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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL

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Through: Philip S. Brachman, M. D.
Director, Bureau of Epidemiology (BE)

DATE: April 6, 1978

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Honduras
EXCC

FROM : Medical Epidemiologist, Program Evaluation Branch (PEB)
Family Planning Evaluation Division (FPED), BE

SUBJECT: Resource Support Services Report: Evaluation of the Program for the
Extension of Health Services, Honduras: February 4-27, 1978

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SUMMARY

Since 1975, the Ministry of Health (MOH) of Honduras has conducted a program to expand the availability of health services in rural areas. At the request of the Division of Maternal and Child Health, MOH, and USAID/Honduras, which is partially supporting the program, I participated in a general evaluation of the program.

The program is centered around the rural health post or "cesar," 55 of which have been constructed since the initiation of the program, with a total of 243 units planned. To date, 150 Rural Auxiliary Nurses have been trained in a 10-month course in a center established specifically for the program. These auxiliaries staff the cesars and supervise a network of volunteer community health workers in the areas surrounding the cesar. The categories of health workers include:

- 1. The health representative, who is elected by his community and has responsibilities centered on environmental sanitation;

2. The health guardian, who provides simple medical treatments, such as first aid and diarrhea treatment, as well as collecting simple health statistics and making referrals to the cesar; and
3. The empirical midwife (partera), who receives training in improved obstetrical techniques and pre- and postpartum referrals to the cesar.

The AID Project Manager and I interviewed several members of each category of health worker during our field visits and observed a portion of the training of health guardians and of health representatives. We also talked with national and regional level nursing supervisors, and reviewed regional statistical reports and supervisory reports.

The overall project design appears well suited to creating a rural health infrastructure in Honduras. However, in many ways the implementation of the program fails to adequately exploit the potential of the infrastructure that it creates. To provide an objective measure of the program's ultimate effectiveness, either with or without the modifications suggested in this report, project managers should authorize an infant or child mortality survey comparing areas where the program has been implemented with those where it has not.

The training of the rural auxiliary nurse in clinical areas appears generally satisfactory, with the exception of a minimal family planning component of only 4 hours. However, based on field performance, it is clear that the auxiliary' training in the supervision of the network of community health workers or the "informal" health system is unsatisfactory. I recommend that the training center instructors obtain feedback from their graduates in the field by performing in-depth evaluations of functioning cesars, with emphasis on the actual effectiveness of the informal system. On the basis of this experience, the instructors should then arrange for their students to participate in similar evaluations to learn techniques of evaluating and supervising the informal system.

The training of informal system personnel is presently based on loosely-structured lectures, which include subjects of marginal importance. I recommend that this approach be replaced with a course oriented toward a small number of carefully selected, high priority skills desired of the agent, and these should be explicitly defined in writing. This limited, high priority content should then be presented with intense repetition and continual active questioning of each class member. Similarly, each class member should perform the desired skills several times under conditions simulating those of the field, until he demonstrates mastery of the skill. Formal evaluation should be concentrated on identifying areas that have not been mastered so that further training can be focused in those areas; initial evaluations should take place well before the end of the course.

In addition to altering training methodologies, program managers should consider expanding the role of the health guardian. The present selection of medicaments available to this agent have a minimal potential to influence the health of the community. In addition, the guardian should receive training and supervisory support in a more active role in his community, with the goal of providing complete coverage of his community, with basic medical, educational, and referral services, rather than passively responding to requests from individuals, as is the present pattern.

The role and training of the health representative should also be altered to take advantage of his influence as an elected community leader, particularly by supporting the educational and referral activities of the health guardian. The training of midwives would benefit from increased attention to the recognition, management, and transport of obstetrical emergencies, including the development of specific emergency transport arrangements for each midwife.

Present supervisory activities are limited to reviewing records kept by the informal system personnel and providing technical retraining. Increased attention to the coverage of the target population and the effectiveness of the health agents is needed in the program's supervisory system. Both the local auxiliary and her supervisor should make small, informal community surveys to monitor the actual coverage of the informal system. In addition, they should evaluate the effectiveness of the agent's interventions by following up a sample of their efforts in medical treatment, education, and referral. The organization of data collected by the cesar should be restructured to facilitate supervision, and data that does not contribute to supervision should be eliminated.

Serious shortages of basic supplies and per diem funds were apparent in every area that we visited. Since correction of these problems may involve agencies outside the control of program managers, the program would benefit from the creation of a local fund through minimal charging for drugs, so that critical supplies could be purchased directly when the logistics system of the Ministry fails to provide them.

The series of new emergency referral hospitals which are planned as part of the program, should be postponed or reconsidered, since existing emergency hospitals are under-utilized, and the referral system from rural cesars is virtually nonfunctional.

To provide a low-cost means for promoting communication among program personnel and to provide recognition for outstanding volunteer workers, the program should also consider instituting a newsletter specifically directed toward program activities.

I. PLACES, DATES, AND PURPOSE OF TRAVEL

Honduras, February 4-27, 1978, at the request of USAID/Honduras, USAID/LA, USAID/POP/LA, and USAID/POP/FPSD, to assist the MOH of Honduras in the evaluation of the Program for the Extension of Health Services in Honduras. I wrote a preliminary draft of the findings of the evaluation and presented this to AID/Honduras before my departure and verbally briefed MOH officials. This is the final report. This travel was combined with an earlier consultation in Nicaragua for which a separate report has been submitted (see CDC/RSSA Report: Nicaragua, dated March 22, 1978), and was in accordance with the Resource Support Services Agreement (RSSA) between the Office of Population, AID, and CDC/BE/FPED.

