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EVALUATION REPORT
EAST COAST DELIVERY PROJECT
OPG 524-0143

MARCH 17-31, 1980

I N T R O D U C T I O N

In 1977 the Wisconsin Nicaraguan Partners, a private voluntary organization, received a grant of US\$225,000 from AID to support a rural health project on the East Coast of Nicaragua. This grant terminates in September 1980.

The project is managed by the Center for Regional Development (CENDER) located in Puerto Cabezas. This center was established by the Wisconsin/Nicaraguan Partners and provides a variety of community and regional services, one of which is health care.

The health project staff consists of an accountant/manager, three coordinators (for midwifery, nutrition and health care), three supervisors (two for midwives and one for nutritionists) and several clerical staff who assist in drug distribution, census data collection and tabulation and logistical coordination.

METHODS

The framework for this evaluation is based upon the end of project conditions and objectives articulated in the project agreement signed in 1977. Many of these objectives were not stated in measurable terms, therefore, some liberty has been taken in the interpretation of the scope and qualification/quantification of these objectives. Unfortunately, but not surprisingly, a plan for evaluation was not established at the outset of this project, thus, in many cases necessary data were not collected. I would strongly recommend that in future agreements involving this project, objectives and evaluation procedures are more explicitly stated. A good information system would seem imperative in the next phase of this project as responsibility for project management and support gradually are transferred to the Ministry of Health. Since the future of this program is tenuous for economic and political reasons, the staff should make every effort to document the efficiency and effectiveness of this system of health care delivery. Of particular importance will be data for the simple calculation of the cost-effectiveness of the training/supervision program, the rotation of midwives in the Partera Center, the maintenance of a two-way radio network, the Nutrition Rehabilitation Center and the establishment and operation of health posts.

This evaluation is based upon a review of project related documents since 1976, interviews with CENDER health staff and Wisconsin/Nicaragua Partner representatives and site visits to communities in which health workers are operating. I was unable to observe various aspects of project activity such as training and continuing education. Unfortunately, the project manager and supervisor of the midwifery program were not available during my visit. Needless to say, their absence limited my ability to evaluate the overall management of the program and the maternal-child care services provided by CENDER.

EVALUATION OF PROJECT OBJETIVES

<u>MAJOR OBJECTIVES</u>	<u>STATUS</u>	<u>REMARKS</u>	<u>RECOMMENDATIONS</u>
1. Form a Regional Health Council whose functions include (p.1):	Unfulfilled; such a council was not created on a permanent basis	A Regional Health Council as described on Page one of Annex A of OPG Agreement was not permanently established.	Due to the importance of a professional relationship between health staff and the Regional MOH the concept of a forum for the exchange of ideas should be encouraged.
a. General leadership.	Functions never effectively performed	This Council was to be spawned by a regional conference; two conferences were held in Puerto Cabezas.	Given the political climate and MOH policies CENDEP should maintain contact with other service agencies in the region but not take an active, leading role in trying to create a regional health council.
b. Coordination of services in the region.		Despite these meetings, a networking of health personnel and agencies in Zelaya was never institutionalized.	
c. Formulation and implementation of an integrated delivery system.			
d. Supervision and guidance to subsidiary or supporting systems.		The underlying concept of regionalization could have been better developed in the project proposal and agreement; the execution of this objective was impeded from the outset of this project.	In the future, this objective has to be substantially altered as the MOH has a keen interest in creating a regionalized system of health services.
2. Establish Community Health Organization in 28 Villages (p.2)	Satisfied	Loosely integrated organizations exist in 34 villages	
a) Maintain Community Health Organizations	Unclear objectives		The concept of a village health team needs to be reinforced; better integration of the functions and skills of health leader, nutrition leader and midwife. Activities of the health workers should be integrated with the CDS to ensure community cooperation and continuity.

