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REPORT ON THE PROPOSED SUDAN  
HEALTH SECTOR SUPPORT PROJECT -  
SUGGESTED AUGMENTATION OF  
MATERNAL & CHILD HEALTH &  
NUTRITION ASPECTS

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## PREFACE

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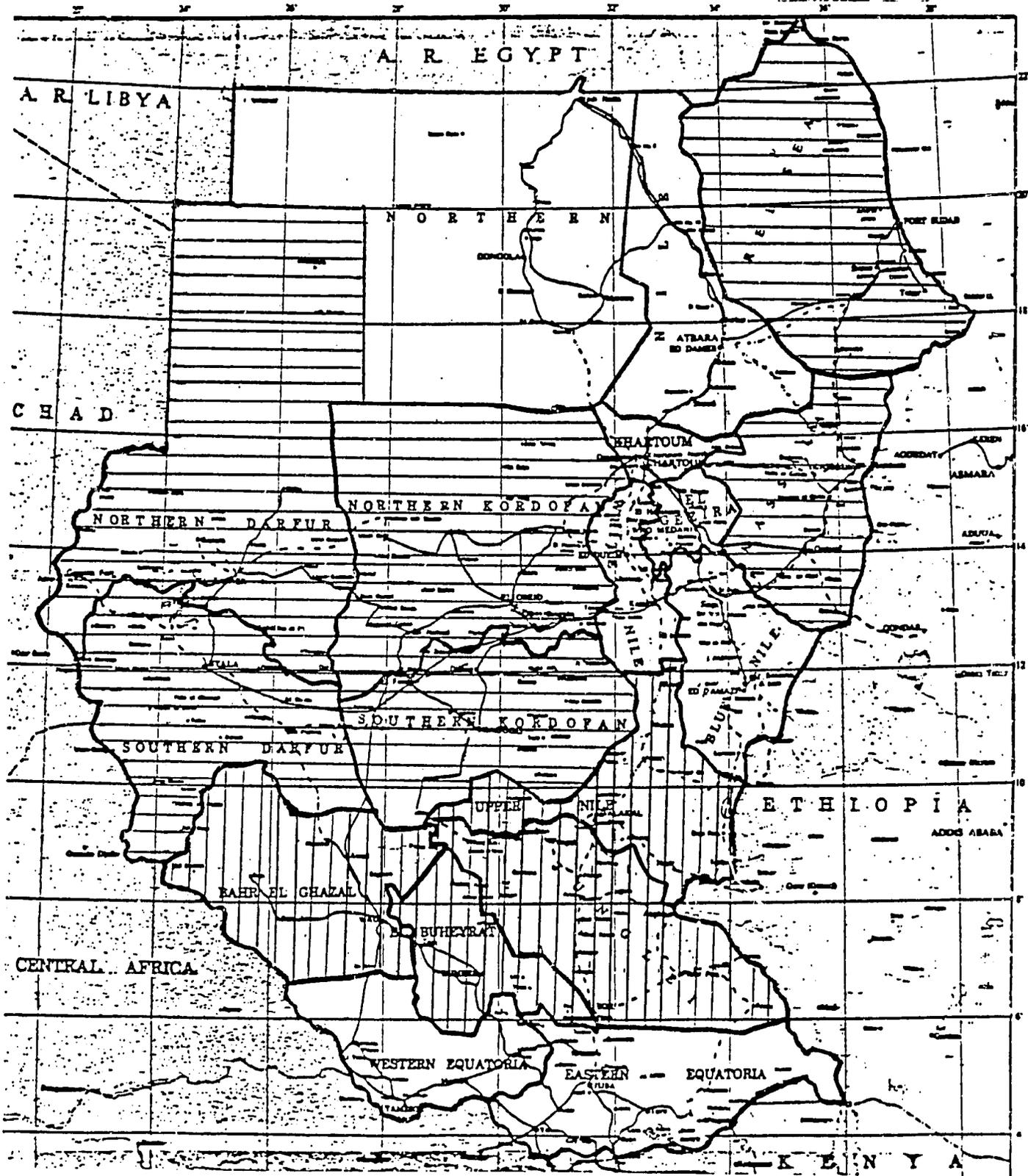
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## TABLE OF ABBREVIATIONS

AMREF	African Medical and Research Foundation
CHW	Community Health Workers
GOS	Government of Sudan
HC	Health Center
HV	Health Visitor
MCH	Maternal & Child Health
MA	Medical Assistant
MOH	Ministry of Health
NCHW	Nomad Community Health Worker
NHP	National Health Programme
NMW	Nurse Midwife
PCM	Protein-Calorie Malnutrition
PHCP	Primary Health Care Program
PHCU	Primary Health Care Unit
PIU	Project Implementation Unit
PMO	Provincial Medical Officer
SHSSP	"Sudan Health Sector Support Project"
SMA	Senior Medical Assistant
TBA	Traditional Birth Attendants
VMW	Village Midwives
WHO	World Health Organization

SUDAN HEALTH SECTOR SUPPORT-PROJECT PROVINCES



LEGEND:

- Northern Provinces 
- Southern Provinces 

## EXECUTIVE SUMMARY

Consultation was requested by USAID/Sudan to assist with the Maternal and Child Health and nutrition aspects of the "Sudan Health Sector Support Project" (SHSSP). Sudan, Africa's largest country, links the Arab world of the Middle East with the Bantu world of Africa. The Primary Health Care Program (PHCP) was developed by the Government of Sudan (GOS) to address the health needs of the 20 million, predominately rural Sudanese. The health status is characterized by a high birth rate, a high infant mortality rate, a high death rate, a high population growth rate. The personnel and the facilities in the PHCP are reviewed.

The problems identified included a lack of baseline data for health planning purposes, especially nutrition information. Preventive and promotive aspects of the training of community health workers and their tutors, and of medical assistants is limited. Supervision of health workers is weak. Continuing community involvement in the Primary Health Care Program often slackens. Vertical organization of the government places a serious constraint on the coordination of overlapping programs. Logistics in Sudan are difficult at best. The two receiving cold storage rooms have no back up generators.

Recommendations have been incorporated with the elements of the "Sudan Health Sector Support Project Paper", July, 1979. They are presented in the format identified in that paper on pages 8 and 9.

The GOS and USAID/Sudan have far-reaching goals for the impact of Maternal and Child Health (MCH) services in the face of limited health manpower. The training of health workers providing MCH services was reviewed. More in-depth primary and in-service training in supervisory skills and components of preventive MCH services would upgrade triage skills. Examples of job task analyses and competency-based training in MCH are provided. The Ministry of Health is in the process of developing MCH policies and procedures. Some specific components of MCH services are suggested as a guide for the SHSSP to catalyze these efforts. Specific expertise needed to assist the SHSSP in implementing the MCH goals includes nurse midwifery, public health nursing and health logistics. Additional supplies to upgrade MCH services are suggested.

The SHSSP plans to evaluate the impact of the project in health. The Fast, Informal, Relevant and Economical method of evaluation is summarized to augment the SHSSP plan.

## CHAPTER 1: Introduction & Background

### Purpose and Itinerary

Consultation was requested to assist USAID/Sudan with the Maternal and Child Health (MCH) and nutrition aspects of the "Sudan Health Sector Support Project". This activity included nine days in Khartoum and two days at USAID/Washington. While in Khartoum, site visits were made to the MOH and to several training schools, i.e. the Nursing School of the College of Khartoum; a health visitor's school; a village midwifery school. A field visit was undertaken to observe a health center (HC), a dispensary and a PHCU in Gezira Province, 30 kilometers north of Wad Medoni. A list of persons contacted is included as Appendix A.

### Country Profile

A million square miles (1/3 the size of the U.S.A.), 17 to 20 million people, a hundred languages - Sudan, Africa's largest country, links the Arab world of the Middle East with the Bantu world of Africa. This cultural and political diversity provides unique characteristics that temper health planning for the predominately rural populace (77%). Forty four percent of the people live on 23% of the land. The estimated annual per capita income is \$165.\*

Sudan is a country characterized by a high birth rate, a high death rate, a high population growth rate, a high infant mortality rate. Table 1 presents a comparison between 1973 estimates and current estimates of various demographic measures. Because of significant problems in the reporting of vital events, it is difficult to say whether there has really been a change in rates.

Table 1: Comparison Between 1973 and 1979 Estimates of Demographic Measures

	1973 <sup>a</sup>	1979 <sup>b</sup>
Population, Millions	14.9	20.9
Crude Birth Rate/1000 population	48-50	49
Crude Death Rate/1000 population	20-25	17
Infant Mortality Rate/1000 Live Births	135-145	132*
Life Expectancy at Birth	47.3 yr.-male 49.9 yr.-female	48.6 yr.*
Population Growth Rate	2.5-3.2%	3.2%

<sup>a</sup>Sudan Ministry of Health Department of Statistics

<sup>b</sup>"World Population Estimates, 1979", The Environmental Fund, Washington, D.C., unless otherwise indicated

In 1975, the Government of Sudan (GOS), with the assistance of the World Health Organization (WHO) and donor agencies, prepared a National Health Programme (NHP) to improve the health status of the Sudanese. Detailed plans were developed for eight specific six-year health programs.

\* "Sudan Health Sector Support Paper - Annexes", Annex A

Of these programs the Primary Health Care Program (PHCP) has been highlighted by the GOS in an effort to provide minimal curative and preventive health care in a vast, sparsely populated land.

