistics for Guatemala are more reliable and more comprehensive than in many other countries. Several studies of perinatal and neonatal mortality have been conducted in conjunction with efforts to identify risk factors during pregnancy, delivery and postpartum. No systematic studies of maternal mortality had been attempted until recently, however, INCAP is now completing analysis of a study of maternal mortality in all government hospitals.

While Guatemala's maternal and child health situation is similar to that of other Central American countries, wide variations exist between different geographic areas and ethnic and economic groups. While overall maternal mortality has been estimated by the MOH at 10+/10,000, the recent INCAP hospital study will show a much higher rate of approximately 22. As only 20-30% of total births occur in the hospital, this is undoubtedly an underestimate. The principal causes of death in this study are sepsis, hemorrhage, and eclampsia.

According to the DHS, the national IMR fell from 92 between 1972-76, to 73 between 1983-87. Higher rates are found in rural residents, residents of the Central Region, mothers having completed less than primary school, births of male infants, mothers under 20 and over 40 years old, and those with birth intervals of less than 2 years.

Several studies have addressed neonatal and perinatal mortality by cause. These include the recent studies by Bartlett which have estimated an intrapartum mortality rate of 64 per 1,000 pregnancies (prospective study) entering labor and neonatal mortality of 39 per 1,000 live births (case-control study), with the principal causes of death identified as intrapartum asphyxia, birth trauma, prematurity, and neonatal sepsis. Parental risk factors included primigravidy, lack of prenatal care, inter-birth interval of less than 14 months and maternal illiteracy. Intrapartum risk was associated with the use of intramuscular oxytocin and the performance of more than 3 vaginal examinations during labor. Extremely high risks of intrapartum and neonatal death were associated with prematurity, rupture of membranes >24 hours before delivery, malpresentation and hemorrhage.

Low birth weight is estimated at approximately 18% of all births in Guatemala, although there is great rural-urban variation.

The DHS showed that 27% of women who had become pregnant during the previous five years had received no prenatal care. Women in urban areas and women with primary schooling or above were more likely to receive prenatal care from a physician (80% or more). Thirty percent of rural women reported receiving no prenatal care; less than 50% of those who received care were attended by a physician; 44% were attended by a TBA.

Only 20% of all births during the preceding five years were attended by a physician or a nurse; 60% overall were attended by a TBA. In the rural area, TBAs attended 69% of all births. The MOH estimates that it is equipped to service only about 20% of the potential demand for delivery care and that this capacity is not likely to increase in the near future. As such, the role of the TBA will continue to be critical.

Ministry of Health Services

The Ministry of Health is the primary provider of health services in Guatemala. The MOH system consists of 5 Health Regions and 24 Health Areas. At the community level, the health system trains and depends on the Traditional Birth Attendant (TBA) and the Village Health Promoter as primary care and referral agents. TBAs are identified by the health posts and given 15 days initial and 3 days refresher training each year For additional information, the Reader is referred to the excellent report on TBA training and practices prepared by Pam Putney and Barry Smith.

Health Posts are generally staffed by at least one Auxiliary Nurse and, in some cases, a Rural Health Technician. While the Auxiliary Nurse is the trainer, supervisor and first line of referral for the TBA and the prenatal care provider at the health post level, basic training for this cadre of worker does not include prenatal, delivery, or neonatal care. The Rural Health Technician, where assigned, is an active community agent but he is neither trained in nor required by the norms to participate in maternal heath activities. The Rural Health Technician receives a total of 4 years of training primarily in preventive health measures including ORT, immunization, sanitation, health education, and vector control.

Health Centers are often equipped as small rural hospitals with several beds for emergencies. Staffing includes at least one physician, nurse, sanitation inspector, rural health technician and several auxiliary nurses. There are reportedly no certified nurse midwives in the government health system, however, a number have been trained in the past in Guatemala. The physician in charge is responsible for supervising the health center, health posts and special programs in the district.