<u>MAJOR OBJECTIVES</u>	<u>STATUS</u>	<u>REMARKS</u>	<u>RECOMMENDATIONS</u>
b) Select, train and supervise health workers	44 leaders 51 nutritionists 96 parteras - community visit every three (3) months - rotating intership at Partera Center for midwives - retraining courses at least one/year		- Determine optimal health worker/population ratio; plan manpower development activities according; if more than one type of worker/community address sharing of resources, target households, delineation of responsibilities, etc. - Encourage integrated training sessions for community health team. - Promote sense of teamwork among three types of health personnel working within village. During site visits CENDER staff should discuss cases and activities where leaders, nutritionists and parteras should collaborate. - Develop guidelines for intra-village referral (health leader-nutritionists-partera)
c) Development of Health Post	Number/pop was never specified 6 of 34 communities have health post	Concept of clinic with defined catchment area poorly developed therefore linkages between communities and health post are weak.	- The Ministry of Health has expressed the desire to receive CENDER inputs for the construction of health posts in Dakura and Layasiksa. I would recommend that before building facilities, consideration be given to total area needs, geographical distances between the 34 villages and health facilities, staffing requirements, the ability of MOH to provide operating funds for the clinics, community access to clinics

MAJOR OBJECTIVES

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d) Develop capacity to deliver minimal but essential care to 2/3 of women of reproductive age and children under six

Project never specified what constitutes "minimal but essential care"

Indicators for measurement of objectives never defined

Several indicators can be suggested at this stage to provide a proxy measure of this objective

1. Existence of health personnel
2. Ability of personnel to provide first aid, to detect signs of illness, to provide health education, to surveil target population and to refer high risk cases
3. Regular supply of basic drugs and equipment for performance of #2
4. Logistic support for referral of cases.
5. Maintain standards of care for services provided by three (3) types of village health workers

1. Health personnel reside in each of the communities; there is evidence that are providing services to a segment of the target population however data are poor on access of target population to village workers and productivity of health workers
 - In 1978 over 80% of births were attended by midwife (not clear whether all midwives were trained, however)
 - In 1978 low percentage of children were immunized; immunization data are unreliable due to problems with record-keeping.
 - From available data, it is not possible to calculate the % of children under 6 yrs. who are periodically weighed by nutritionist
 - The death rate for children 0-4 years of age is three times that of adults (1978 survey data); according to monthly site visit reports and weight charts since mid-79, there is a high (unquantified) incidence of childhood morbidity; these statistics point to the need for a more rigorous effort to provide periodic under-5 clinics in villages to achieve higher immunization rates; to seek ways of fortifying the diet of Misquito children; of encouraging women to boil water and better household hygiene
- CENDER and nutritionists should continue to hold health education sessions for village women
- CENDER should consider re-initiating the household garden project
- Greater emphasis on preventive health care for children in curricula of all health workers
- Closer supervisor of C+ activities
- Periodic spot checks of prevalence of disease among under 5's by CENDER staff during community visits

<u>MAJOR OBJECTIVES</u>	<u>STATUS</u>	<u>REMARKS</u>
d) (continued)		<ul style="list-style-type: none"> <li data-bbox="940 299 1871 412">2. When health workers graduate from the health course they are trained to provide basic services; application and quality of their knowledge and skills is not tested systematically once they are in the field <li data-bbox="940 448 1843 475">3. Erratic due to lack of supplies provided by former MOH <li data-bbox="940 506 1885 533">4. See comments on referral of cases; sub-objective number 4 <li data-bbox="940 564 1871 617">5. Norms for patient care were never established; therefore a yardstick for quality control does not exist.

II. <u>SUBOBJECTIVES</u>	<u>STATUS</u>	<u>REMARKS</u>	<u>RECOMMENDATIONS</u>
Develop Regional Training Center (Page 3, Annex)	A "facility" was never constructed for training purposes however a viable system for training personnel has been created.		
a) Develop Training Materials	Upgrading necessary	To date no manuals have been developed for health leaders, nutrition leaders and mid-wives for training and future reference; staff have pulled together a variety of materials which could be better integrated and organized into a text. M. Levy, a former Center employee, with the assistance of a nurse practitioner, was developing a manual for the health leaders; Levy has taken these materials to the MOH and plans to upgrade and publish them as the official MOH <u>promotor</u> text; not clear when this will be completed; <u>Donde No Hay Doctor</u> distributed to health leaders; no data as to utility of the text; frequency with which consulted; whether easily apprehended by workers, etc.	Field tested manuals for indigenous workers have been developed for use all over the world. Samples of these materials should be made available to project and MOH; segments of didactic texts can be integrated and adapted to the local environment. Technical assistance on the synthesis of these materials would be useful as well as for the development of teaching visual aids for health workers and community health education sessions. Technical assistance to CENDER staff, MOH and Health workers on methods of community health education with an emphasis on prevention and communal projects such as latrines, water purification, etc. Development of algorithms for identification and treatment of signs and symptoms of illness for each type of health worker.