The PHCP, as defined in the NHP, is a comprehensive health delivery system which:

- is community based and reaches beyond the health center and dispensary;
- is specifically designed to have responsibility for the entire rural and nomadic population;
- lays stress on health services that are promotive and preventive rather than curative;
- includes rural development activities, and
- relies upon community participation and self reliance in the development of a rural health care system at the peripheral level.

At the village level, which is at the periphery of the PHCP, Figure 1, there are three types of workers:

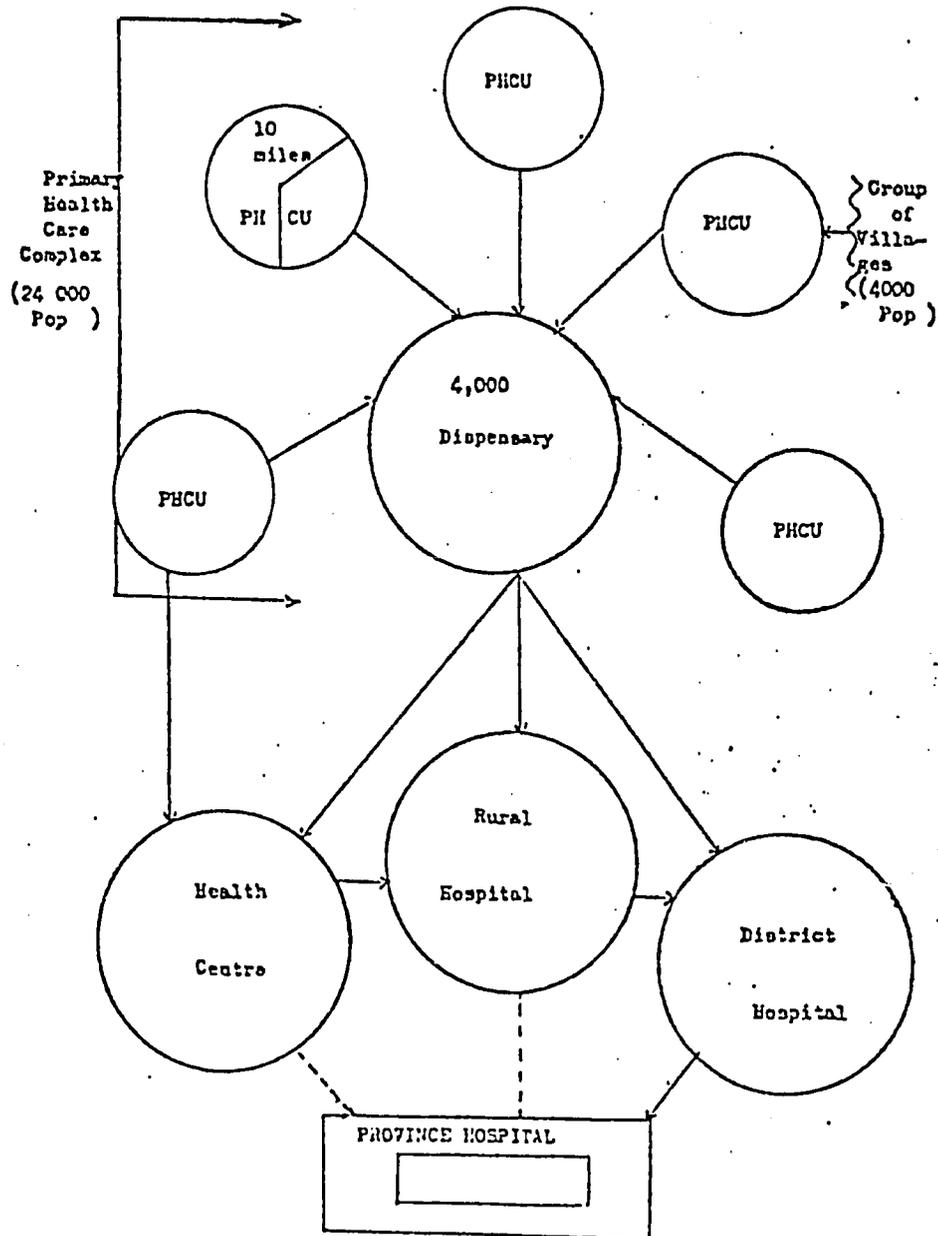
- traditional birth attendants (TBA) who have little or no formal training and who perform deliveries. This worker is outside of the GOS health program.
- village midwives (VMW) who have at least 9 months of formal training and provide primarily maternal health services (not present in all villages).
- community health workers (CHW) and among nomads, nomad community health workers, (NCHW) (not present in all villages). These are two new categories of health personnel who receive nine months training in curative, promotive, and preventive services.

The CHWs are stationed in Primary Health Care Units (PHCU) which are simple one or two room facilities. The VMW is not assigned to the PHCU but may utilize it for clinics. The CHW's and VMW's are encouraged to develop a cooperative working arrangement.

At the next level of this pyramidal infrastructure is the dispensary. This is a somewhat larger facility where outpatient services are provided, and referrals are received from PHCUs. The dispensaries are staffed by a medical assistant (MA) who gives simple curative and preventive care and may provide supervision for the village level CHW. Rarely a nurse-midwife is also stationed at the dispensary to provide MCH services (including deliveries) and to supervise the VMW.

Often located in a different town from the dispensary, a health center (HC) is to be staffed by a senior medical assistant (SMA), one or more nurses and a health visitor (HV). The latter is a female nurse-midwife with one additional year of training, who supervises VMWs. The HC and its staff primarily provide outpatient services with some limited inpatient services. Because of a limited number of SMAs, the HC may be staffed by a MA. There are only 180 HCs with a full MCH program provided by the HV. Forty-three of these HC's are located in Khartoum Province.

Figure 1: Primary Health Care Complex



Key: PHC - Primary Health Care  
 ———> Normal Referral  
 - - -> Emergency Referral

Source: NMP Document page 65

NB. This figure has been further perfected as far as referral from PHCU to Health Centre is concerned.

Though difficult to evaluate any change in vital rates, the last fifteen years has seen a change in some of the resources through which the Ministry of Health (MOH) is seeking to provide primary health care in the PHCP. Table 2 reveals the significant increase in the number of dressing stations and the appearance of primary health care units (PHCU) and the community health workers (CHW) to staff the PHCU's.

Table 2: Comparison of Some Health Resources, 1963-64 & 1979

	<u>1963-64<sup>a</sup></u>	<u>1979<sup>b</sup></u>
Population	12.8 million	17.3 million
Facilities		
Dispensaries	508	736 <sup>c</sup>
Dressing Stations	592	1,901 <sup>c</sup>
Primary Health Care Units	0	834
Personnel		
Medical Assistants	602	1,016
Community Health Workers	0	1,214

<sup>a</sup>Bryant, John, Health & the Developing World, Cornell U. Press, London, 1969.

<sup>b</sup>"Sudan Health Sector Support Project Paper - Annexes", Annex B, USAID/Sudan, July, 1979

<sup>c</sup>Data for 1977, ibid

Table 3 presents an estimation of the relative number of people per unit in the PHCP, from a low of 2900/unit for the combined Northern provinces of Nile and Northern to a high of 10,900/unit for the combined Southern provinces of Upper Nile and Junglei. As can be seen from the table, the Health Sector Support is proposed for the provinces with the highest number of persons per ambulatory care facility. This analysis excludes any ambulatory care provided by hospitals.

In summary, consultation was requested by USAID/Sudan to assist with the MCH and nutrition aspects of the "Sudan Health Sector Support Project" (SHSSP). The PHCP was developed by the GOS to address the health needs of the 20 million, predominately rural Sudanese. The health status is characterized by a high birth rate, a high infant mortality rate, a high death rate, a high population growth rate. The personnel and the facilities in the PHCP were reviewed.

TABLE 3: Estimation of the Average Number of Sudanese  
Per Ambulatory Care Facility

Province	1973 % of Population <sup>a</sup>	Projected 1977 Population <sup>b</sup>	Health Centers	Dispensaries	Dressing Stations	Newly Built <sup>c</sup> PHCU's, 1978	Total Ambulatory Care Facilities	Average # persons per unit
Northern Region								
Khartoum	7.8	1,530,000	33	50	91	26	200	7,650
Gezira	12.5	2,450,000	52	124	484	3	663	3,695
White Nile	6.6	1,290,000	0	35	93	67	204	6,324
Blue Nile	6.5	1,280,000	10	61	223	37	331	3,867
Nile			20	57	150	6	233	
Northern	6.7	1,310,000	11	69	121	17	218	2,905
Kassala*	7.5	1,470,000	13	53	119	-	185	7,946
Red Sea*	3.1	610,000	5	14	57	36	112	5,446
N. Kordofan*			17	62	119	44	242	
S. Kordofan*	14.8	2,900,000	4	40	90	5	139	7,612
N. Darfur*			9	39	44	-	92	
S. Darfur*	14.6	2,860,000	6	24	42	46	118	13,619
Subtotal	80.1	15,700,000	189	628	1,633	287	2,737	5,736
Southern Region								
Equatoria	9.4	1,840,000	4	47	137	30	218	8,440
Bahr El Gazal*	5.4	1,060,000	4	23	85	-	112	9,464
Upper Nile*	5.1	1,000,000	4	38	46	4	92	10,870
Subtotal	19.9	39,000,000	12	108	268	34	422	9,242
Grand Total	100.0	19,600,000	201	736	1,901	321	3,159	6,204

\* Health Sector Support Project Provinces

<sup>a</sup>Sudan Ministry of Health, Department of Statistics, 1975. Estimates based upon preliminary 1973 Census results

<sup>b</sup>Based on a 3.2% growth rate and an estimated 1979 population of 20.9 million

<sup>c</sup>"Sudan Health Sector Support Paper - Annexes", Annex B

## CHAPTER 2: Problems Identified

During the nine day consultation in Sudan, a number of constraints to the delivery of health care became apparent. The following discussion addresses them.