II. PRINCIPAL CONTACTS

A. USAID/Honduras

1. Dr. Thomas Hyslop, Health Officer
2. Anita Siegel, R.N., Public Health Advisor
3. Mr. George Moore, Public Health Advisor

B. Ministry of Health

1. Planning Unit
 - a. Dr. Gustavo Corrales, Chief
2. Division of Maternal & Child Health
 - a. Dr. Arnada Estrada, Director
 - b. Lic. Maria Teresa de Cerella, Head Nurse Supervisor
 - c. Dr. Elsa Moreno, Resident Advisor, Pan American Health Organization
 - d. Rita Fairbanks, R.N., Resident Advisor, Pan American Health Organization
3. Region 4, Choluteca
 - a. Sra. Marta Lillian de Arrone, Director, Rural Auxiliary Nurse Training Center, Choluteca
 - b. Srta. Maria Rosa Boano, Regional Nursing Director
 - c. Srta. Clara Arita, Area Nurse Supervisor
 - d. Srta. Clara Bruso, Area Nurse Supervisor
 - e. Sra. Arcenia Garcia, Rural Auxiliary Nurse

4. Region 3, San Pedro Sula

- a. Dr. Humberto Pineda, Director
- b. Dr. Sara Orrellano, Area Medical Director
- c. Dr. Antonio Andino, Regional Epidemiologist

5. Region I, Danli

- a. Srta. Nellie Mijra, Regional Nursing Supervisor
- b. Sra. Gregoria De Escobar, Rural Auxiliary Nurse

6. Region 6, La Ceiba

- a. Dr. Carlos Rivas, Regional Epidemiologist
- b. Sra. Norma de Carias, Regional Nursing Supervisor
- c. Sra. Yolanda de Valle, Regional Statistician
- d. Sr. Raul Cartagena, Regional Sanitation Inspector
- e. Sra. Mayra de Mijra, Area Nurse Supervisor
- f. Sra. Cristie de Munguia, Rural Auxiliary Nurse

III. EVALUATION OF THE PROGRAM FOR THE EXTENSION OF HEALTH SERVICES IN HONDURAS

A. Introduction

Since 1975, the MOH of the Government of Honduras has been conducting a program to expand the availability of health services in the rural areas of the country. At the request of the Division of Maternal and Child Health and USAID/Honduras, which is partially supporting the program through Project 522-0130, I participated in a general evaluation of the program from February 4-27, 1978.

1. Program Outline

The program is centered around the rural health post or cesar, 55 of which have been completed since the initiation of the program. In addition, 34 units are under construction, and a total of 243 units are planned with funding through a \$14 million Inter-American Development Bank loan. This loan will also fund the construction of 9 new emergency hospitals (CHE's) and a regional hospital in San Pedro Sula.*

*Ministerio de Salud Publica y Asistencia Social, Informe de la Segunda Reunion para Evaluar el Programa de Extension de la Cobertura de los Servicios de Salud in Honduras, Choluteca, April 1977

The cesar is staffed by a rural auxiliary nurse. Approximately 150 of these auxiliary nurses have been trained in a nursing school that was established in Choluteca specifically for the program, using a 10-month curriculum also developed for the program's specific needs. The program also includes a network of locally-trained community health workers to expand the cesar's impact in its assigned area of influence. A professional health promotor organizes a series of village assemblies that together elect a local health committee, which includes at least one health representative from each of the several communities within the area of influence of the cesar. These representatives are then trained for 5 days by the health promotor and auxiliary nurse in community organization and motivation. Each representative then returns home and convenes a second community meeting, with the assistance of the health promotor, to select a volunteer community health worker or Guardian de Salud. The Guardian de Salud receives 5 days training, emphasizing the collection of simple health statistics, referrals to the cesar, and the use of selected simple medicaments: aspirin, kaolin-pectate, an expectorant, piperazine, an antispasmodic, merthiolate, and peroxide solution. Later, the health representative and the guardian cooperate to recruit local empirical midwives (parteras) for approximately 2 weeks training in simple obstetrical techniques and referrals, in a course conducted by the area nurse supervisor. The midwives also receive a simple delivery kit.

Following the initial organization phase, the health representatives' responsibilities center on promoting environmental sanitation, with supervision provided by the health promotor. The auxiliary nurse provides field supervision for the Guardian and the midwives. The volunteer health personnel are referred to as the informal health system, as distinguished from the salaried Ministry professionals, or the formal system. In addition to receiving field supervision, the informal health personnel meet periodically with the auxiliary nurse and area nurse supervisor in the local cesar. The community health committees are also encouraged to meet periodically with guidance from the health promotor. With the exception of the midwives, who customarily charge an individually-set fee, all drugs and services provided by the informal personnel are free.

This outline reflects the standards promulgated by the national program committee. Since implementation is carried out by regional personnel, some variation on the general pattern occurs in different parts of the country. Program objectives are described in terms of increased coverage of rural areas with health services, rather than quantitative health indicators.