<u>SUBOBJECTIVES</u>	<u>STATUS</u>	<u>REMARKS</u>	<u>RECOMMENDATIONS</u>
a) (continued)			Stronger emphasis in curriculum on prevention (community outreach, early signs of disease; immunization; promotion of community cooperation; prenatal care, community education regarding personal hygiene and environmental sanitation, etc.)
b) Identify basis educational kits	(unable to assess contents, distribution and utility of kits)	As far as I know (unable to verify) health workers are given a <u>botiquin</u> upon "graduation", the contents of which are replenished periodically.	Need to specify who will supply kits in the future and method of replenishing medical supplies
c) Provide continuing education to health workers	Retrained at least twice/year. CENDER health staff visit village every three (3) months Rotating of midwives in Partera Center in Puerto Cabezas for two weeks.		<p>Develop curriculum for continuing education for each type of health worker</p> <p>Develop training materials for continuing education.</p> <p>Update manuals and algorithms as skill levels for workers improve</p> <p>Develop simple tests for health workers to assess knowledge, practical skills and decision making abilities</p> <p>Collect information on cost of Partera internship program, effectiveness of experience on midwives</p> <p>Consider the cost-effectiveness of nutrition rehabilitation center in Sisim; ability of the system to support the rotation</p>

<u>SUBOBJECTIVES</u>	<u>STATUS</u>	<u>REMARKS</u>	<u>RECOMMENDATIONS</u>
c) (continued)			of nutritionist through this facility; acceptability of this rehab and training facility to MOH.
d) Improve the efficiency of delivery system		CENDER accountant not available during my site visit; therefore I am not aware of the types of financial and management data which are available for the measurement of this objective. Obviously this is a key issue since the management and support of the program is to be transferred to the MOH.	The documentation of the "cost" of supporting the various activities associated with this rural health project will be of critical importance in the future. T/A to develop simple reporting system for management, planning and evaluation of health care services.
2) Expand, maintain and develop the MOH-sponsored logistic system (p.3, Annex)	Unsatisfactory	Former MSP was not a reliable supplier of basic drugs and supplies to village health workers; by default the PVO became involved in providing bulk of medications.	Determine whether Regional CAM is capable and willing to supply village workers with essential drugs on a regular basis. If deficiencies anticipated, consider other sources of pharmaceutical to supplement CAM inventories.

<u>SUBOBJECTIVES</u>	<u>STATUS</u>	<u>REMARKS</u>	<u>RECOMMENDATIONS</u>
2) (continued)			Establish system for distribution of CAM supplies to health personnel in 34 communities. Standardize essential drug lists for each health worker. Establish fixed range of prices for CAM/CENDER drugs sold in the community.
3) Develop reporting system to and from communities, regional Health council and other agencies	Not operative at all of these levels.	Due to disintegration of the regional health council there is no formal reporting of project-related information to other agencies; the project tries to keep in communication with MOH and other development agencies	Develop channels of communication between CENDER health staff, the Ministry of Health, other PVO's and AID Identify critical information needed from village health workers. Standardize the reporting of this information. Instruct the health workers on the reporting of basic patient care data T/A to health workers to set up simple system for tabulating information on health care activities/month Develop system for communicating this information to CENDER Tabulation and analysis of information by CENDER staff

<u>SUBJECTIVES</u>	<u>STATUS</u>	<u>REMARKS</u>	<u>RECOMMENDATIONS</u>
Possible Types of Data To be Reported:			
Patient Care Data	Weak, Sporadic	No system presently exists for auditing the quality of care, the appropriateness of treatment and outcome of treatment	With development of algorithms, referral criteria and drug inventory system, a system for reporting patient care data can be structured; simple forms can be developed to report # patient seen; age, name and sex of pt.; signs and symptoms detected; drugs and/or treatment prescribed; follow-up actions (if any) and referral decision (if any).
Census Data	Good; Rigorous attempts to get 100% response rate	Data collected by CENDER health staff in house-to-house interviews. CENDER circulates these data to MOH and various agencies.	Support the collection of demographic, health status and utilization data; encourage health worker involvement in data collection; discuss questionnaire with MOH and standardize form; link questionnaire to data requirements for evaluation of project objectives
Project Activities Data	Adequate	CENDER could improve their reporting to AID/MOH, etc., by determining what these parties would like to know about the project and standardizing the format in which these data are presented.	
Form & Referral System (p.4 Annex)	Weak	The establishment of a referral system in Zelaya	CENDER, MOH and other agencies should study transportation

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4) (Continued)

is a very challenging undertaking. CENDER has laid some of the groundwork for the strengthening of community, clinic, center linkages.