### Lack of Baseline Data

Information on infant feeding practices and taboos, personal hygiene habits, availability of foods, etc., for different parts of the country is not readily available except for three provinces - Gezira, Khartoum, and Kordofan. This basic data is crucial to the design and implementation of any MCH or health education program. Since only two of three baseline social economic, demographic and health studies planned for Northern Kordofan, Southern Darfur and Kassala Provinces had been completed by January, 1978, this seems to be a much needed area for SHSSP activity. The gathering of this type of information would require the technical assistance of a behavioral scientist or anthropologist at least three months per province. Appendix B provides a list of other topics which might be elements of a baseline needs assessment to strengthen health planning.

### Training the CHW

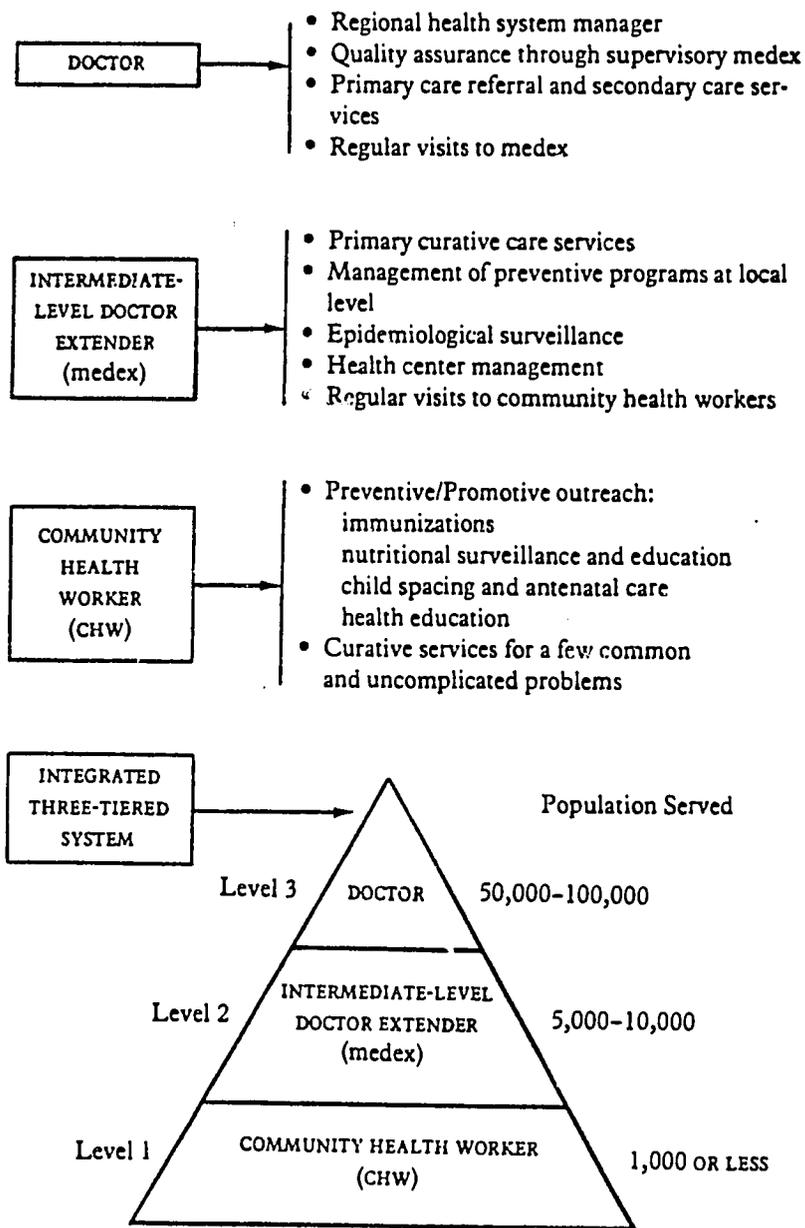
According to Dr. Richard Smith, the appropriate role of the CHW is to be a change agent for preventive and promotive services with limited curative services. As such, he should be extensively versed in communication and organizational skills to foster community development. Dr. Smith diagrams this concept in Figure 2.

It seemed that the CHW in Sudan was expected to have more curative skills than envisioned in this figure. That was the impression conveyed by the director of the CHW training program. Certainly the community expects more curative skills.

The role of the CHW might be strengthened if a clear job description were more widely publicized. That description could then form the basis of a competency-based education program which could prepare the CHW with communication and organization skills for rural development. Such a program might include a management protocol for a pit privy such as in Appendix C. The Health Manpower Development Staff of the University of Hawaii is in the process of developing competency-based education modules for the role of the CHW as described in Figure 2.

In addition, the CHW training is new enough that it has not been transferred to the Training Section within MOH. Thus, the information on preventive and promotive health may not be consistent with that being taught the HV and the VMW. An example of one problem area is that of weaning foods. Bananas and wheat pap are non-existent in many parts of Sudan, so it is inappropriate to teach this information to the CHW. These foods did not seem to be as inflexible a part of VMW and HV training. This is also an example of lack of baseline information.

**FIGURE 2. Job Descriptions of the Manpower Configuration for Rural Primary Health Care Services**



Source: Richard A. Smith, M.D., M.P.H., Manpower and Primary Health Care: Guidelines for Improving/Expanding Health Service Coverage in Developing Countries; The University of Hawaii, 1978; p. 26

The CHW also has little/no reference material. Though he might have been given a procedure manual upon completion of training, the CHW visited had relinquished his manual to his tutor. Such a minimal resource ought to be available to every CHW.

### CHW Tutor Training

CHW's are trained by SMA's who have been given a short training course to make them tutors. Their background in preventive/promotive care is weak at best since their activities and training have been in curative care. Their repertoire of teaching skills is limited to lectures. Thus, how could the current tutors be expected to impart skills in community dialogue if they never enter into a dialogue with their students? Retraining of the tutors seems an essential component of improving the functional level of the CHW.

### MA Training

Since health education is a massive job, all health workers should be doing it. The health education should begin with practices that actually exist in the community and attempt to mold them into more healthful ways of living rather than introducing totally alien teachings.\* However, MA's receive an excessive emphasis on curative care and relatively little training in MCH or preventive and promotive care. Yet, part of their role may be to supervise CHW, VMW and HV workers who may have better preventive/promotive training than the MA's. A revision in the curriculum for MA's should include a greater emphasis on health education, MCH and community health. Training in supervision should also be included.

Appendix D presents a prototype job description for a mid-level health worker such as the MA. It further expands to show an example of how a competency-based education program would define duties, skills and knowledge for each task in the job description. Then in Appendix E, the module list and organization for this type of training program is presented. This example illustrates what a large portion of the training should be devoted to MCH and Community Health topics. Management and supervision are also included as part of the training. This provides an example against which the curriculum for training MA's in Sudan could be evaluated. Competency-based training guidelines are presented in Appendix F.

### Manpower in Southern Sudan

In Southern Sudan, the 17 year civil war seriously depleted manpower resources. There are few top or mid-level personnel. Now 31 individuals who were in college in Uganda have no place to complete their education. They might be prime candidates for some of the long term training planned in the SHSSP.

\*"Child Health - Rural Health Series I"; African Medical and Research Foundation, Nairobi, Kenya

### Supervision:

There exists some vague paper mechanism for supervision of the various health workers. Though the three facilities visited in Gezira Province did have a functional supervisory mechanism, this is reported to be unusual in other more rural provinces.

Undoubtedly there are many contributing factors to weak supervision. Two were readily apparent. Supervisory skills may not be emphasized enough in the training courses for HV's and MA's. Lack of a mechanism of transportation, or fuel for same, renders supervisors immobile.

The already suggested strengthening of training for management skills could address the first barrier. The bicycles to be provided by the SHSSP will help address the second. However, bicycles need to be equipped with a carrying rack for supplies. In addition, a bicycle for the Nomad community health worker seems impractical. A female camel, a fodder allowance and canvas saddle bags to carry supplies might be more appropriate and provide enough incentive to assure that the animal is cared for.

### Community Involvement:

Many communities in Sudan have already built PCHU's and are impatiently awaiting the arrival of the CHW. Continuing involvement of the community, however, varies from none to a donation box in the dispensary or health center, to the village council making a door to door assessment for maintenance of the facility.

The already suggested inclusion of community organization skills in the training of CHW's could provide a mechanism for continuing community involvement. The formation of a health committee or a maternal and child health committee in the community and the nurturing of such committees by the CHW would be one way of translating community organization skills into action.

The collection box at the dispensary presents a great temptation to health workers in need of some extra cash. It has been alledged that many CHW's and MA's sell drugs and the administration of intramuscular medication for an added income. Thus, the more reliable way to assure maintenance of the facility and the provision of kerosene to fuel the burner for sterilization purposes seems to be village council assessments. Encouraging this type of support could also be a part of the CHW's role.