2. Methodology

After reviewing available program documents provided by Anita Siegel, R. N., the AID Project Manager (including a detailed evaluation report prepared by a MOH committee in April, 1977), I received an extensive orientation by Mrs. Siegel. We also discussed the program with Lic. Maria Teresa de Cerella, Chief Nurse Supervisor of the Maternal and Child Health Division, and with Rita Fairbanks, R. N., and Dr. Elsa Moreno, resident Pan American Health Organization advisors. We discussed the rural auxiliary nurse training program with Lic. Marta Lillian de Arrone, Director of the training center in Choluteca. We were, however, unable to actually observe auxiliary nurse training since the course was not in session during February. We visited auxiliary nurses and personnel of the informal system in 3 health regions (1, 4, and 6) selected by program officials, and observed the training of Guardians and health representatives in Region 1 (Danli). Current program data were not available on the national level, but we reviewed the data collected by the Statistics Department of Region 6 (La Ceiba), as well as a sample of cesar evaluation reports prepared by area nurse supervisors. Due to time limitations, we were unable to observe supervisory visits by area nursing personnel, nor did we observe partera training or the supervision of informal system personnel by the rural auxiliary nurse.

The limitations of this 3-week evaluation are obvious. The effectiveness of several important features of the program were not observed directly but inferred from other observations and reported data. The techniques and abilities of all levels of program personnel are likely to vary widely, and those that we visited may not be truly representative. Our chief objective was to analyze the experience gained in the areas that we visited, so that future implementation plans can reflect actual program performance.

3. General Impressions

No health resource is more valuable than an organized infrastructure that makes services available on a community basis, although this has been rarely achieved in the rural areas of developing countries. The program under consideration appears to be extremely well designed to create such an infrastructure, and the high priority it has received from the MOH is appropriate. Because such a program is inherently complex and innovative, it is to be expected that its implementation will produce some results that could not have been anticipated in the initial design phases.

Some of these will be weaknesses that must be corrected; others, strengths that demand exploitation. In this report, I will attempt to focus on both of these within the context of an overall program design, which is sound and could even serve as a model for other countries.

B. Training and Roles of Program Personnel

1. The Rural Auxiliary Nurse

The Director of the training center in Cholulteca indicated an interest in continually revising the rural auxiliary nurse training course on the basis of the actual role of the auxiliary in the field. Such flexibility is commendable and should receive active support of all Ministry officials involved in setting standards for training. However, these efforts are impeded by the virtually complete absence of contact between the center instructors and graduate auxiliaries working in the field. One potential approach to the lack of feedback from the field is to provide several weeks each year for the instructors to make in-depth evaluations of the performance of graduates. In addition to providing a basis for modifying the training program, these field evaluations should also contribute directly to improving any areas of auxiliary performance that are found to be weak. Field evaluations would also be useful for evaluating the screening process presently used for selecting candidates for the rural auxiliary nurse training course. Finally, detailed evaluations of both the cesar and the associated informal health system would provide the instructors with the background necessary to develop field training for student auxiliaries in the supervision of the community health agents, without sacrificing clinical competence.

a. Clinical Training and Responsibilities

The rural auxiliary nurses that we visited were confident clinicians and were able to respond to a variety of technical questions with apparent competence. Clinical records similarly indicated a thorough evaluation of patients. A conspicuous exception to the generally favorable pattern is family planning and birth spacing. The course curriculum allocates only 4 hours to family planning, including 2 hours for a written examination. As a result, the auxiliaries appear to deal with contraception passively, simply referring women who express interest to the nearest facility with an active program. Thus, a large portion of the program's potential impact

on maternal and infant mortality and morbidity, including the nutritional status of high priority groups, is not being realized. Although increased training in family planning and more active family planning counseling would increase the program's effectiveness, a much larger improvement would result from the actual provision of contraceptive services. There was a consensus among the area and local personnel that we talked with that the auxiliary nurse could provide family planning services competently, and they do, in fact, provide contraceptives successfully in one region. Further, the auxiliaries presently use far more sophisticated drugs, such as methergine. There are only a small number of direct public health interventions that are feasible with minimally-trained personnel, yet have a plausible health impact. The provision of family planning services is clearly one of these, and the program is significantly weakened by inadequate attention to this area.

The present clinical curriculum includes extensive training in sterile techniques and 1 hour in suturing technique. Expansion of these activities, including direct clinical experience--to include specific training in the suturing of postpartum tears--would add an important clinical service to those presently available at the cesar.

b. Community Activities

Although supervision of the informal health system by the auxiliary is listed among the norms provided by the national committee, the Director of the training school described this section of the curriculum as relatively small. Field training presently consists of assigning groups of 9 students to spend a few weeks working with agents of the informal system associated with a given cesar. A single instructor supervises 4 students working in the cesar, as well as the 9 in the field, and the Director informed us that, unlike clinic-based work, the community activities of the students are not evaluated. Further, there are no trained partecas in the area where the students have their field experience.

We found that the community activities of graduate auxiliaries in the field consist primarily of reviewing reports prepared by the informal system personnel and giving talks on technical areas during monthly meetings in the cesar and during field

visits to the agents. The auxiliary nurses that we interviewed were generally unable to estimate the level of community coverage for basic health services that the center provided. Similarly, they were unfamiliar with the extent of coverage provided by the informal system or its effectiveness in dealing with specific health problems.