Due to poor transportation, poor communication, late detection of illness/high risk cases, this system is weakened

There are indications that villagers are reluctant to go to the hospital or center in part for a variety of economic and cultural reasons.

needs, resources and ways in which the various agencies can coordinate to provide greater mobility for villagers

Health worker should work more vigorously in the early detection of medium to high risk cases; early detection should be emphasized in the curriculum; community outreach should be emphasized by health supervisors

Referral criteria should be developed for each type of health worker

Continue to hold community health education classes for mothers so that they become familiar with the signs, dangers and prescribed treatment of prevalent childhood diseases.

Develop better relationships between health workers and hospital, center and clinic personnel

Familiarize health workers with the facilities and staff of the medical center.

Develop an understanding with center/hospital personnel about the reception of the referral patient and the role of the health worker

<u>SUBJECTIVE</u>	<u>STATUS</u>	<u>REMARKS</u>	<u>RECOMMENDATIONS</u>
5) Establish a Low Cost Radio Communications Network (Page 4, Annex)	Two clinics in 60 mile radius in which program operating have two-way radios Six month survey in 1978 reveled roughly 1 radio contact/day with Puerto Cabezas on health matter	Due to distribution of population, these radios serve limited catchment area; majority of villages without two-way communication; intermittent problems with power source for those clinics w/radio.	Decisions to expand the radio communication network of this region must be predicated upon feasibility of receiving T/A and financial support in the future. (To my knowledge, data are not available on the average cost of operating and maintaining a two-way radio).
6) Develop operational/administrative guidelines to implement and facilitate the regional delivery system (p.4 Annex)	Incomplete	Because a regional system of health services was not institutionalized, these guidelines were not developed. In addition, the vagueness of this objectives lends itself to loose implementation, for example it is not specified if guidelines were to be developed for the operation of services at the community level, at the management level (e.g. CENDER headquarters) at the inter-institutional level (village-clinic-center-hospital) or all of the above At the community-level no such guidelines has been developed thereby contri-	Appropriate technology radios may have a direct impact on the timeliness and appropriateness of referrals and on the quality of care provided by the health workers. Data are not available to test this. In the future such guidelines should be developed by the Ministry of Health (hopefully with input from CENDER staff and health personnel) naturally such guidelines will be determine by the type of infra-structural changes the Ministry of Health may institute The development of these administrative procedures will serve to clarify channels of communication, accountability, lines of authority, areas of responsibilities, sources of financial support, etc. for the Ministry of Health and CENDER; by articulating these inter-relationships, future misunderstandings between the MOH and CENDER can be averted or more easily resolved.

SUBOBJECTIVES

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RECOMMENDATIONS

- % of cases/worker referred
% who sought higher level
of care (source of care)
- morbidity statistics

OUTCOME OBJECTIVES

In 1978 CENDER formally began to collect census and health related data in the communities in which they work. The previous year, a college student and a Miskito woman surveyed 27 communities. For the purpose of measuring the percentage of changed achieved for each outcome objective, 1977 or 1978 data can be used as baseline. Technically it would be more correct to use 1978 data since the questionnaires, methods of interviewing and filling out questionnaires, data tabulation and analysis were not standardized until 1978 and there is the problem of inter-observer reliability. Unfortunately, the only available data are those collected in 1977 and 1978. At the present time, census data are being collected and should be compiled by May 1980. Until these data are available, however, it will be necessary to confine comments on the attainment of outcome objectives to differences in health status indicators in 1977 and 1978.