Departmental hospitals are conceived as referral facilities for obstetrical and other emergencies. They are generally staffed with physicians covering ob/gyn, pediatrics, and general medicine, nurses (3 years training), auxiliary nurses, social workers and other non-professional personnel.

The Area Health Office Director (usually at departmental level) is responsible for the coordination and supervision of all facilities and programs in the department. While the hospital theoretically comes under the purview of the Area in charge, in reality the hospitals are reported to function separately.

Registro Hospitalario Número

Fecha

HISTORIA CLINICA PERINATAL

MINISTERIO DE SALUD PUBLICA DE GUATEMALA

Nombres: _____

Apellidos de soltera: _____

Apellido de casada: _____

Fecha de nacimiento: _____

Nombre de la Institución: _____ Código

Dirección: _____ Teléfono _____

Municipio: _____

Departamento: _____

I. ANTECEDENTES

Edad (años) ☐☐

Alfabeta
- Si ☐
- No ☐

Grupo étnico:
- Blanco ☐
- Indígena ☐
- Negro ☐
- Ladino ☐

Estudios
- Ninguno ☐
- Primaria ☐
- Secundaria ☐
- Universitarios ☐
- Años apuntados ☐

Estado civil
- Casada ☐
- Unida ☐
- Soltera ☐
- Otro ☐

Ocupación
- Ama de casa ☐
- Oficios domésticos remunerados ☐
- Comercio fijo propio ☐
- Comercio ambulante ☐
- Jornalera agrícola ☐
- Otra ☐

Vivienda Si No
- Agua intradomicilio ☐ ☐
- Piso de tierra ☐ ☐

Si No
- Fuente de ingresos continua? ☐ ☐

Antecedentes Familiares

Si	No	
☐	☐	Diabetes
☐	☐	Tuberculosis
☐	☐	Gemelares
☐	☐	Anomalías congen.
☐	☐	Otros _____

Si	No	**Personales**
☐	☐	Convulsiones
☐	☐	Tuberculosis
☐	☐	Diabetes
☐	☐	HTA crónica
☐	☐	Cirugía pélvica
☐	☐	Infertilidad
☐	☐	Medicamentos
☐	☐	Otras infecciones
☐	☐	Otro: _____

Obstétricos

Número de:
- Gestas ☐☐
- Abortos ☐☐
- Cesáreas ☐
- Partos vag. ☐☐
- Nac. vivos ☐☐
- Nacidos muertos ☐
- H. vivos ☐☐
- Muertos 1a. semana ☐
- Muertos después 1a. semana ☐
- RN <2500 gm ? ☐
- Ectópicos ☐
- Múltiples ☐

Producto último embarazo
- Aborto ☐
- Muerte fetal ☐
- Muerte neonatal ☐
- Muerte pos-neonat. ☐
- Aun vive ☐

Fecha último parto/aborto: ☐☐☐☐☐☐ (Día) (Mes) (Año)

Edad gestacional ☐☐ Semanas

Peso ☐☐☐☐ Lb Oz

II. EMBARAZO ACTUAL

Peso habitual ☐☐☐ lb.

Talla ☐☐☐ cm

Dudas FUR: Si ☐ No ☐ Desconoce ☐

F.U.R. ☐☐☐☐☐☐

F.P.P. ☐☐☐☐☐☐

Grupo sanguíneo
- O ☐
- A ☐
- B ☐
- AB ☐
- Sin dato ☐

Rh
- Positivo ☐
- Negativo ☐
- Sin dato ☐

Sensibilizada
- Si ☐
- No ☐
- Sin dato ☐

VDRL
- Positivo ☐
- Negativo ☐
- Sin dato ☐

Mes ☐☐ Año ☐☐

Hemoglobina Mes Año
- ☐☐ Gramos ☐☐ ☐☐
- ☐☐ Gramos ☐☐ ☐☐

TOXOIDE TETANICO (mes de embarazo)