The expanded rural health infrastructure created by the program makes an active, epidemiological approach to health problems possible, as distinguished from passively waiting for patients to enter the health care system. Similarly, the informal system can and should reduce the time spent by the auxiliary in dealing with health activities that could be performed by less highly trained personnel. However, the present supervisory activities of the auxiliary do not give adequate attention to health problems that are either not detected by the informal system personnel or are not handled effectively by them. To correct this situation will require that the auxiliary make occasional informal surveys in the agents' communities to estimate the agents' success in detecting health problems such as infant diarrhea, malnutrition, and lack of childhood vaccinations. Similarly, the effectiveness of the informal system agents' intervention should be followed up in the community on a sample basis to determine, for example, if unvaccinated children referred to the center actually go and, if not, what followup visits were made by the agent; or similarly, if the agents' treatment of diarrhea was effective and whether or not he revisited the patient to make certain that the outcome was satisfactory. The auxiliary also needs to know how to organize and use the data gathered by the informal system, informal community surveys, and the center to facilitate these evaluations. For example, the auxiliary should know who the malnourished children in a given community are, whether or not the number of known cases is consistent with the results of her own community survey, who is improving, and who requires followup by a local agent. She should be able to determine which of the agents that relate to the center have been least effective and, therefore, require further training, and what kind of training. She should also allocate more of her supervisory time to assisting the agents with poor performance, relative to more successful agents.

Supervision of the informal system should encompass educational efforts as well as specific treatments and projects. The auxiliary should determine, for example, if the health guardian has explained to the mother of a malnourished child, the technique of supplementing the infant's diet and the importance of birth spacing, and whether or not the mother properly understands the advice. This approach should also be extended to the auxiliaries' monthly meetings with informal system personnel, with emphasis on specific problem cases that require followup in the coming month, in addition to the more general training that is currently provided. The chief objective of these extensive field activities by the auxiliary nurse is to supervise and support the informal system agents so that they, in turn, can deal with as many health problems as their abilities allow. A successful program of supervision will reduce the auxiliary's load of routine problems and patient followup, and increase her ability to devote her time to more complex problems. Supervision of the auxiliary nurse should reflect this objective, and this will be discussed in a subsequent section.

c. Training in Community Activities

One potentially useful approach to training students in an epidemiological approach to community health problems, including the evaluation and support of informal system agents, is to provide the students with the opportunity to perform in-depth evaluations of functioning cesars. To prepare the students for field work, the instructor would provide an orientation to the evaluation of a cesar, based on the field experience recommended above. The students could then be assigned in pairs to spend 1-2 weeks in a cesar, with occasional supervisory visits by an instructor. The students would review the data available in the cesar, compare this to the results of their own community surveys of health problems, and evaluate the performance of the informal system agents. At the end of the evaluation, they would prepare a classroom presentation for the entire class. If possible, the students should have the opportunity to perform evaluations of at least 2 cesars to observe the effect of slightly different approaches by different auxiliaries. In addition to providing a valuable training experience, these evaluations should provide useful insights for the auxiliary whose cesar was evaluated, and for her supervisor, in terms of both conspicuously successful efforts and areas that require increased attention. To perform the nutrition component of their surveys, the students should

have access to portable scales for weighing infants. They should also be provided with a map of the cesar's area of influence.

To adequately test the student's understanding of complex evaluation and supervision processes will require a more open-ended format, rather than the multiple choice and true/false approach that now predominates in examinations used in the training center. In the field, the graduate auxiliary nurse will have to plan, organize, and carry out her own evaluation and supervision efforts, with only occasional assistance from her supervisor. Classroom evaluation should reflect this with examination questions such as "How would you organize a system to detect and follow pregnant women in the area of influence of your cesar?" or "How would you deal with the problem of infant deaths from diarrhea in the area of influence of your cesar?"

Expansion of training in community activities will require a reduction in the amount of time spent in other areas. The instructors will be required to carefully choose areas of relatively lower priority for this reduction, based on their impressions gained from observing the actual function of auxiliaries in the field. The opinions of these auxiliaries regarding areas in which training could be reduced should be valuable in this process.

2. Training and Roles of Informal System Personnel

a. General Principles

A number of constraints limit the amount of time that can be invested in the initial training of informal system personnel: the availability of Ministry training personnel, the willingness of community volunteers to spend prolonged periods of time attending a formal training course, and the cost of the training. The training periods now in use in the program have proved a reasonable compromise between these constraints and the need to thoroughly train agents in important health skills. Experience with short-term training of non-professional health personnel in other countries indicates a need to severely limit the content of such training: material that is presented, but not retained by the agent, or not mastered sufficiently so that the agent can apply it effectively, contributes nothing to the program, even if the material has legitimate value. It is, therefore, necessary to assign priorities to the skills and knowledge that are

potentially useful for the different agents and then limit the content of the course to the highest priority areas. Lower priority areas should be postponed for followup training, such as the monthly meetings now held in the cesar. The most appropriate basis on which to set these priorities is the potential public health impact of the skill or knowledge in question.

The process of designing a priority-based training course requires that the skills and knowledge desired of the student in a given area be explicitly and completely defined in writing. Because of the extreme time limitations involved, the traditional approach used in the training of health professionals, that of simply outlining the general topics to be covered, may result in the instructor's devoting training time to relatively unimportant points, while high priority areas have not yet been mastered. This may be acceptable in a 4-year course, but not in one of 4 days. For example, one health guardian that we visited knew the recipe for an oral rehydration solution, but did not know how to use it properly or how to supervise its use. Although dehydration secondary to diarrhea is probably the major cause of infant mortality in rural Honduras, this agent was not dealing with the problem adequately and may even have caused infants to receive potentially dangerous hypertonic solutions. In contrast, we found that a large portion of guardian training in the same area concerned methods to reduce the spread of influenza (such as using a personal set of dishes), and the importance of bathing during a cold and avoiding iced beverages. Certainly none of these subjects has a potential for producing health benefits comparable to the adequate treatment of diarrhea in young children.