1. Reduce Infant Mortality
by 30% (0-1 year)

Based on a comparison of IMR's for 1977 and 1978, there was a 29% drop in rates

Given what has been observed in other parts of the world, I would strongly question the observed decline in IMR from 1977 to 1978 and attribute this observed decrease to statistical and data collection errors

To double check data mortality data reported in the annual survey, health statistics should be collected by health workers on a monthly (or some short interval of time) basis

It is worthy to note that as of 1978, infant mortality rates were three times greater than mortality rates for any other age group pointing to the need for continued emphasis on MCH

For evaluation purposes it would be useful if intermediate outcome indicators were developed and necessary data collected e.g. % of neonates examined by trained midwife, % of infants breast-feed, % of infants seen by nutritionist and health worker, frequency of well baby visit, immunization rate, supplementary feeding practices, % of neonates treated with silver nitrate

2. Reduce Mortality of
Preschool Children
by 40%

Death rates for children 0-4 were 43.5 in 1977 and 29.0 in 1978, a purported decline of 34% (as with IMR I would be skeptical about this observed drop in mortality rates)

3. Reduce Maternal Mortality
30% (from 2% to 1.4%)

Common formulae used for the computation of this rate is:

$$\frac{\# \text{ of deaths from puerperal causes/year}}{\# \text{ of live births/year}}$$

(Data unavailable at this time to measure changes in rates over time)

4. Reduce severe enteric/
parasitic infections
(requiring hospitalization)
by 50%

Data not available for the measurement of this objective

(of the 129 deaths reported in 1978, the primary cause of death recorded by interviewers were: fever, diarrhea, vomiting and stomach pain)

(1978 data indicate that the incidence of diarrhea is 59/1000 for all ages and of parasites is 145/1000; comparison of these rates with clinic visits indicates that a low percentage of people with signs of enteric/parasitic infection contact the clinic for treatment; there are no data to determine what percentage of people with these symptoms contact the health worker e.g. non-clinic visit for care)

One problem with this objective is that it assumes that one can use referral information as an indicator of the severity of an illness; unfortunately we do not know whether health workers are making appropriate decisions about whether/when to refer a patient to a higher level of health care; therefore it is difficult to use "requiring hospitalization" as a measurement of the severity of infection

- In the future, measurement of this objective will be facilitated by the establishment and enforcement of referral criteria and the development of a system for the periodic reporting of morbidity

5. Reduce protein-calorie malnutrition in children under 5 by 75% for Grade III and by 40% by Grade II
- Data are now being collected by the nutritionists on weight per age group and Gómez rating; at this time not enough information has been collected and tabulated to determine whether changes have occurred
- (It would seem highly unlikely, however, due to the food shortages, environmental factors and newness of the health services program that the targeted reduction in malnutrition was achieved)
6. Provide pre and post natal assistance and rehabilitative care to 80% of childbearing women
- 87% of births were attended by midwives
- No data on stage at which prenatal care provided; evidence that majority of pregnant women not seen during first trimester;
- Midwives provided with vitamins and iron for women for pre and post-natal care as indicated
- Increase % of women seen in 1st and 2nd trimester by midwife
Develop system for monitoring coverage/quality of care to pregnant women in community
Identify signs of complications/ develop treatment protocols and criteria for referral
Supply midwives with essential vitamins, minerals and medicines for pregnant
Determine vaccination requirements for childbearing age
Emphasize in training of midwives prenatal nutrition; support health ed. for women
7. Reduce mortality from TB by 30%
Reduce morbidity by 30%
Immunize 80% of children under 5 years against TB
- Reliable cause-specific mortality statistics not available
Prevalence/incidence data for TB not available
Data unavailable
(A 1978 survey report does not include BCG in section on immunizations)
- All data on immunization rates are of questionable reliability. Under the previous Ministry, national immunization rates were low and given the location of the Miskito villages, one can infer an even lower rate of immunization of children under 5 years
- CENDER does not keep immunization records and therefore must rely on respondent's

7. (continued)

memory) or records (which are often lost) or Ministry statistics. In addition, from the middle of 1978 until the revolution many government activities were suspended contributing further to low immunization rates. The GRN has launched an immunization campaign since late 1979. The effects of the MOH's efforts should be reflected in the 1980 survey and in MOH health statistics.