### Coordination:

The GOS, including the MOH, is organized with vertical lines of authority. The health infrastructure at the provincial level is also organized in a vertical manner. This type of organization creates many barriers to coordination among programs in the MOH and virtually blocks any communication among various ministeries that have developed overlapping programs such as those in the Ministeries of Education, Agriculture, Social Affairs, Culture and Information. An Interministerial Coordinating Committee might enhance communication

to maximize the scarce resources involved in providing a preventive primary health care program. Such a committee might also begin to address the problem of lack of coordination among donor agencies.

#### Logistics:

The problem of logistics in Sudan is enormous. Fuel supplies are dependant upon Iranian sources and are extremely variable. The South is virtually isolated because Air Sudan has cancelled all flights since there is no fuel for the return trip. The one all-weather supply route to Juba, the seat of Southern Regional Government, was through Uganda and is now closed. Efforts to upgrade the supply route through Kenya to an all-weather road have not yet generated enough donor support.

Transportation of drugs and health supplies from Port Sudan to Khartoum is sporadic because the shipments are too small to get priority rating for the railroad. In addition, the railroad has not been maintained well enough to permit frequent regularly scheduled trips. The Nile River has not been utilized as a supply route as much as might be feasible. The SHSSP includes plans to address some of these problems.

Storage facilities for drugs and health supplies are limited or inadequate. The SHSSP includes plans to supplement the existing facilities.

The MOH has a relaxed inventory procedure which needs revision to provide a mechanism for more accurate monitoring of drugs, supplies, and vehicles provided by many donors. Strengthening the MOH's inventory procedures is a vital part of the USAID Northern Sudan Primary Health Care Project. The drug inventory in the central stores and at Port Sudan is expected to be completed in three months. Then, the policies and procedures will be moved to the provincial level. UNICEF plans to follow the same policies and procedures in maintaining its inventory.

Once a more accurate inventory procedure is in place, it will be possible to determine the supplies and vehicular needs to adequately implement the SHSSP in view of the other logistic problems outlined. The consultant with the Northern Sudan Primary Health Care Project has an excellent understanding of the problems and a systematic, practical way to implement changes.

#### Cold Chain:

There are enormous gaps in the cold chain which must be resolved before an adequate, effective immunization program can be mounted in Sudan. The refrigerated storage rooms, one in the MOH's central store and one at Port Sudan, do not have back-up generators despite the fact that almost daily power outages occur. Refrigerated transport between Port Sudan and Khartoum is unreliable as it is from Khartoum out to provincial capitals. Reliable refrigeration beyond provincial capitals or larger cities is questionable and for this reason, immunizations are not available at the PHCU level. In addition to the proposed refrigerated truck for the SHSSP, it seems imperative to provide a back-up power supply for the two major refrigerated store rooms in Khartoum and Port Sudan.

Maternal and Child Health:

Additional problems related to MCH care will be discussed in Chapter 4.

Summary:

The problems identified included a lack of baseline data for health planning purposes, especially nutrition information. Preventive and promotive aspects of the training of CHW's and their tutors and of MA's is limited. Supervision of health workers is weak. Continuing community involvement in the PHCP often slackens. Vertical organization of the government places a serious constraint on the coordination of overlapping programs. Logistics in Sudan are difficult at best. The two receiving cold storage rooms have no back up generators.

## CHAPTER 3: Recommendations

### SUMMARY OF RECOMMENDATIONS FOR SUDAN HEALTH SECTOR SUPPORT PROJECT

#### Improved Delivery of Services and Commodities under the PHCP:

- needs assessment to determine the unique characteristics of each province with which to strengthen the preventive/promotive curricula.
- curricula revision to emphasize preventive and promotive as well as curative services; to demonstrate "how to's" of health education and rural development, i.e. competency-based, task-oriented training.
- training and retraining of PHCP personnel and CHW tutors according to revised curricula.
- provision of revised teaching manual to each tutor, MA and CHW.
- construction of training facilities to augment MOH capabilities for training front-line health workers.
- supporting GOS emphasis on self-help through the provision of local currency for the procurement of building materials for the community construction of PHCUs.
- encouraging voluntary contribution to support PHCU/dispensary maintenance and to supply kerosene for sterilization of PHCU equipment.
- strengthening the logistic/supply system through training of storekeepers and construction of PHCP warehouses.
- provision of PHCP drugs and equipment.

#### Strengthen Rural MCH Services:

- assist in developing policies, principles and practices for more comprehensive MCH through the MOH Committee on MCH Services.
- needs assessment to determine the appropriateness of training re: the task required of the student; the needs and unique characteristics of each province.
- assist in conducting baseline studies of local eating patterns and taboos and of applied nutrition research.
- curricula evaluation and revision, if indicated, to assure a consistent, parallel and practical presentation of nutrition, health maintenance concepts, i.e. prenatal care, infant and child care, health education, hygiene.
- train and retrain all health personnel to include greater emphasis on preventive MCH activities, including nutrition education.

- provide revised training manual to each tutor, HV, NMW, VMW.
- construct training facilities to augment MOH capabilities for training front-line health workers.
- provide commodities and supplies.
- begin the establishment of a functioning cold chain to make immunization more available.

Improved Central, Regional and Provincial Planning, Management and Information Systems:

- assist in formation of InterMinisterial Development Committee to include Education, Agriculture, Health, Cultural Information and Social Affairs.
- assist provincial assistant commissioners of health in evaluating and planning their PHC program.
- assist in conducting baseline studies as well as applied research into administrative problems of the PHCP.
- training of selected health administrators and health planners in modern management, planning and evaluation techniques.
- strengthening the health management information system through the training of health statisticians, improvement in reporting and provision of a mini-computer.

Improved Health Communications for PHCP<sup>a</sup>:

- strengthening the newly established Department of Health Education in MOH by the provision of basic supplies, re: the development of materials for augmenting PHCP and MCH.
- include more techniques about health education in training in all health personnel, utilizing Health Education Personnel.
- assist in establishing a health radio education program in the South.
- begin development of a health radio education program for the North.
- assist in establishing a pilot 2-way radio communication system for the PHCP in a selected province in the North and South.

---

<sup>a</sup>The communications project should be a separate project if/when a health radio education program were to become feasible for Northern Sudan. Until that time, however, two elements favor communications remaining part of the Health Sector Support Project:

1. It is essential that training in some of the techniques of health education be incorporated for all health personnel.

Expanded Rural Safe Water Supply:<sup>b</sup>

- needs assessment to determine unique provincial characteristics and taboos about personal hygiene and elimination.
  - incorporation of concepts of personal hygiene, sanitation, safe water in the training of all health personnel with special attention to adaptations for children.
  - train sanitary overseers in techniques of rural development for environmental health.
  - assist in the development of environmental health models adapted to local materials and cultural molds.
  - stimulate local manufacture, maintenance and marketing of models developed through self help mechanism, such as environmental health cooperatives or credit unions.
  - expansion of access to safe water.
- 

<sup>a</sup>(continued)

2. The overall program for health education needs to be coordinated and fully integrated with the PHCP.

These two activities might be more easily accomplished in conjunction with the curricula revisions planned in the Health Sector Support Project.

<sup>b</sup>Current plans are to develop the safe water component as a separate project. Despite the separate project status, it is essential that concepts of personal hygiene and environmental health become a part of the health education repertoire of each health worker. Thus, the project must work closely with the Health Sector Support Project.

## CHAPTER 4: Maternal & Child Health Services

### MCH Goals Within the PHCP

- Decrease maternal mortality from 3/1,000 livebirths to 1/1,000 livebirths in seven years.
- Treatment of infertility and decrease incidence of infertility.
- Coverage of 30% of the population with midwifery services.
- Child spacing to be integrated with MCH services.
- Decrease infant mortality from 140/1,000 livebirths to less than 100/1,000 livebirths in seven years.
- Reduce childhood mortality for 1 - 3 year olds by 25%.
- By 1984, vaccination of 80% of 0 - 5 year olds for measles, polio, DPT, tuberculosis and smallpox.
- Improve nutrition status by education, demonstration and monitoring of growth.
- By 1984, increase the number of fully trained health visitors to twice the 1976 level.
- Improve the information and the health education in support of MCH services.
- By 1984, reduce by 50% the number of children with protein-calorie malnutrition (PCM) ages 0-4.
- Provide nutrition education in schools.
- Agricultural extension workers and community health works should promote community gardens.

These are ambitious goals to be accomplished in a very short time. A doubling of the time frame might make them more approachable. It is with these in mind that the SHSSP was developed but few specific strategies have been identified. The needs for manpower and education and curricula revision are so great that this forms the basis for approaching the SHSSP. Once these elements are in place and administrative and supervisory roles are strengthened, more specific strategies might be appropriate. A more reliable health information system is being developed. Some additional suggestions are provided in the following sections.

### MCH Personnel and Training

Aspects of maternal and child health care have long been recognized as part of the program of the MOH. Training of VMW's began in the 1920's and is a well established part of the Training Section of the MOH. Mrs. Herrah, Chief of this section, has been with the MOH for 40 years and appears to be knowledgeable and well respected by her colleagues.