This is not to suggest that the training of informal system personnel should focus exclusively on the treatment of disease and specific sanitation projects; motivation, education, and referral activities constitute important feasible public health interventions for the informal system. However, here too, training should focus on a small number of specific high priority concepts. Informal personnel must master these sufficiently well so that they can apply them actively in their communities, with only occasional assistance from the auxiliary. No instructor will be available when the guardian visits a home, and he must have clearly in mind the ideas he wishes to convey and do so without assistance. This implies the need to not only limit the number of concepts taught in the course, but to also prepare the students to perform complete groups or sequences of activities. For

example, in nutrition, the agent should be capable of advising the mother of a young infant on the importance of breastfeeding, a simple approach to diet supplementation, the need to have the child weighed and vaccinated in the cesar, the benefits and methods of birth spacing, and the importance of early treatment of diarrhea. Similarly, a partera must know the entire sequence of steps necessary to properly prepare to attend a birth. Classroom instruction should reflect the field situation by bringing each student to a level of competence at which he is capable of presenting all the desired information in a simulated field situation (such as role-playing). This is also true for training in various specific skills. For example, each guardian should actually prepare an oral rehydration solution correctly and without assistance before the end of the course, and each partera should be able to properly attend a simulated delivery without help from the instructor.

Some teaching methodologies are better adapted than others to the approach of bringing students to a defined level of competence in a small number of skills in a very short training course. One of these is intense repetition of high priority concepts, coupled with continual questioning of the students to measure their grasp of the area. It is important that all students participate actively, and this is best accomplished when the instructor questions specific students, rather than waiting for volunteers (who usually comprise only a small number of more aggressive students). This is facilitated by providing the students with name tags, so that the instructor can call on them by name. In the training of nonprofessionals, it is also desirable to emphasize concrete examples as much as possible, rather than abstract descriptions. Similarly, the instructors should attempt to minimize the use of technical terms that are not essential to the agents' function in the field. For example, little is gained by explaining that influenza is caused by a virus, as was done in the guardian training we observed. Indeed, it is unlikely that any of the students understood this, despite the time devoted to it. Even a term as simple as "prenatal" appeared unfamiliar to the students; health professionals, who use such terms routinely, must make a conscious effort to avoid using them in the classroom when they do not contribute directly to the agents' function in the field. Writing down the entire content of training would also facilitate avoiding the unconscious use of confusing technical terms.

Prolonged lectures, although used traditionally in the training of health professionals, are relatively inefficient in a short course for non-professionals. The instructor should continually obtain feedback from her students, since important concepts that may appear simple are frequently strange and confusing to the students. When students answer questions correctly, the instructor should consciously offer praise, and she should scrupulously avoid humiliating a student whose answer is incorrect. It is also traditional in the training of health professionals to introduce a subject by asking the students what they know about the subject, and this approach was used in the guardian training we observed. Except when the instructor is specifically interested in the beliefs and practices in rural areas, this approach takes too much class time to be included in a course of a few days.

Formal testing of each student's knowledge and skills is an important feature of any training course. As noted previously, the skills and knowledge desired in the actual field situation must be carefully defined in writing. Student testing should also mimic the actual field situation as closely as possible. The exclusion of students from the program on the basis of poor classroom performance is problematic, since they were selected by their own communities. Thus, the chief objective of formal evaluations should be to reveal areas of weakness in the student's knowledge so that further training can be concentrated on these areas. To do this, initial testing should take place well before the end of the course, so that the indicated retraining can take place.

b. The Guardian de Salud

The Guardian de Salud represents one of the strengths of the program which, on the basis of recent experience, demands more exploitation as an agent for improving rural health. The previous section outlined a method by which the Guardian can be brought to a defined level of competence in a limited number of high priority areas, based on feasibility and potential public health impact. The range of interventions for which the guardian can be adequately prepared in a short training course is obviously limited. It is clear, therefore, that no arbitrary limits should be applied to further limit these options: the guardian should perform all high priority activities that he can master in a short training course. It is clear that by specifically defining the level of

competence necessary and tailoring the training course appropriately, the number of high priority health activities of the guardian can be expanded.

(1) Simple Medical Activities

The public health impact of the simple medical activities of the guardians that we visited is severely limited. None had piperazine, and none had gauze or tape with which to use the antiseptics that they did have. Each did know the recipe for a homemade oral rehydration solution, but were unfamiliar with the need for careful monitoring of its use. Adequate supplies of drugs are obviously essential for this area of activity, and possible means for improving the supply situation will be presented later. An expansion and modification of the guardian's supply of drugs, coupled with specific training in their use in the field, would increase the effectiveness of this agent:

- (a) Diarrhea Treatment. Recent research in the treatment of diarrhea in infants indicates that rehydration (but not drugs intended to decrease the frequency of bowel movements, such as kaolin-pectate*) is effective in preventing infant mortality associated with these diseases**. It is desirable, therefore, that the guardian be supplied with oral rehydration salts (oralyte or its equivalent), and limit the use of kaolin-pectate to older children and adults. The home-made rehydration solution (suero casero) presently recommended is also preferable to kaolin, but distinctly inferior to oralyte, which contains glucose (which facilitates absorption), potassium, and bicarbonate. The importance of early treatment and the avoidance of hypertonic solutions also require increased attention, both in the training course and during supervision. Virtually all infant deaths from diarrhea are preventable with the resources potentially available to the program. Prompt rehydration is also likely to improve the nutritional status of young children, although this is a longer-term benefit.