1a ☐ 2a ☐

DOSIS

FUMA
- Si ☐ No./día ☐☐
- No ☐

Examen clínico normal?
- Si ☐
- No ☐

Examen de mamas normal?
- Si ☐
- No ☐

Citología cervical normal?
- Si ☐
- No ☐
- Infecc. ☐
- Sin dato ☐

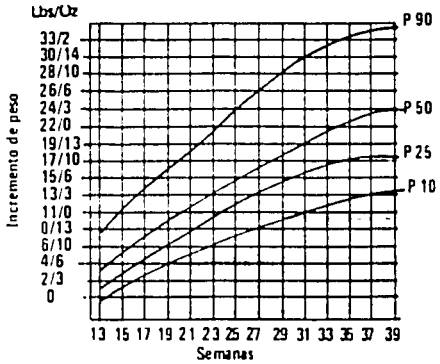
Orina Mes Año
- Normal ☐ ☐☐ ☐☐
- Patológica ☐
- Normal ☐ ☐☐ ☐☐
- Patológica ☐

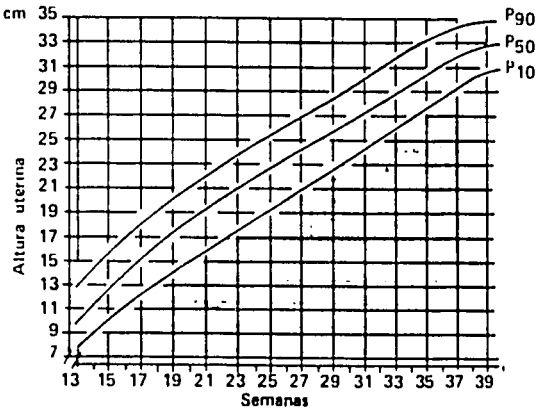
III. CONTROL PRE-NATAL

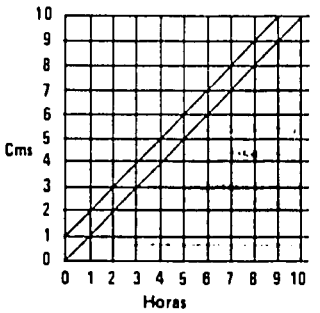
Consulta No	1	2	3	4	5	6	7	8
Fecha								
Sem. amenorrea								
Peso (Lb -oz)								
T.A. (Max. Min.)								
A. U. (cm)								
FCF (lat/min)								
Presentacion 9. SID 1. Cef. 2. Pelv. 3. Trans								
Patologías								
Medicamentos								
Riesgo obstetrico 1. Si 2. No								
Grado de riesgo 1. Bajo 2. Alto 3. Extremo								
Observaciones								

Responsable. _____

IV. GRAFICAS







Partograma normal

Si ☐ No ☐

Sin trabajo de parto ☐

CODIGOS

PATOLOGIAS

00 Ninguna
01 Embarazo multiple
02 Hipertension cronica
03 Preeclampsia
04 eclampsia
05 Cardiopatia
06 Diabetes mellitus
07 Anemia cronica
08 Parasitismo intestinal
09 Embarazo ectopico
10 RPM
11 Amnioitis
12 DCP
13 Hemorragia del primer trimestre
14 Hemorragia del 2o. trimestre
15 Hemorragia del 3er. trimestre
16 Amenaza de parto prematuro
17 Trabajo de parto prematuro
18 SFA
19 Embolia pulmonar
20 Accidente de anestesia/ complicaciones transop
21 Infeccion de herida operatoria
22 Infeccion pelvica
23 Endometritis
24 Choque septico
25 Infeccion urinaria
26 Hemorragia post parto
27 Leucorrea
28 Otras (especificar en espacio para observaciones)

MEDICAMENTOS

0 Ninguno
1 Analgesicos/antipireticos
2 Anticonvulsivos
3 Betamimeticos
4 Sedantes
5 Hierro o vitaminas
6 Esteroides
7 Oxitocicos
8 Antibioticos
9 Otros