8. Immunize 80% of children under 6 with DPT

19.3% immunized (1978 survey)

9. Immunize 80% pregnant women against tetanus toxoid

No data available; (doubtful that successive doses of vaccine are administered, and especially dosage prior to delivery)

(Communicate further with midwife supervisor as to status of this objective)

10. Vaccinate 85% of children under 5 against measles

9.3% vaccinated (1978 survey)

In 1979 many children (% unknown) were killed or debilitated by the outbreak of a measles epidemic

Preliminary data from 1980 survey suggest that roughly 41% of children 1-4 in Sandy Bay received the 1st dose of measles vaccine

11. Vaccinate 85% of children under 5 against polio

16.7% vaccinated (1978 survey)

Preliminary data reveal that nearly 50% of children in Sandy Bay received their 2nd dose of polio vaccine

12. Decrease the birth rate by 15%

42.3 (1978)
38.4 (1977)

This objective is not relevant or realistic as the health workers do not offer family planning services to women of reproductive age; midwives do offer counseling, however, on birth spacing.

13. Increase child spacing
average by 20%

Data not available;
Measurement contingent
upon results of 1980
survey.

PROJECT DESCRIPTION & RECOMMENDATIONS:

The main accomplishment of this project has been the formation of an infrastructure for village health worker training, primary care services delivery and linkages between villages and higher levels of care. This infrastructure has to be strengthened and the program objectives better focused to insure that in the long-run these communities will receive basic health services. Political factors also figure prominently in the survivalability of this infrastructure; political considerations will be addressed in a subsequent section of this report.

I would strongly recommend that the program not be expanded but that additional support be channeled to the further development of training programs, community outreach, preventive care and linkages between these communities and CENDER/MOH (supervision, monitoring, transportation, communication and referral mechanisms).

The training and support of village health workers comprises the core of this project. At this time, CENDER has succeeded in providing 34 communities with personnel to handle the early stages of illness, to recognize medium to high risk cases and to provide health education. The health workers require continued supervision and training from CENDER staff and other paraprofessional/professional personnel (e.g. MOH). At present, the bulk of the health leaders time is devoted to curative medicine. Greater emphasis must be placed during training and site visits on preventive care (e.g. immunization, purification of water, disposal of human waste, proper maintenance of wells and personal hygiene). It appears, for example, that the health leaders make few home visits to talk to people about sanitation or do community outreach to detect early signs for disease. For the most part, all of the health workers in the community (health leader, nutritionist and midwife) wait until they are contacted by a patient with a complaint. More of their time should be devoted to detecting illness, organizing the community for health education, environmental projects and to soliciting feedback on community needs.

Nutritionists have more contact with the community than do the health leaders as they are responsible for the periodic weighing of children under six years of age. This activity enables them to identify cases of malnutrition and to take necessary steps to rehydrate the child or refer him/her to the health center/hospital. It is not clear whether the nutritionist also uses these home visits to inform the health leader or midwife of children and/or pregnant women requiring their services. The level of intra-village coordination should be monitored more closely by supervisory personnel. Methods for fostering a team approach to providing community health services should be included in the curricula of the health leaders, nutritionists and midwives.

(2)

A high percentage of births are attended by midwives. It is not certain, however, if village women continue to use midwives who have not received training. Midwives generally make contact with their clients during the latter stages of pregnancy. A woman will initiate a relationship with the midwife at an earlier stage if she develops pain or an abnormality. As in the case of the health leader, midwives should be encouraged during their training and in subsequent educational sessions, to seek out women in their communities during the first trimester of their pregnancy. Another means of increasing the percentage of prenatal visits would be to hold community meetings in which the midwife and the CENDER midwife supervisor inform women of the importance of prenatal care and of the availability of the midwife to provide nutrition counseling and prenatal care. The chief methods of controlling the quality of care provided by the midwives are through training, refresher courses and the rotation of midwives through the Partera Center in Puerto Cabezas. It would be desirable, however, to have greater supervision of midwives in the villages where they attend the majority of births. CENDER should try to develop a system whereby midwives report pregnancies in their villages and the midwife supervisor schedules visits to the communities to check the midwives' skills, knowledge and whether procedures are aseptic.

Mortality rates among the 0-4 age group are higher than those of any other age interval in the Miskito population; this same difference is observed among the total population of Nicaragua as well. According to national health statistics published in Syncrisis (1974) death in the 0-4 age group accounted for 42% of total deaths.