*B. Portnoy, H. DuPont, D. Pruitt, J. Abdo, J. Rodriguez: Antidiarrheal Agents in the treatment of acute diarrhea in children. JAMA 236: 844-846, 1976

**W. Ascoli, L. Mata, Studies of diarrheal disease in Central America. Am. J Trop. Med and Hyg 14:1057-1061, 1965

- (b) Treatment of Parasites. The piperazine used by the guardians has the undeniable benefit of treating ascaris and, therefore, contributes to an improved general nutritional status, particularly in children and fertile-age women. Mebendazole, although somewhat more expensive, has several advantages over piperazine:* 1) effective treatment of hookworm and whipworm as well as ascaris, 2) a simple treatment regimen, and 3) the virtually complete absence of side effects. The guardian's approach to parasite treatment should also reflect the high prevalence of parasitosis in rural areas by promoting periodic treatment of the entire community, particularly young children and fertile-age women. This approach should be supported in both the training course and field supervision.
- (c) Nutrition. In addition to educational efforts, the guardian is capable of dispensing iron and vitamin tablets to high priority groups, such as small children and pregnant and lactating women. This should reduce the time spent by the auxiliary in dispensing these drugs and increase coverage of more distant communities.
- (d) Family Planning. The provision of simple family planning services, such as barrier methods and oral contraceptives, is potentially one of the most effective public health interventions that the guardian is capable of learning.** This would require relatively brief training in screening and followup, combined with field supervision by the clinic auxiliary nurse. The adverse effect of distance is the same for family planning services as it is for the treatment of diarrhea or parasites. The potential for the program to place a trained agent with family planning services in each community greatly increases the likelihood that a significant drop in maternal and infant mortality can be realized.

*D. Blumenthal, Intestinal nematodes in the United States: New England J of Medicine 29:1437-1439, 1977

**A. Rosenfeld: Nursing and auxiliary personnel: A training guide for family planning programs. Advances in Planned Parenthood XI (4) 185-190, 1976

The training and supervision of the guardian in these simple medical treatments should be oriented toward an active seeking out of community members who could benefit from such services, including followup of previously treated cases. The guardians that we visited appeared to take a largely passive approach and wait for community members to seek their assistance. The guardian should not assume that every family is familiar with the services he offers, and one of his initial tasks should be to systematically educate them.

(2) Referral and Education Activities

As with simple medical treatments, a more active, systematic approach is also desirable in the educational and referral activities of the guardian. With the aid of the auxiliary nurse and health representative, he should make periodic followup visits to families with malnourished or non-vaccinated children until a successful outcome has been achieved. Similarly, he should revisit the homes of children treated for diarrhea to evaluate their progress until they are well or successfully referred. A "successful" referral occurs only when the patient actually goes to the cesar. Thus, the guardian should continue to revisit the family until they actually make the indicated visit to the cesar or until he can transfer responsibility to the auxiliary nurse.

The guardian should also take responsibility for actively seeking out families that need an educational intervention, even though they may be unaware of their need. Every fertile-age woman should be educated about the importance of birth spacing and the proper supplementation of an infant's diet, as well as the importance of early treatment of infant diarrhea and childhood vaccinations. The guardian should also learn to evaluate his own educational efforts to be certain that members of the community have understood him. It is the responsibility of the auxiliary nurse to assure that the guardian achieves complete community coverage with effectively communicated, simple health concepts. However, the training course should facilitate this process by emphasizing the need for systematic coverage and making concrete suggestions for achieving it, including the organization and use of community health data by family.

The retraining sessions for guardians that we observed gave heavy emphasis to first aid. These sessions should be broadened to include retraining in all of the above areas and discussions of the experiences of individual guardians in the field, both successful methods that might benefit others and specific problems for which advice is needed.

c. The Health Representative

By separating the role of the health representative from the more technical role of the health guardian, the program has created an unusual and valuable resource for the health infrastructure. The health representatives that we met were generally older than the guardians, all were male heads of household, and by virtue of their positions as elected leaders of their communities, all appeared to be highly respected. It is appropriate that the program make fewer demands on the time of the health representative compared to the guardian, since he was chosen for his leadership position rather than his availability to perform health promotion activities. However, even taking into consideration the fact that the health representative generally has only a limited amount of time available for program activities, his role could be expanded to the benefit of the program. Further, present activities appear to focus on well and latrine projects to the exclusion of other activities. These are both areas that produce visible benefits only in the long-term, and a number of the health representatives who we talked with appeared somewhat discouraged at the slow progress they observed.

The health representative's prestige in the community places him in a good position to support the educational and referral efforts of the guardian. If, for example, the guardian finds his efforts to persuade a couple to have their children vaccinated have failed, the health representative could use his influence to convince them, and if successful, obviate a field visit by the auxiliary nurse. In other areas, he could reinforce the guardian's efforts by discussing subjects such as family planning and infant nutrition with the men of the community, particularly in families where the guardian meets resistance.

To integrate the health representative into the informal system in this way will require close coordination between the auxiliary nurse and the health promotor, and the support of their respective supervisors at the area and regional levels. The health representative should be prepared to accept supervision from both the auxiliary and the promotor who, in turn, should support each other's efforts. Similarly, the training of the health representative should be broadened to include the areas in which he can support the guardian and partera.

