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9. ABSTRACT  
The American Public Health Association, under a contract with the Agency for International Development, has designed a program in public health improvement which is called the Development and Evaluation of Integrated Delivery Systems (DEIDS). The activity is designed to assist countries to demonstrate how to establish health delivery systems within seven years. Such projects include, but are not limited to, Maternal and Child Health and Family Planning and Nutrition. The projects are to cover large populations in predominantly rural areas. They are to utilize in-country resources for the service component, although external assistance organized by DEIDS is available for planning, evaluation, training, and limited amounts of essential equipment. It is expected that successful health delivery systems can be subsequently replicated in the country or in the region.

- These are phases through which DEIDS projects proceed:
- a) Phase I -- reconnaissance within a specific country or region, to gather information about disease patterns, health services as currently organized, local resources, cultural aspects, community involvement, the potential for integration of various parts of public health, opportunities for innovation, current and potential staffing, training, supervision, emphasis upon preventive services, outreach, cost, and evaluation
  - b) Phase II -- Detailed planning. This phase begins if the survey in Phase I recommends it, and involves experts from the host country as well as experts assigned by DEIDS.
  - c) Phase III -- Pilot Project Operations, which continue for as long as eight years.

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Guidelines for DEIDS Planning - I

August 1973

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with assistance from Consultants and  
Staff of the American Public Health  
Association's Project, "Development and  
Evaluation of Integrated Delivery Systems"

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## A. Introduction

The Development and Evaluation of Integrated Delivery Systems (DEIDS) contract is designed to assist countries to demonstrate that within seven years a health delivery system can be developed to provide services including, but not limited to, Maternal and Child Health, Family Planning and Nutrition, which are accessible and acceptable to two-thirds of a target population. The projects are to cover large population groups in predominantly rural areas. They will utilize in-country resources for the service component, although external assistance is available for planning, evaluation, training and limited essential equipment. Successful health delivery systems are subsequently expected to be replicated in the respective countries and regions.

Since the contract does not specify a pattern to be applied, DEIDS planning teams have great freedom in their negotiations with host countries regarding the "what" (specific objectives), the "who" (kinds of personnel to be utilized), and the "how" (task assignment and procedures).

The American Public Health Association, as project coordinator and manager, has worked with consultants to develop these MCH guidelines to assist DEIDS planning teams and the

host countries concerned. Consultants and staff were asked to prepare background papers on priorities in several aspects of maternal and child care in preparation for discussion with a small group of consultants.

The notes on pediatric and child health procedures (including nutrition), were compiled by Dr. D.B. Jelliffe. Maternal care procedures proposed for the Population Council projects were supplied by Dr. Howard Taylor. Notes on priorities in family planning were prepared by Dr. D.T. Rice. In addition to these papers, the following materials were mailed to each participant about two weeks before the meeting:

1. Summary of DEIDS objectives and procedures -- by the staff
2. Setting the Scene of DEIDS -- by Dr. D.T. Rice
3. Guidance Notes for Nurses in the "Under-fives" Welfare Center -- by David Morley
4. Nutrition Programs for Preschool Children (Zigreb Guidelines) -- by Derrick B. Jelliffe and E.F. Patrice Jelliffe
5. Excerpts from Feeding the Preschool Child -- PAG Ad Hoc Working Group
6. A New Look at Multimixes for the Caribbean -- E.F. Patrice Jelliffe

On April 12, 1973, a number of pediatricians, gynecologists, public health administrators and nurse-midwives drawn from schools of public health and medicine, state bureaus of MCH, private practice, foundations, international agencies and federal agencies, met with DEIDS staff to discuss these papers on priorities in MCH services. The group was expected to concentrate on adding and subtracting procedures and re-ordering priorities. However, most of the time was devoted to statements regarding pertinent philosophies, the need for more specific objectives, the function and place of evaluation, particular experiences of other similar projects, and the desirability for integration of all health activities.

Preparation of the MCH Guidelines has been the responsibility of Dr. Donald T. Rice of the DEIDS staff. They are based on the background papers for and statements made at the April 12, 1973 meeting, although several other ideas have also been developed. Appropriate suggestions generated at a later meeting of foreign consultants are also incorporated. Other staff of APHA and Dr. Thomas Hyslop have contributed to their present content. This condensation of thinking on the subject should assist planning teams in understanding the concepts behind DEIDS and will promote consistency among the four projects.

## B. Principles

### 1. Ecology of Health.

Each country project will be planned on the basis of ecological conditions, defined very broadly, which exist in that country. Important aspects of the ecology of health services are:

#### a. Disease patterns.

An ecological diagnosis needs to be made from available literature, from locally available hospital and health center data and, if feasible, from community assessment.