In most parts of the developing world, the majority of infant deaths occur during the first 28 days of life. Primary causes of death are low birth weight and neonatal tetanus. These statistics point to the need for improved prenatal care, upgraded maternal nutrition and more aseptic obstetrical practices, particularly more sterile methods of treating the umbilical cord. These facets of maternal child care should be strongly emphasized during the training of nutritionists and midwives and closely monitored by CENDER/MOH personnel once the health workers are providing care in their communities.

(3)

Among poor, rural Nicaraguan children, the leading causes of death are enteritis/diarrhea, measles, parasitic diseases and respiratory infections. As has been observed throughout the developing world, rural children are plagued by the negative effects of a synergy of environmental factors. Generally the child is weakened by malnutrition which is complicated by dehydration and/or infectious diseases, both of which prove to be fatal in many cases. To counteract this complex etiology of disease in the Miskito communities, CENDER should place greater priority on water decontamination and the proper handling of water, the disposal of human and animal wastes, child nutrition, immunization and health education for village women.

Health leaders are responsible for storing, prescribing and reordering medicines. Although there is no systematic method to monitor the appropriateness with which the health leader distributes drugs, there is evidence that there is an overuse of penicillin and other injectable medicines. Problems also have arisen over the price of drugs to the consumers. To alleviate these problems, I would recommend several measures:

- 1) Develop algorithms for the use of essential drugs in which dosages per age group are clearly explained
- 2) Establish a list of essential drugs which the health leader is allowed to prescribe
- 3) Inform health leaders of all counter-indications of the drugs on the essential list
- 4) Develop a simple system for reporting type, quantity and reason for drugs prescribed on a monthly basis

(4)

- 5) Post a price range for each essential drug in each community; prices will vary depending upon the source of procurement (e.g. CENDER, MCH, Pharmacy, etc.)
- 6) Encourage health leaders to follow-up patients who are given penicillin and other drugs which require careful vigilance and compliance to drug regimens over an extended period of time (e.g. TB, malaria, bacterial infections).

Generally the training of the village health workers can be improved by 1) formalizing the curriculum and developing a teaching manual for each worker; 2) emphasizing prevention and methods of community health education and 3) emphasizing a team approach to providing primary care in the community.

It seems apparent that in the future, any development of the curriculum and manuals and other teaching materials will be coordinated or at least subject to review by the Ministry of Health. Given that presently an array of materials are loosely integrated to teach the health workers, any attempts to organize the information in a logical, clear format will enhance training. Such a manual also should be used by the health workers once they return to their communities. Since many workers are illiterate (or semi-literate) the manuals should be pictorial or written in very simple misquito. One format which may prove to be useful and easily comprehended is a series of algorithms covering the major signs and symptoms of illness. Such algorithms would enable the health worker to systematically assess a patient's health status and reach a decision/judgement on diagnosis, treatment and need for referral or consultation. A system for reporting patient load, diagnoses made, treatment prescribed, drugs sold and follow-up actions taken could be standardized using these algorithms as the frame of reference. If AID grants this project continued funding, it would be advisable to explore the possibility of offering technical assistance for the development of a teaching/reference manual and patient care algorithms. Presumably CENDER and MOH staff would collaborate on the preparation of the curriculum for training (and continuing education) and the manual.

Prevention should be stressed very heavily during all training sessions. During these sessions the basic concepts of prevention can be introduced. It is usually the case, however, that

these concepts are not translated into community activities unless supervisory personnel work with the health leaders, nutritionists and midwives to promote community prevention projects. Working with the Comité de Defensa Sandinista, CENDER staff and health leaders may be able to better mobilize community participation in immunization campaigns, environment sanitation and other health-related activities. CENDER staff are cognizant of the need for greater emphasis on prevention and of the need to work with the health personnel to hold community meetings. The nutrition supervisor is working with the community nutritionist to periodically assemble women to talk to them about the signs and treatment of malnutrition and dehydration, the importance of boiling water and of maintaining family hygiene. Other areas CENDER would like to work in are well construction and maintenance, latrines and water purification. Technical assistance on methods of educating the community about the need for these innovations and the execution of these projects may be indicated.

Team building and role clarification should be an integral part of the health workers training. Each health worker should be familiar with the functions and skills of the other health personnel working in the village. During training, areas of coordination should be identified so that appropriate intra-village referrals can be made. The development of the algorithms also can be useful in identifying cases for which consultation with the health leader, midwife and/or nutritionist would be appropriate. When supervisory personnel visit the communities they should assemble all health workers so they can discuss health problems and cases and conduct community health meetings. CENDER also has developed cursillos integrados which are another important means of intermeshing the skills and expertise of the health workers. In the future more training sessions should be held for all three types of health workers.