A number of measures could be used to gain time for the health promotor so that he can support a wider range of activities by the health representative. The promotor could assist the health representative in constructing a family-specific map of the community, rather than making the maps himself, as is presently done. In addition, the community data now gathered by the health promotor should be carefully reviewed to determine which data is actually used by the program; the remainder should be eliminated. The health promotor should also consider experimenting with the installation of "mini-latrines" as an alternative to more elaborate and time-consuming conventional latrines. These are constructed with an expanded manual post-hold auger, and experience in Panama indicates that a latrine requiring less than an hour to construct will serve an average family up to 1 year.

d. The Empirical Midwife

The general training principals outlined previously have been adopted by the partera training program of the MOH of Nicaragua. Program personnel responsible for developing partera training norms might find a visit to this program useful. In addition, a small number of potentially useful interventions by the partera should be considered for inclusion in the training course:

- (1) The importance of rapid evaluation of the newborn infant's breathing, and the prompt application of mouth-to-mouth respiration should be included in every training course, including practice on a model infant.
- (2) The technique of postpartum uterine massage for hemorrhage should be mastered by every partera and actually performed on volunteers.

- (3) The need to refer complicated deliveries requires a specific plan for each partera. This should include construction of a simple stretcher, which every trained partera should have available at every delivery. In addition, each partera should know the location of the nearest available vehicle for transport of an obstetrical emergency to the nearest hospital. The auxiliary and the health representative should negotiate the availability and transportation charge for a vehicle in each community prior to the occurrence of an emergency, and preferably before partera training takes place. Where possible, the health representative could create a common fund to pay emergency transportation costs, using a small portion of each partera's fee.

To demonstrate her ability to recognize obstetrical emergencies, each partera should be able to list the major signs of an emergency, including quantitative time definitions of obstructed labor and premature rupture of the membranes.

Adequate supervision of partera performance requires that the auxiliary nurse follow all pregnancies in the area of influence of the cesar, including the outcome for both the mother and infant. As discussed previously, the informal health system should provide the data needed for supervision, but the auxiliary should monitor the accuracy of this information through her own informal community surveys, and organize the data to facilitate supervision of the informal system, including trained parteras.

C. Supervision and Data Collection

The April, 1977 Ministry evaluation report referred to previously, describes both supervision and data collection as unsatisfactory. To fully realize the public health potential of the program requires that supervision and data collection be closely linked, in contrast to the more traditional pattern that has evolved. Increased integration of supervision and collection of program data is needed at all levels of the program.

I have alluded to the need for the auxiliary to evaluate the activities of the informal system with reference to the population actually covered-- that is, she should attempt to estimate the need that is not being met by the informal system. One approach to this is to conduct occasional informal surveys in the community to estimate the prevalence of undetected malnutrition, incomplete vaccination status, the need for birth spacing,

and so on. This approach can be supplemented by comparing cesar records to known rates. For example, by applying the fertility rate for Honduras to the population of a community, the auxiliary can estimate the number of pregnant women who should be under control. Similarly, if the rate of malnutrition in children in a community is at variance with surrounding communities or with previous experience in that community, an investigation is appropriate.

The focus of the auxiliary's supervisor should also be the rate of coverage of the population with basic health services. If coverage is inadequate, it is the supervisor's role to determine the causes and suggest solutions. In addition, the supervisor should verify, through her own community surveys, that the auxiliary's impression of coverage is accurate, as well as independently evaluating the effectiveness of informal system personnel. Both of these activities require extensive field visits, and it is clear that the current pattern of supervision must be altered. Presently, supervisors are expected to spend approximately 3 hours per cesar, and to complete an assigned number of visits, averaging about one visit per month to each cesar in her area. To thoroughly evaluate the actual coverage of a cesar and its informal system will require longer supervisory visits, and these will necessarily be less frequent. However, it is important to maintain selectivity in scheduling these visits: cesars with lower performance should receive more and, if necessary, longer visits. Supervisors should be accountable for the actual performance of the clinics they supervise, not the number of visits that they make.

The supervisory process could be facilitated by asking the auxiliary to evaluate her own program and maintain coverage data by community. She should also identify specific problem areas for discussion with the supervisor. It is also desirable that the auxiliary investigate the deaths that occur in the area of influence of the cesar, particularly of children and fertile-age women, and discuss these with the supervisor to determine if they were potentially preventable.

Information that does not contribute to the supervisory process should be minimized in both the reports completed by the auxiliary and those of the supervisor. Emphasis on counts of talks given to the community, attentions given, injections, and visits made to informal personnel should be shifted to measures of the effectiveness of the cesar-informal system unit in covering the target population with basic services. That all pregnancies in a community are followed and no children died from diarrhea, reveals more about an auxiliary's supervision of the guardian than does the number of visits she has made to him. On the other hand, if pregnancies are not detected and children do die from diarrhea, whatever the number of visits the auxiliary made, a problem exists and must be investigated by the supervisor.

To evaluate the nutrition component of the program, supervisors should have access to portable scales for infants, both to evaluate the progress of children known to be malnourished and to evaluate the prevalence of malnutrition in informal community sample surveys.

It is likely that the area supervisors would benefit from an orientation session prior to attempting to implement this approach to supervision. One possible source for these sessions is the training center in Choluteca, once the instructors have developed an evaluation methodology for cesars. Alternatively, the nursing department at the regional or national level could develop guidelines based on a field trial.

In the situation in which the supervisor has determined the need for a major orientation for a given auxiliary but is unable to devote sufficient time to the retraining necessary, the program should consider assigning the auxiliary to a period of observation in a conspicuously successful cesar.