A candidate for VMW school should be literate to enter the 9 month training course in one of 18 schools (1 per province). She must participate in 15 home deliveries before graduation. A new class will not begin until all of the previous class has completed the required deliveries. In fact, medical students may graduate without having participated in as many deliveries as a VMW. Additional information about VMW training is contained in Appendix G. Part of the routine equipment in the VMW kit is

is catgut and needles to sew up the episiotomy required because of the extensive scar tissue that results from the common practice of female circumcision.

The VMW has a part time profession because she often has a family of her own to care for. She is to be paid Ls 30 (\$1.00 = Ls 0.8) by the MOH, though in the rural areas, she is often paid several months late. In the smaller of two villages visited, the VMW attended 3 - 4 deliveries a month and was paid Ls 2 - 5 per delivery if the family could afford it. In the larger village, the VMW attended 4 - 5 deliveries a month and received Ls 5 - 8 per delivery. Those VMW who are widows or divorcees, living in rural villages, are considered "strange", i.e. a woman of the proper upbringing would not live alone in a rural village.

Candidates for the three nurse midwifery schools have completed 4 - 9 years of general education, three years of hospital based nursing education and 2 - 4 years of nursing experience. After completion of the 12 month course, the nurse midwives (NMW) work on the delivery floor in hospitals attending normal deliveries, or become HV, midwifery tutors or administrators (Appendix H).

After two years experience, the NMW may go to one of two HV schools. The 18 month training course includes an advanced course in midwifery and a greater emphasis on prenatal and well-child care, plus supervision of VMW's.

In the HC visited on the field trip, the HV spent two days a week supervising four VMW's in towns surrounding the HC. She then traveled to another HC to supervise three other VMW's. She made home visits with the VMW's to see their postpartum clients and periodically observed VMW deliveries. In this instance, there was evidence of on-going supervision. However, in more rural areas, it was reported that some HV provided no supervision of the VMW's. With the VMW's in each HC, the HV held weekly prenatal and child welfare clinics. Prenatal clinic varied from the usual attendance of 40-60 per clinic to as many as 200 when the dried milk supplement was available. Patients were registered by a clerk. Food demonstrations or other health teachings might be presented. Then each patient was examined and a urine specimen was obtained. Adult scales were not seen in the clinic. The following data were recorded on each antenatal clinic card:

- Clinic location
- Patient's identification number
- Patient's name and address
- Midwife's name
- Parity
- Pelvic Measurements
- Previous History
- Findings at first examination
- At each visit: Date
- Urine - Presence or Absence of albumin
- Remarks

The usual attendance at the well-baby clinic was 40. Children were registered by the clerk. They were weighed and mothers were given feeding instructions. There might be food demonstrations or other health teaching. Data items recorded on the Child Welfare Clinic Cards included the following:

Clinic Record

Name/location of the Clinic.  
Patient's name and address.  
For each visit: Date  
Weight  
Diet

Clinic Record Continuation Form:

Patient's identification number  
For each visit: Date  
Weight  
Age  
Remarks

HV is to submit a monthly report of her activities to the Provincial Medical Officer (PMO). The data requested on that report is summarized in Appendix I. It is primarily by monitoring these reports that the PMO renders whatever supervision he might provide for the HV.

Both the VMW's and the HV have the responsibility to register births, to report and refer problems to the next level of care. Communicable diseases are reported to the CHW or to the MA for care and followup.

There are 180 HC's with a functional MCH component conducted by HV's (43 in Khartoum Province). Yet it is reported that 457 HV's have been trained. One unanswered question remains to explain the discrepancy between these two numbers. Where are these trained HV's?

In the PHCU visited, the CHW and the VMW conducted a joint prenatal clinic several times a month. Four or five patients attended. The VMW examined the patients and the CHW presented nutrition classes. No adult or infant scales were in the PHCU. The CHW also made the home visits to teach nutrition. This type of cooperation is encouraged but was reported to be an infrequent occurrence.

More supervisory skills included in the training of the HV, the medical officers and MA's might improve some of the problems with supervision. Transportation and fuel is also a significant problem which the SHSSP is attempting to address.

More indepth training in components preventive MCH services could upgrade the skills of triage so essential to identifying high risk situations for mothers and children and referring the problems to a higher level of care. Appendixes G and H present a brief outline of the number of hours spent on various topics. Care of the newborn is not one of the

topics identified, yet this is one of the job functions of the VMW and NMW. Appendix J contains a bit more detail on the training provided the students at the Khartoum Nursing College. A similar more detailed analysis needs to be conducted of all the curricula for training health personnel.

In addition, a task analysis should be undertaken for the job that is expected of each health worker in relation to MCH care. Appendix K presents the task analysis for a Maternal and Child Health Training Module and for a Community Nutrition Training Module.

In-service training for health workers could upgrade existing skills and might improve motivation. Travel and per diem could be provided for provincial health personnel to attend seminars on topics such as "Nutrition and the Role of Provincial Medical Personnel; Nutrition and MCH Services at the Village Level; Cultural and Social Attitudes Affecting Delivery of Health Services." Other topics for in-service training are listed in Appendix L.

#### An other Provider of Maternal Care

Trained midwives, however, are estimated to be providing less than 25% of the maternal care in Sudan. Training resources for midwives are limited. In addition, the 18% of the population that is urban is served by 60% of the health infrastructure, leaving 40% for vast rural and nomadic areas. Thus, it has been estimated that 75-90% of the deliveries in rural areas are attended by TBA's. These indigenous workers have a well-defined and well-accepted role in their communities. They often receive gifts of money or in-kind services from the families assisted.

TBA's come by their role through various ways, e.g., a family tradition, exhibition of natural skill after assisting at a few deliveries or be deliberate choices after having been themselves seriously ill and recovered. They are generally middle-aged or elderly. Because of the status in the community, efforts are made to recruit the daughters of the TBA's to VMW school.

In view of the limited resources in rural areas, it seems only reasonable, as a temporary measure, to try to upgrade the care that TBA's are providing. This could be done in short courses specifically designed for illiterate training or on a one to one basis, wherever the administrative approval and supervisory capability exists.

Criteria for selection of a TBA for training should be based on observation of her work, her ability to learn and her reputation in the community. Training then should be aimed at giving her competence to carry out selected tasks related to antenatal parturient and postpartal care.

A "midwifery kit" for the TBA should be simple and consist of supplies such as: a metal container, scissors and clamps, razor blade and cord ties, Dettol antiseptic, cotton, iron tablets.

Components of MCH Services:

Until this year, there has not been a specific section within the MOH for MCH services. This division is to be organized under the direction of a physician who will be returning from advanced training in MCH and public health. The SHSSP could provide an impetus to MCH by assisting new MOH Committee on MCH in developing policies and procedures. The formation of Provincial Committee on MCH could be a further extension.

Despite a survey of various documents, it was difficult to gain a clear understanding of the MCH program in the MOH. It was apparent that certain elements are referenced as parts of preventive MCH services, e.g. antenatal care with iron, folic acid, vitamins and food supplements. Midwifery services also seem to fit into this category. Growth assessments and screening for PCM are to be part of child welfare services as are immunizations. Oral rehydration powder is to be prescribed as appropriate for diarrhea and dehydration.

Health education is intended to be part of preventive/promotive services. Topics that were referenced were Basic Nutrition Needs, Nutrient Content of Common Foods, Food Demonstrations, Breast Feeding and Lactation, Weaning, Weaning Foods, Nutrition During Pregnancy and Lactation, Budgeting the Food Money.

The field visits were to some of the best services in the PHCP. All of the elements listed above were not available even there. Food and vitamin/mineral supplements were irregularly available. No growth charts were to be seen. Adults scales were not seen. An infant scale was only in the HC. Immunizations were not being given. Little time was devoted to promotive efforts. No health education aides were seen. The newborn scales in the midwife kits were missing, perhaps sold in the market for a meat scale. The reasons for these shortages should be taken into account when determining the need for including some of these items on the supply list of the SHSSP. One reason food demonstrations are limited could be the lack of funds to purchase samples.

Until such time as the MCH Committee formulates policies and procedures, a suggested format for MCH services includes the following components\*:

Children	Mothers	
	Ante-Natal	Child Spacing
Registration	Registration	Registration
Weighing & plotting	Weighing & plotting	
Growth pattern	Weight Gain	
Examination & Advice	Examination & Advice	Examination & Advice
Immunizations	Immunizations	
Dispensing	Dispensing	Dispensing
Health & Nutrition	Health & Nutrition	Health & Nutrition
Education	Education	Education

\*"Child Health - Rural Health Series I" - African Medical and Research Foundation, P. O. Box 30125, Nairobi, Kenya

A variety of health care personnel have been trained to provide these different services throughout East Africa. The following tabulation shows how to build on each worker's skills\*:

Personnel	Registration	Weighing & Plotting	Exam & Advice /Children	Exam & Advice /Ante-Natal	Exam & Advice /Child Spacing	Referral of Problem Cases	Immunizations	Dispensing	Health/Nutrition Education
Non-Medical Worker	X	X						(X)	X
Nurse/Dispensary Assistant	X	X					X	X	X
Health Auxillaries	X	X					X	X	X
Village Midwife	X	X		X	(X)	X	X	X	X
Trained Nurse	x	x	x	x	x	x	x	x	x
Rural Medical Workers	X	X	X	X	X	X	X	X	X

( ) May not be adequately trained for this task.

The task analysis referenced in Appendix K would then elaborate on the skills needed to perform these activities.