V. TRABAJO DE PARTO

No. de examen	1	2	3	4	5	6
Fecha						
Hora						
P. A. (Max/Min)						
Num. contr./10 min						
Duracion c/contrac (seg)						
Altitud (signo-num)						
Variedad de Pos.						
FCF (lat/min.)						
Dilat. Cerv. (cms)						
Meconio 1. Si 2. No 9. No corresp.						
CODIGO Patologias						
CODIGO Medicamentos						

Observaciones

Responsable

VI. PARTO

Fuente principal de atencion prenatal:
- Hospital ☐
- Medico particular ☐
- Centro/puesto de salud ☐
- Comadrona ☐
- Ninguna ☐
- Otro ☐

Número total de controles: ☐☐

Número ingresos hospital en embarazo actual: ☐

Causas ☐☐☐☐ (Ver codigo)

Terminacion
- Natural (PES) ☐
- Forceps ☐
- Cesarea corp. ☐
- CSTP ☐
- Aborto ☐
- Otro ☐

Edad gestacional ☐☐ Semanas
- AU ☐
- UR ☐
- USG ☐

Método

Inicio del T. P.
- Espontaneo ☐
- Inducido ☐
- No trabajo de parto ☐

Horas RPM ☐☐☐

Fecha de terminacion: ☐☐☐☐ Hora ☐☐ Dia ☐☐ Mes ☐☐ Año

Atendio parto:
- Médico ☐
- Enfermera ☐
- Estudiante ☐
- Comadrona ☐
- Empirico ☐
- Ninguno ☐
- Otro ☐

Lugar de parto:
- Hospital ☐
- Centro de Salud ☐
- Domicilio ☐
- Via pública ☐
- Casa de Salud ☐
- Otro ☐

Presentacion:
- Cefálica ☐
- Pélvica ☐
- Hombro ☐
- Otra ☐

Indic. Forceps/Cesarea
- SFA ☐
- DCP ☐
- Cesarea anterior ☐
- Toxemia ☐
- Hemo. 3er trim. ☐
- Transversa ☐
- Podalica ☐
- Agotamiento ☐
- Otro ☐

Episiotomia
- Si ☐
- No ☐

Alumbramiento:
- Natural/espontaneo ☐
- Artificial ☐

Placenta completa:
- Si ☐
- No ☐

Desgarros:
- Piel y/o mucosa ☐
- Muscular ☐
- Rectal ☐
- Cervical ☐
- Uterino ☐
- Vaginal ☐
- Ninguno ☐

Anestesia/Analgesia:
- Local ☐
- General ☐
- Epidural ☐
- Pudenda ☐
- Narcoticos ☐
- Ninguna ☐

Cordon umbilical:
- Normal ☐
- Circulares ☐
- Brevedad ☐
- Nudo ☐
- Otro ☐

Liquido Amniotico:
- Normal ☐
- Meconio ☐
- Fetido ☐
- Oligo hidramnios ☐
- Polihidramnios ☐
- Otro ☐

VII. RECIEN NACIDO

ESTADO AL NACER

- Vivo ☐
- Muerte en embarazo ☐
- Muerte en parto ☐
- Muerte se desconoce momento ☐

Sexo aparente: Masculino ☐ Femenino ☐

Producto: Simple ☐ 1er. gemelo ☐ 2o. gemelo ☐

Edad gestacional por examen físico: ☐☐ Semanas

Adecuación: AEG ☐ PEG ☐ GEG ☐

Apgar: ☐ 1 minuto ☐☐ 5 min.