D. Proposed Infant Mortality Surveys

This evaluation has concentrated on the training of health personnel and their subsequent delivery of health services. The ultimate objectives of the program, however, must be expressed in terms of the actual health status of rural communities, not merely the availability of services. A program that succeeds in providing services, yet fails to produce a satisfactory improvement in health, requires re-examination. If, on the other hand, the services provided correlate with significant improvements in health, program managers can proceed with confidence that their efforts are producing concrete benefits. The infant mortality rate is generally regarded as the best single overall measure of health status in the rural areas of developing countries. Therefore, I recommend that the MOH authorize infant mortality surveys in implemented and non-implemented areas and use this information in planning future implementation efforts. The results of these surveys should also be compared to those of the 1971 Honduras National Demographic Survey (EDENH), which was conducted by the Latin America Demographic Center (CELADE). This survey was based on a sample of 33,500 persons, including 1,424 children of less than 1 year, and revealed a rural infant mortality rate of 122.7 deaths per 1,000 live births. With little additional cost, these surveys could also collect important information on patterns of use of health resources, acceptability of different services, nutrition, and fertility.

E. Finances and Logistics

A detailed analysis of the logistics problems that we observed during our field work is beyond the scope of the brief evaluation. This is not intended to minimize the seriousness of the problem, however. One cesar that we visited lacked a syphygnomanometer, rendering a large portion of

the prenatal norms irrelevant for that clinic. Shortages of supplies for the informal system have also been noted previously, and similar shortages characterized most of the cesars we visited. To a certain extent, these shortages are beyond the control of the program's planners, and certainly beyond the control of the local cesar. While remedies are being sought for these problems, the program cannot afford to continue with chronic shortages of basic drugs, much less expand the range of drugs offered. It is prudent, therefore, for program managers to consider instituting charges for the medicines provided by the informal system, while maintaining or increasing the net contribution of the Ministry. A charge at or below actual cost is not likely to prove a significant barrier for most people. If possible, the program should arrange for the Ministry to provide additional new drugs at their wholesale cost, beyond those now supplied free. For example, parteras should be able to purchase supplies at cost, rather than buying them in pharmacies as is presently done. Selling drugs at cost, with a small subsidy from the Ministry, could also be used to generate a local fund that could be used according to priorities set by the local health committee--for example, for the transport of emergencies, nutrition supplementation, or the purchase of additional drugs. Provided that the Ministry maintains or increases its present contribution of supplies, all locally-generated funds from charging for drugs could thus be returned to the community through the local health fund, and markedly improve the local supply situation.

To a certain extent, each area of the program competes with other areas for available funds. Beyond actual construction costs, the hospital emergency centers (CHE's) will both compete with the cesars for funding and provide important referral facilities. At present, the referral system from cesars to CHE's is inadequate to provide significant benefits to the rural population. The CHE that we visited was less than 30% occupied, and two-thirds of the patients in the pediatric ward were being treated for uncomplicated diarrhea, which could be adequately managed by a guardian equipped with oralyte. Similarly, several of the cesars that we visited had not referred a single high-risk pregnancy for delivery, and we found that the great majority of deliveries in the CHE we visited were normal and self-referred.

The maintenance cost of the new CHE's now planned will probably equal or exceed the maintenance cost of the completed network of cesars. The potential effectiveness of these expensive centers cannot be reached without a functioning referral system from the corresponding cesars. Increased supervision, with in-depth evaluation of cesar performance, should improve this situation. However, it is also necessary to monitor the referral process directly. This requires that existing CHE's report referrals actually received, by cesar, so that this can be compared to the number of patients referred by each cesar. If the present low rate of utilization of existing CHE's results from the failure of referred

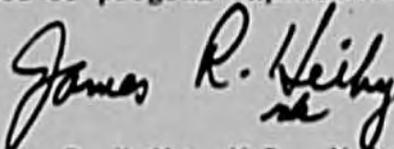
patients to actually go to the CHE, an investigation is warranted. If the utilization of existing CHE's eventually reaches satisfactory levels, the construction of additional units could then be considered. If an adequate referral level is not reached and the additional CHE's are still built, the majority of program resources will be effectively transferred away from rural communities to provide hospitals for urban communities.

F. A Proposed Program Newsletter

To increase communications between program personnel, program managers should consider a periodic newsletter. This would provide the opportunity to give recognition to outstanding members of the informal system, as well as outstanding auxiliaries, and to inform other program personnel about successful innovations. The newsletter could also include technical articles as a form of retraining, and a column for letters from program personnel with comments, suggestions, and questions related to the program.

G. Additional Training Centers

In their April 1977 evaluation report, the MOH Committee expressed concern that the availability of trained nurses not become a limiting factor in the implementation of the program. The present training capacity of the Center in Cholulteca corresponds to the rate of construction of new cesars projected in the Committee's report, 81 per year. This is considerably below the capacity originally contemplated in the early versions of the AID project paper, but a number of considerations militate against the construction of additional training centers in the near future. Ministry officials are currently developing a curriculum to be used to train auxiliary nurses for the planned network of emergency referral hospitals (CHE's). As discussed previously, these hospitals represent a questionable investment of program resources at the present time. Thus, the corresponding training center should have excess capacity that could be used to train auxiliary nurses for any cesars that are constructed above the projected number. In addition, the findings of the evaluation reported here suggest the need to concentrate administrative resources on the improvement of existing services rather than attempting a major increase in the rate of program expansion.



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