#### SHSSP Personnel

The proposed staffing pattern for the SHSSP is not clear to this author. However, there is proposed some combination of MCH Advisors with professional background in medicine, nursing or midwifery with public health experience. This author strongly urges that among the MCH specialists selected, someone needs to have a nurse/midwifery background and someone needs to have a public health nursing background with an MCH specialization. These areas of expertise are essential to accomplishing the goals listed at the beginning of the chapter.

There will need to be strong coordination among these two specialists, the five public health coordinators and the team leader for the contract.

#### USAID/Sudan Personnel

There presently exists two health positions; one Public Health Officer, a physician, and one Public Health Advisor. When the SHSSP gets underway there will be a very large health program with a large training component in a country with many logistical problems. At that time, the mission may need to augment the staff for the health section to maintain more appropriate accountability. Besides the public health medical expertise, two others will be needed: that of public health nursing and that of health program logistics/implementation such as the public health advisor provided in the measles/smallpox vaccination program in West Africa. It may also become essential to have a health person stationed in the South.

#### SHSSP Supplies

A number of items are planned in the category of supplies for the SHSSP, including health education supplies and drugs. Consideration should be given to adding food models to the health education supplies, for use by the health workers providing nutrition education. A food demonstration allowance might also be considered.

A Nutrition Strategies Workshop was held in Sudan in 1978. A manual on nutrition education was developed. This manual should be made available to all health workers expected to provide nutrition education. A copy of the PHCP manual should also be available to each CHW.

To upgrade MCH services, adult scales and infant scales need to be located at sites where prenatal clinics and child welfare clinics are held. Prenatal weight gain and fundal height charts should be considered. Infant growth charts and tape measures are essential to the screening for PCM.

#### Summary

The GOS and USAID/Sudan have far-reaching goals for the impact of Maternal and Child Health (MCH) services in the face of limited health manpower. The training of health workers providing MCH services was reviewed. More in-depth primary and in-service training in supervisory skills and components of preventive MCH services would upgrade triage skills. Examples of job task analyses and competency based training are provided. Traditional birth attendants provide a significant portion of maternal care in rural areas. Upgrading their skill level would be a stopgap measure. The MOH is in the process of developing MCH policies and procedures. Some specific components of MCH services are suggested as a guide for the SHSSP to catalyze these efforts. Specific expertise needed to assist the SHSSP in implementing the MCH goals includes nurse midwifery, public health nursing and health logistics.

## CHAPTER 5: Evaluation

In Sudan, the timing of certain phases of evaluation needs to be flexible because of unusually long start up delays. That is, the second and fourth year evaluation should take place on the second and fourth year of project activity, not the second and fourth year of funding. The evaluation section of the SHSSP could be expanded a bit to provide a few more details. The following information is presented as an example of additional data items that might be included in the evaluation. This Fast, Informal, Relevant and Economical (FIRE) method of gathering information for evaluation was summarized from Manpower and Primary Health Care by Dr. Richard A. Smith, University Press of Hawaii.

The FIRE evaluation plan includes:

1. The before-and-after use of available data from many sources outside the program design (FIRE evaluation).
2. A roster of selected indicators that are expected to change over time.
3. Anecdotal and descriptive materials.
4. A panel of experts to digest this evaluative information and provide a before-and-after summary for the decisionmakers.

Data sources for the FIRE evaluation plan involve the following:

1. National census data
2. Hospital:
  - a. inpatient data
  - b. outpatient data
3. Rural health center, dispensary, and health post data
4. Education department statistics, i.e., attendance records, sick leaves, health education programs
5. Studies and surveys sponsored by:
  - a. national planning agency
  - b. universities
  - c. anthropologists
  - d. World Bank, WHO, UNICEF, etc.
- b. Voluntary agencies

The following is a list of indicators which would be expected to change over the life of the SHSSP:

- A. Inputs
  1. People and Facilities
    - a. Total number of CHW graduated; number in service.  
Total number of VMW graduated; number in service.  
Total number of HV graduated; number in service.  
Attrition rate of health personnel after 5 years.  
Total number of PHCU.  
Total number of fully functioning HC.
    - b. Number of CHW's/100,000 rural population.  
Number of PHCU/100,000 rural population.  
Percent of population within 1 hour travel time to a primary health care provider.

2. Financial Resources.
  - Total expenditure for health.
  - Current operating expenditures.
  - Comparative cost per health worker graduated (after two years of capitalization).
  - Cost per service per health unit.
3. Technological Resources
  - Enumeration of increased or decreased services because community needs tend to be redefined and CHW training adjusted to those needs. Listing of services allows decision makers to access the appropriateness of the total services given, e.g. the addition of oral rehydration solution; the provision of iron and folic acid tablets to pregnant women; the provision of dried milk supplement to pregnant women.
- B. Process
  1. Community acceptance of CHW.
  2. Percentage of health facilities with penicillin 80% of the time.
- C. Outputs
  1. Curative
    - Percent increase/decrease in curative encounters per year (excluding immunizations, prenatal visits and well-child visit).
  2. Preventive
    - a. Percent increase/decrease in prenatal encounters.
    - b. Percent increase/decrease in prenatal immunizations.
    - c. Percent increase/decrease in well-child visits.
    - d. Percent increase/decrease in children's immunizations.
    - e. Percent increase/decrease health education sessions; encounters.
- D. Status Change
  1. Change in Infant Mortality Rate (IMR). Improved records and reporting should produce an initial "increase in IMR . Disease and age specific rates - malnutrition and anemia, respiratory and measles, gastroenteritis, tuberculosis, malaria.
  2. Periodic Measurement of nutritional status of children. (Weight/age; weight/height; arm circumference for age.)
  3. Immunization status - Scar survey for BCG, smallpox.
  4. Change in the number and proportion of deliveries with antenatal care.

#### Summary

The SHSSP plans to evaluate the impact of the project in health. The Fast, Informal, Relevant and Economical method of evaluation is summarized to augment the SHSSP plan.

APPENDIX A  
Resource Material & Contacts

A number of USAID/S documents were reviewed for background information and included:

- Country Development Strategy
- Report of the Health Sector Assessment Team - Sudan, 1977
- Northern Sudan Primary Health Care Project Paper
- Southern Sudan Primary Health Care Project Paper
- Sudan Health Sector Support Project Paper

Personal contacts included the following persons:

USAID/Sudan

- Mr. James Beebe, Education Officer
- Mr. Tom Chapman, Chief, General Development Office
- Dr. George Contis, Medical Service Consultants, Inc.,  
Contractor for Northern Primary Health Care Program
- Mr. Bob McCandliss, Juba Area Coordinator
- Mr. Fred Michaels, Contract Logistics Consultant, Northern  
Primary Health Care Program
- Mr. Jerry Weaver, Rural Development Officer

Ministry of Health, Sudan

- Dr. Kabachi, Director of Rural Health and Provincial Affairs
- Dr. Kerrahaz, Head of training program Community Health Workers
- Mrs. Herrah, Chief of the Training Division

Others, Sudan

- Mr. & Mrs. David Chell, Consultants to MOH in Evaluation  
of Primary Health Care Program
- Mrs. Awatif Osman, Director, Khartoum Nursing College

USAID/Washington

- Tom Georges, M.D., AFR/DR/HH
- Duff Gillespie, Office of Population
- John McEnaney, Project Officer, Office of Health

Others, Washington

- Barry Karlin, Ph.D., American Public Health Association, Office  
of International Health; continuing education program on  
sanitation at American Public Health Association

## APPENDIX B: An Assessment Program to Strengthen Health Planning\*

### 2.0 Situation Assessment

Essential to the design of a program that appropriately addresses the health problems of a population is a thorough understanding of the existing situation. This phase of the planning process is therefore *descriptive* and should yield a clear picture of the situation at both community and organizational levels. It will provide the information base from which projections will be made relating to health status, service utilization, health manpower, and health service system requirements. It will thus serve as the information base for the design and evaluation of the project. As such, it should provide a comprehensive overview of the community and the organization of health services. Included in this overview should be a careful review of past manpower planning efforts, present national health planning (country health programming exercises, etc.), and economic development plans. The assessment should include a review of:

#### 2.1 Community factors

- 2.1.1 Population characteristics and trends
- 2.1.2 Socioeconomic characteristics and trends
- 2.1.3 Health status of the population: morbidity, mortality, disability, discontent; health needs and demands
- 2.1.4 Community expectations, wants, and the potential for contribution to health system change

#### 2.2 Organizational factors

- 2.2.1 Existing health policies and programs
- 2.2.2 Organizational structure and function of the health service system
- 2.2.3 Health systems financing (public and private)
- 2.2.4 Health facilities inventory (equipment, staffing patterns, cost, utilization)
- 2.2.5 Existing health manpower configuration
  - a. Categories of health manpower: professional, nonprofessional, indigenous healers, and providers
  - b. Manpower productivity: organization and patterns of work, remuneration, quality of performance, and potential for delegation or transfer of functions

- c. Recruitment, attrition, and migration
- d. Worker values
- e. Educational institutions' capability for training
- f. Potential manpower pool

#### 2.2.6 Health services requirement

#### 2.2.7 Health manpower requirement

### 2.3 Assessment of health manpower needs

Because the purpose of this planning is the development of a primary health care program intended to improve health services and manpower coverage, particular attention must be given to:

2.3.1 Analysis and projection of health needs and the population's demand for services.

2.3.2 Measurement of existing health manpower and an analysis of its pattern of utilization and effectiveness; this measurement should embrace all types of health workers. This will include all existing paramedical workers and should weigh the potential for upgrading these workers as providers of primary care. Also included in this assessment will be enumeration and assessment of the productivity of various types of indigenous practitioners and healers.