EXTERNAL FACTORS:

Since this OPG was granted to the Wisconsin/Nicaraguan Partera, Nicaragua has experienced a political and socio-economic revolution. As a result, institutional transformations have occurred which have had a direct impact on the CENDER rural health project. Under the GRN, the health system has been nationalized and the Ministry of Health is in the process of integrating health services and resources into the Sistema Nacional Unico de Salud. In the Department of Zelaya, several health care services continue to operate semi-autonomously but there are indications that over time hospitals such as those administered by religious groups will be absorbed by the SNUS.

The Regional Director of Health has expressed on numerous occasions, a desire to gain more control over CENDER's health activities and resources. Given the Ministry's limited resources and overwhelming task of providing primary care to an economically depressed area, it is not likely that CENDER will receive substantial government support in the short-term. Therefore this project needs to seek non-governmental funding for the next 1-2 years with the assumption that there will be a gradual transfer of support, accountability and management to the Ministry of Health. As this project gradually shifts from Wisconsin/Nicaragua Partners auspices to the Ministry there will be a need to define CENDER's role during this transition period and the degree of control its board and staff will exercise over personnel, resources and project management.

At an early stage it also would be advisable to clarify the Ministry's policy toward indigenous workers in general and the scope and viability of CENDER's training and supervision in particular. There have been some indications that the Ministry wants to channel its resources to the formation and maintenance of a new cadre of health worker. Should this be the case, the question arises as to what type of support can indigenous health workers expect to receive from the Ministry once AID support is withdrawn? If the Ministry does not anticipate the replacement of the indigenous workers by brigadistas de salud in the near future, does the Ministry wish to substantially alter the curriculum now being employed to train indigenous health workers? How can CENDER best respond to these and other policy shifts? Assuming that the training/supervision will continue to be the keystone of the CENDER health rural project, who will determine which of the activities performed by the health workers are of greater priority? If, for example, the Ministry decides to have health leaders concentrate on well projects, how can CENDER staff

respond to this decision? Who will prepare the health workers to execute these projects? Who will provide technical assistance? What will be the source of building inputs?, etc. These types of questions should be applied to all facets of the CENDER health project which absorb a considerable proportion of staff time, resources and coordination (e.g. rotational training at the Partera Center and the Sisin Nutritional Rehabilitation Center). Furthermore before expanding project activities (e.g. installing more radios, building new health posts, training more workers, etc.), there should be rigorous examination of Ministry objectives, the ability and desire of the Ministry to provide financial and logistical support and identification of persons responsible for management and supervision.

These and other questions about the content and scope of CENDER's program will probably be negotiated over an extended period of time. It would be desirable, however, if the initial agreement between the Ministry of Health and the Nicaraguan/Wisconsin Partners addresses decision-making authority, areas of responsibility, roles and functions, policy direction, etc., as explicitly as possible. Such an agreement will provide the framework for the joint planning of specific project activities and reduce the probability of serious misunderstandings.

At present the level of inter-personal conflict is high and has impeded the ability of CENDER health staff and Regional Ministry of Health representatives to work constructively in meeting the high demand for primary health care in the region. As soon as possible, Dr. Canton and other representatives of the W/N Partners should mediate the resolution of conflicts between Dr. Rodríguez and his associates and Ms. Velez de Perilla and her staff. Up until recently CENDER has operated autonomously and strongly identifies with the personnel they have trained and with the communities they serve. They perceive Dr. Rodríguez as encroaching on their territory and threatening to dismantle the infrastructure they have created. It is reported that several key members of the CENDER staff will quit if the Ministry of Health begins to "manipulate" them. Obviously, further project planning cannot proceed, until these misunderstandings are addressed and resolved. Until an agreement is reached between the PVO and the MOH, as to CENDER's role, responsibility and degree of decision-making authority, a decision about the continued funding of this project should not be made.

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The transfer of project management and coordination from Wisconsin to the Nicaraguan representatives of this PVO would be logistically and politically prudent. Given the political climate and tangle of inter-personal conflicts, it would be more useful if the project is identified with local persons rather than "absentee foreign managers".