Reanimación: Si ☐ No ☐

Peso al nacer: Lb ☐☐ Oz ☐☐

Longitud ☐☐☐ cm

Circunferencia cefálica ☐☐☐ cm

VDRL: Positivo ☐ Negativo ☐ Sin dato ☐

Egreso RN: Sano ☐ Enfermo ☐ Traslado ☐ Fallece ☐

Edad alta/o al fallecer: ☐☐ Días ☐☐ y Horas

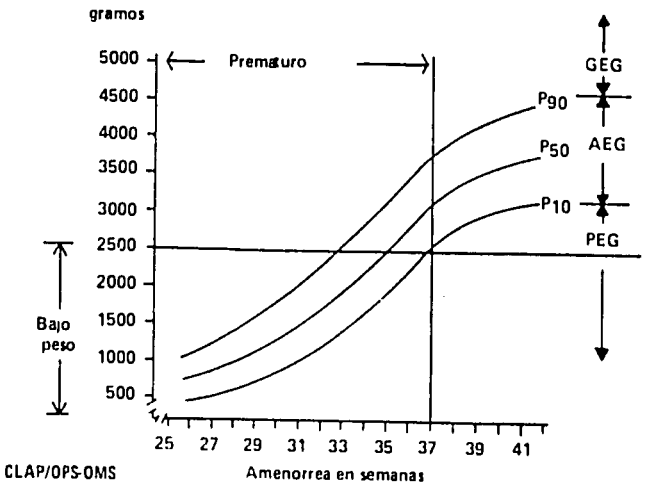
Autopsia: Si ☐ No ☐ No corresponde ☐

PATOLOGIA DEL RECIEN NACIDO

- ☐ Sano
- ☐ Memb. hialina
- ☐ Síndrome aspirativo
- ☐ Otro SDR
- ☐ Apnea
- ☐ Asfixia
- ☐ Hiperbilirrubinemia
- ☐ Síndrome ictérico
- ☐ Hipoglicemia
- ☐ Neurologica
- ☐ Sepsis
- ☐ Hemorragia
- ☐ Trauma obstetrico
- ☐ Anomalia congenita
- ☐ Conjuntivitis neonatal
- ☐ Neumonia
- ☐ Meningitis
- ☐ Onfalitis
- ☐ Sifilis
- ☐ Enterocolitis necrozante
- ☐ Poliglobulia
- ☐ Otra

Observaciones:

RN atendido por:
- Pediatra ☐
- Obstetra ☐
- Enfermera ☐
- Estudiante ☐
- Otro ☐



CLAP/OPS-OMS

ADECUACION DE PESO PARA EDAD GESTACIONAL

VIII. PUERPERIO/EGRESO

Puerperio hospitalario	Primer control	Segundo	Estado al egreso
Días Post parto o AB	☐☐	☐☐	☐☐
Temperatura	☐☐.☐	☐☐.☐	☐☐.☐
Pulso	☐☐☐	☐☐☐	☐☐☐
P. A. (Max.-Min.)	☐☐☐☐☐☐	☐☐☐☐☐☐	☐☐☐☐☐☐
Invol. Ut. 1. Normal 2. Anormal	☐	☐	☐
Loquios 1. Normal 2. Anormal	☐	☐	☐
CODIGO: Patologías	☐☐☐☐	☐☐☐☐	☐☐☐☐
CODIGO: Medicamentos	☐☐☐☐	☐☐☐☐	☐☐☐☐
Lactancia: Materna	☐	☐	☐
Mixta	☐	☐	☐
Otra	☐	☐	☐

EGRESO DE LA MADRE

- Sana ☐
- Enferma y estable con tratamiento ☐
- Egreso contraindicado ☐
- Traslado ☐
- Fallece en embarazo ☐
- Fallece en parto ☐
- Fallece en puerperio ☐

Plan educacional:

	Si	No
Lactancia materna	☐	☐
Higiene personal	☐	☐
Anticonceptivos	☐	☐

PUERPERIO TARDIO

Días post parto ☐☐

Examen normal: Si ☐ No ☐

Patologia ☐☐☐☐

Conducta: Alta ☐ Reconsulta o referencia ☐ Ingreso ☐

Lactancia
- Solo materna ☐
- Mixta ☐
- Artificial ☐

Lactante vivo: Si ☐ No ☐