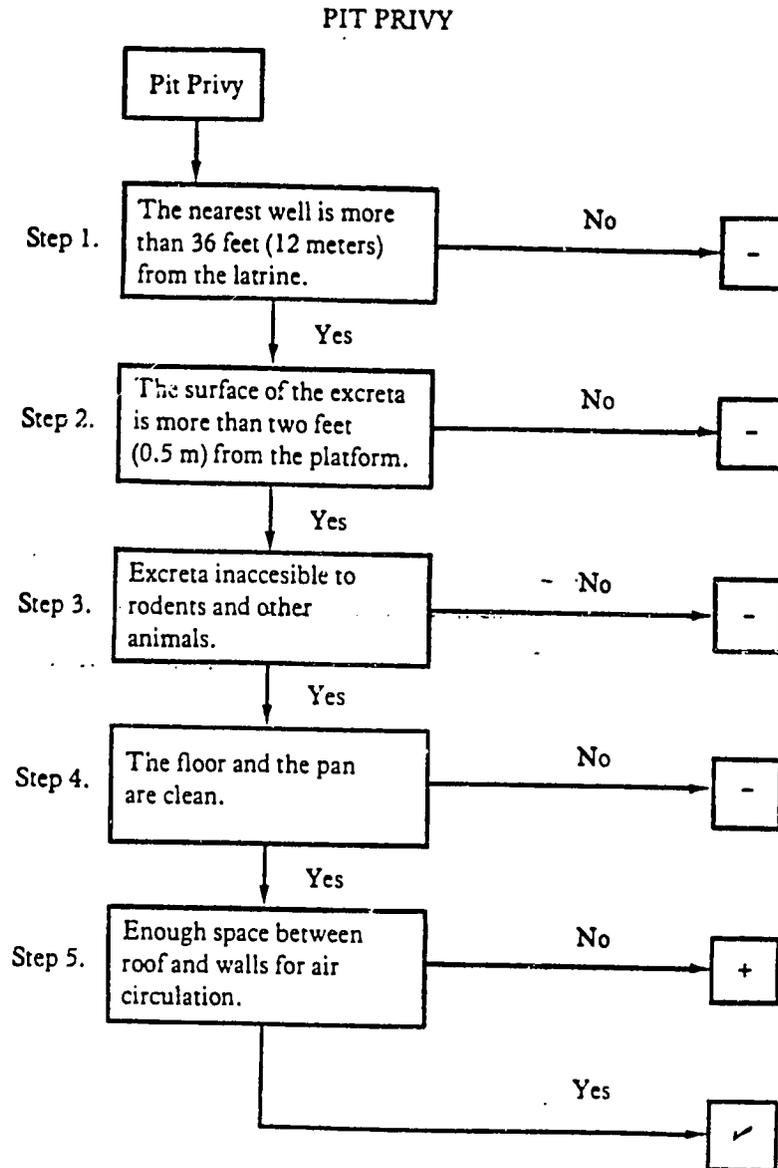
2.3.3 An estimate of future health manpower requirements and training needs in light of the overall health program.

2.3.4 Detection of imbalances between estimated manpower requirements and expected supply.

2.3.5 Assessment of the existing support infrastructure for the health service system within which present health manpower functions. This will include a review of the administrative system, physical structures, logistic and supply systems, and the health information system.

\* Richard A. Smith, M.D., M.P.H.; Manpower and Primary Health Care: Guidelines for Improving/Expanding Health Service Coverage in Developing Countries; The University of Hawaii, 1978; pp. 46 & 47

APPENDIX C: Community Health Workers Management Protocol Example\*



Key: (-) not acceptable; (+) acceptable; (✓) ideal

\* Richard A. Smith, M.D., M.P.H.; Manpower and Primary Health Care: Guidelines for Improving/Expanding Health Service Coverage in Developing Countries; The University of Hawaii, 1978; p. 103

## APPENDIX D: A Prototype Job Description of a Mid-Level Health Worker\*

### Tasks

- I. General clinic
  - A. Diagnose and manage common skin problems
  - B. Diagnose and manage common EENT problems
  - C. Diagnose and manage common problems of the respiratory system and heart
  - D. Diagnose and manage common problems of the gastrointestinal system
  - E. Diagnose and manage common genito-urinary problems
  - F. Diagnose and manage common infectious and chronic diseases
  - G. Diagnose and manage common emergencies and injuries
- II. Maternal and child health
  - A. Diagnose and manage common obstetrical and gynecological problems
  - B. Diagnose and manage common problems of infants and children
  - C. Organize and conduct prenatal and postnatal services
  - D. Organize and conduct child care services
  - E. Organize and conduct family planning services
  - F. Assist midwives with deliveries when necessary
- III. Community health
  - A. Organize and conduct a program to evaluate and promote improvement of community sanitary conditions with emphasis on drinking water, excreta and waste disposal, and insect vectors
  - B. Organize and conduct a program to evaluate needs and promote improvement of community family planning and practices
  - C. Organize and conduct a program to evaluate and promote improvement of community food and nutrition conditions
  - D. Organize and conduct a program for collecting and reporting health statistics.

Each task is further divided into the duties it comprises. For example:

Task: Organize and conduct child care services

### Duties

- 1.0 Participate in a program of disease prevention by immunization
- 2.0 Prepare and maintain adequate weight records to identify high-risk children
- 3.0 Participate in a program of nutritional preventive care

And last, the skills and knowledge that comprise the individual duties are listed. Examples of each are shown below.

Task: Organize and conduct child care services

Duties: Participate in a program of disease prevention by immunization

### Skills

- 1.1 Give the following immunizations:
  - tuberculosis                      tetanus
  - diphtheria                         polio
  - whooping cough                 smallpox
- 1.2 Record immunization information on a child's clinic record

### Knowledge

- 1.1.1 Immunization procedures
- 1.1.2 Types of immunizations
- 1.1.3 Recommended age for immunizations
- 1.1.4 Care and storage of vaccines
- 1.1.5 Possible side effects and/or cautions

\* Richard A. Smith, M.D., M.P.H.; Manpower and Primary Health Care: Guidelines for Improving/Expanding Health Service Coverage in Developing Countries; The University of Hawaii, 1978; pp. 83-85

APPENDIX E: The System for Teaching Essentials to Medex (STEM)<sup>a</sup>

MODULE LIST

Core skills

1. Anatomy and physiology
2. History
3. Physical examination
4. Statistics
5. Causes of diseases

General clinics

6. Skin problems
7. EENT problems
8. Respiratory system and heart problems
9. Gastro-intestinal tract problems
10. Urinary system problems
11. Chronic diseases
12. Dental problems
13. Generalized infections and other medical conditions

Trauma and emergencies

14. Trauma
15. Emergency

Maternal and child health

16. Problems of pregnancy and reproduction
17. Child care
18. Problems of infants and children
19. Family planning
20. Prenatal and postnatal care

Community health

21. Community environmental health
22. Community family planning
23. Community nutrition

Management

24. Mid-level health worker\*

Individual STEM modules are organized in the following manner:

I. Module text

- A. Student guides
- B. Content presentation
- C. Skill descriptions
- D. Review exercises
- E. Protocols
- F. High-risk factors
- G. Skill rating sheets

II. Instructor's material

- A. Instructor's manual
- B. Audio-visual training supplements
- C. Evaluation materials

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\*The development of management modules is consuming an increasing amount of HMDS efforts. Management modules for professional supervisors and management support specialists (e.g., finance, personnel, supply, etc.) are also being developed.

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<sup>a</sup>STEM forms the basis of a curriculum for training mid-level health workers specifically for working in rural areas of developing countries. STEM modules that have been developed are listed, **Richard A. Smith, M.D., M.P.H., Manpower and Primary Health Care: Guidelines for Improving/Expanding Health Service Coverage in Developing Countries; The University of Hawaii, 1978; pp. 93-94**

## APPENDIX F

<u>Competency-Based Training Guidelines (8)</u>	<u>Modules</u>
1. The competencies to be demonstrated are job derived, specified in behavioral terms, and made clear to the student.	1. Module content is developed based upon objectives that are derived from job analysis. These objectives are presented in the students' module text.
2. Evaluation criteria are competency-based, specify mastery levels, and are available to the students.	2. Modules contain specific statements of performance and knowledge criteria.
3. Evaluation requires performance as prime evidence of capability; also, takes student knowledge into account.	3. This is incorporated in the training program design, not specifically a module feature. Evaluation materials are included in modules—performance rating sheets and written exams.
4. Student's progress rate depends upon demonstrated competency.	4. This feature has been incorporated into the program design. Student evaluation criterion referenced, not normative.
5. Instruction program facilitates development and evaluation of specific competencies.	5. Instructor's manual provides lesson plans developed to meet program objectives and competencies.
6. Systematic design is used to account for each training factor.	6. Modules are convenient tools for presenting material in a systematic fashion.
7. Student learning opportunities are individualized, i.e., student experiences are determined by the student's learning needs.	7. Modular training materials contain alternative training strategies.
8. Overall efficiency and effectiveness of learning is assured by students becoming actively involved in the learning process.	8. Module materials provide a range of learning experiences and emphasize the importance of active involvement in learning. Instructors' material contains lesson plans that emphasize maximum student involvement in learning activities.

\* Richard A. Smith, M.D., M.P.H.; Manpower and Primary Health Care: Guidelines for Improving/Expanding Health Service Coverage in Developing Countries; The University of Hawaii, 1978; p. 92

APPENDIX G  
Village and District Midwives Schools

Criteria: Candidate from same village of assignment.  
Age 18 - 25.  
Medically fit.  
No educational background required - priority given to literates.  
Language: Arabic  
Duration: 12 months

Course includes: Practical demonstration (360 hours).  
Lectures (50 hours).  
Practical training in MCH clinics (144 hours).  
Practical training in Hospitals (144 hours).  
Domiciliary deliveries conducted - 15

Examination: Oral theoretical.  
Practice on model and antenatal patients.  
Reports.

Licensing body: Central Board of Public Health

Scope of Work: Antenatal and postnatal care.  
Normal deliveries at home.  
Diagnosis of abnormal deliveries and diseases to refer  
to physician or medical assistant.  
Dispensing of limited drugs like ergot tablets, laxatives,  
analgesics. Sometimes trained to give intramuscular  
injection under doctor's orders.  
Care of newborn.  
Supervised by medical assistant, professional midwives  
and doctors in the district.  
Occasionally works in district hospitals under doctors  
or at a dispensary.

APPENDIX H  
Nurse Midwives Training School

- Criteria:** Minimum four years general education.  
Three years general nursing.  
Minimum two years nursing practice.
- Language:** Arabic
- Duration:** 12 months
- Course includes:** Theoretical obstetrical lectures (54 hours).  
Practical demonstrations (120 hours).  
Antenatal clinic sessions (96 hours).  
Practical Hospital training (960 hours).  
Domiciliary deliveries - 15.  
Hospital deliveries - 10.
- Examination:** written examination.  
Theoretical.  
Practical on model and antenatal patients.
- Further course:** 12 months course to become health visitor, midwifery tutor and administrator.
- Licensing body:** Usually employed by government in hospitals under doctor's supervision or occasionally licensed by Central Board of Public Health for private home deliveries.
- Scope of Work:** Normal deliveries in hospital.  
Detection of abnormalities and referral.  
Minor procedures (e.g. episiotomy).  
Injection, intravenous fluids and drugs under doctor's instruction.  
Antenatal and postnatal care.  
Care of newborn.

APPENDIX I  
Data Items Collected by the Health Visitor for a Monthly Report

Visits made by Health Visitor:

- Homes visited
- New cases under one
- Old cases under one
- New cases over one
- Old cases over one
- Antenatal visits
- Special visits
- Infant welfare clinics
- Antenatal clinics
- Lessons to Midwives
- Inspections to Midwives

Attendance at Antenatal Clinics by Location of Clinic:

- Antenatal Attendances
  - new
  - old
- Not pregnant
  
- Number of clinics held in month
- Cases sent to doctor
  
- Child Welfare attendances
  - new under one
  - old under one
  - new over one
  - old over one
  
- Number of clinics held in month
- Cases sent to doctor

## APPENDIX J

### Analysis of Training in Preventive Maternal & Child Health Care Provided Students at the Khartoum Nursing College

Nursing students at Khartoum Nursing College complete a three year course, which prepares them for a supervisory role in hospitals. The prerequisite is 12 years of primary and secondary education. After two years of work experience, these nurses, usually women, can take one year of midwifery training to become "Sister Midwives" and supervise in Maternity hospitals.

The following summarizes the topics which deal with preventive aspects of MCH care:

#### Pediatric Nursing

Of 79 lecture hours, 48% was devoted to topics on Growth and Development:

- Feeding
- Prematurity
- Protein-Calorie Malnutrition
- Dehydration & Diarrhea
- Respiratory Problems

#### Maternity Nursing

104 hours of instruction taught by nurses.

104 hours of instruction taught by physicians.

Nursing topics:	Antenatal	7 hours
	Labor	12 hours
	Normal Newborn	1 hour
	Prematurity	6 hours
	Complications of labor	11 hours
	Public Health	2 hours
		<u>43 hours or 41%</u>

#### Obstetrical topics:

Anatomy & Physiology of Pregnancy	16 hours
Labor	25 hours
Infections of the Premature	2 hours
	<u>46 hours or 44%</u>

#### Introduction to Public Health Nursing

42% of the 50.5 hours is spent in MCH theory and field work activities involved in home visits.

Advanced Public Health Nursing

Nursing topics:	MCH activities and School Children	9 hours
	Health Education	1 hour
	Team Work	3 hours
	Home Visits	4 hours
Physician Topics:	School Health, Nutrition, and	
	Venereal Disease	2 hours
	Digestive Disease	1 hour
	Parasitology	<u>18 hours</u>
		38 hours or 45%

APPENDIX K

Maternal and Child Health Module: Task Analysis

TASK: Organize and conduct child care services.

Program Objectives		
Duties	Skills	Knowledge
1.0 Participate in a program of disease prevention by immunization.	1.1 Give the following immunizations: -tuberculosis -diphtheria -whooping cough -tetanus -polio -smallpox	1.1.1 Immunization procedures. 1.1.2 Types of immunizations. 1.1.3 Recommended age for immunizations. 1.1.4 Care and storage of vaccine. 1.1.5 Possible side effects and/or cautions.
	1.2 Record immunization information on a child's clinic record.	
2.0 Prepare and maintain adequate weight records to identify high-risk children.	2.1 Weigh and/or measure an infant/child. Correctly maintain a weight chart.	2.1.1 Normal and abnormal growth patterns.
3.0 Participate in a program of nutritional preventive care.	3.1 Identify high-risk children.	3.1.1 Factors that tend to identify high-risk children in a specific community.
4.0 Manage common ailments referred by school health program.	4.1 Diagnose/manage patients referred by school health program.	4.1.1 Factors that cause common ailments. (see: Infants & Children)

Community Nutrition Module: Task Analysis

TASK: Organize and conduct a program to evaluate and promote improvement of community food and nutrition conditions.

Program Objectives		
Duties	Skills	Knowledge
1.0 Provide nutrition information and guidance to the following groups: -newborns -young children -older children and adults -women during pregnancy/lactation -ill people	1.1 Obtain pertinent dietary information.	1.2.1 Minimum dietary requirements. 1.2.2 Different phases in life. 1.2.3 Basics of good dietary habits.
	1.2 Evaluate dietary history.	
	1.3 Chart findings in medical record.	
	1.4 Counsel patient.	1.6.1 The recipe for making Super Porridge. 1.7.1 The recipe for making Salt-Sugar Medicine. 1.8.1 Major points in each lesson. 1.8.2 Appropriate audience for each lesson. 1.8.3 Meaning of nutrition/malnutrition. 1.8.4 Basics of good dietary habits. 1.8.5 Functions of food in the body. 1.8.6 Basic food groups according to function of food in the body. 1.8.7 Different phases of life. 1.8.8 Different dietary needs at different phases in life. 1.8.9 Advantages of breast feeding. 1.8.10 Alternative for breast feeding.
	1.5 Demonstrate feeding a child with the use of a cup and spoon.	
	1.6 Demonstrate the preparation of Super Porridge.	
	1.7 Demonstrate the preparation of Salt-Sugar Medicine.	
	1.8 Teach the nutrition lessons with the use of the flip charts.	

Richard A. Smith, M.D., M.P.H.; Manpower and Primary Health Care: Guidelines for Improving/Expanding Health Service Coverage in Developing Countries; The University of Hawaii, 1978

## APPENDIX L

### Suggested Topics for MCH-Related In-Country Training

1. Nature of the Community
  - a. Collecting data for health assessment.
  - b. Evaluating data to determine health needs.
  - c. Planning health activities based on assessment.
2. Nutrition
  - a. Assessment of nutritional status.
  - b. Use of food supplements.
  - c. Production, preservation and storage of food crops.
  - c. Identification and treatment of malnutrition.
3. Techniques for Running an Antenatal Clinic
  - a. Patient flow.
  - b. Weighing and nutritional assessment.
  - c. Immunization.
  - d. Routine follow-up to monitor pregnancy.
  - e. Use of food supplements.
  - f. Demonstration of food preparation.
  - g. Education on child development.
  - h. Education on child spacing.
  - i. Personal hygiene.
4. Techniques for Running a Child Health Clinic
  - a. Patient flow.
  - b. Weighing and nutritional assessment.
  - c. Routine follow-up to monitor growth and provide nutrition guidance.
  - d. Demonstration of weaning food preparation and clothes making.
  - e. Immunizations.
  - f. Personal hygiene.
5. Communicable Disease in your Community
  - a. Case finding, diagnosis and treatment.
  - b. Preventive aspects.
  - c. Immunization.
  - d. Environmental health aspects.
6. Planning a School Health Program
  - a. Who should be involved.
  - b. Activities planned.
  - c. Activities implemented.
  - d. Follow-up required to maintain activities.
  - e. Use of audio/visual aids, etc.

7. Techniques for Using Health Education to Improve a Community's Health Status

- a. Preparation of poster materials.
- b. Strategic locations for visual materials.
- c. Planning a community health education program.
- d. Use of audio/visual aids, etc.