- 1) Common conditions expected to exist in connection with pregnancy are anemia, malnutrition, abortion, and difficult labor.
- 2) For newborns, tetanus, birth trauma, septicemia, and monilia will be frequently found conditions.
- 3) The general morbidity pattern in infants and preschool children in the community will probably encompass the "Top Ten" common conditions: malnutrition, pneumonia, diarrheal disease, tuberculosis, malaria, intestinal parasites, measles, whooping cough, accidents and anemia, along with other less serious conditions, such

as conjunctivitis, skin infections, and chronic otitis.

b. Health services structure.

The planning team will need to know the current method of providing health care in the project area. Such knowledge will include the staffing pattern and distribution of facilities of the official health program, as well as that of any voluntary organizations active there. In addition, the potential usefulness of indigenous practitioners in the overall, integrated system should be considered.

c. Resources.

In addition to information about the existing personnel and facilities, details are needed about the financial resources available for use in the project area and potential sources of additional personnel, funds or supplies.

d. Cultural aspects.

These factors are so numerous and so important to the success of a project that it is difficult to know what to exclude. Continuous guidance should be obtained from knowledgeable nationals. Some cultural constellations which need to be considered are:

- 1) crop patterns and food preferences
- 2) beliefs about causation and cure of disease
- 3) faith in and use of indigenous healers
- 4) attitudes of the medical establishment towards auxiliaries and indigenous healers
- 5) child care and rearing practices, with possible differences related to sex.
- 6) maternal care practices
- 7) status of women
- 8) modes of transportation
- 9) literacy rates
- 10) health sophistication level
- 11) value assigned to education, with possible differences related to sex.
- 12) perceived needs of the population for health and family planning services.

## 2. Community Involvement

Planning must include definite and adequate arrangements for the involvement of the community. Planners must take into consideration the perceived needs of the rural people. A plan based on needs that are proposed by a foreign group, or the elite in the health department, no matter how technically correct, can be endangered because it may miss the real needs as perceived by the people to be served.

One step in a community involvement is the selection of volunteers and paid workers from, and possibly by, the community. In addition, every attempt should be made to have the community supply as many resources as possible, such as housing, food for feeding programs, and labor for health improvement projects.

A tendency in planning is to underestimate the role that the community can play. However, in order to capitalize on community participation, the plan must allocate sufficient resources to stimulating, organizing and maintaining the functions of community participation and action.

### 3. Integrated System

The degree of integration possible will differ in each country, but planning teams should negotiate for the maximum integration of MCH, family planning and nutrition programs. Integration of family planning may have to be discreetly approached in African projects and in countries which have an autonomous, vertical family planning program. Other vertical health programs

may resist integration, although they realize that their only hope for long-term effectiveness is in the health services delivery system.

Health education activities must be integrated into the health services delivery system. Health education components have to be carefully planned and coordinated with the other health services, as care must be taken not to develop expectations which are beyond the capability of the communities or the health program to meet.

In addition to the official health structure, the semi-voluntary health organizations, such as Red Cross, Tuberculosis Association, and truly voluntary health and medical activities of indigenous and foreign charitable groups must be taken into consideration. In most situations coordination can be increased and integration of services may be possible in certain cases.

Indigenous practitioners of various sorts are usually found in any area and their cooperation should be elicited and the possibility of their integration must be considered.

Beyond the health department there are usually other closely related government activities which may possibly be integrated, or at least become coordinated with the

proposed health system. Agricultural extension, community development, and home economics or mothercraft activities are some of the obvious ones.

#### 4. Innovations

Without innovation there would be no improvement in the current delivery system. The planning team, in concert with host country planners, should "brainstorm" the innovative possibilities, discuss and weigh them carefully and propose for trial those innovations that seem the most feasible. However, innovations must not be too "far out" to be eventually incorporated into the nation's system. For instance, it will do little good to prove that a system relying heavily on volunteers and community organization will work, if a feudal system or the political climate make voluntarism unacceptable on a national basis. Likewise, it would be futile to prove that indigenous healers can be integrated into the system, or that an auxiliary can do procedures usually reserved for physicians, if there were solid opposition to these procedures on the part of the medical establishment. An innovation is inappropriate if it proposes staffing levels in numbers or competencies which exceed the host country's norms or potential capacities.

Innovations successfully developed in the proposed delivery system may require special informational and promotional efforts if they are ultimately to be accepted in a nation-wide expansion of the delivery system.

5. Non-professional workers.

Physicians, nurses, nutritionists, health educators, engineers, biostatisticians and other professional staff are not going to be available in rural areas in developing countries, except on an occasional or unusual basis. Furthermore, it is highly probably that many of the tasks usually reserved for these professionals can be done more happily and more successfully by well-trained auxiliaries, aides and volunteers. Therefore, the policy should be to assign almost all tasks to the appropriate category of non-professional workers. This may require the development of new types of workers, such as auxiliary midwives, "promotores de salud" or health education assistants. However, the system must not train workers for tasks which they cannot be expected to learn or to carry out satisfactorily, whether the reason be the complexity or an absurd number of those tasks. As it is difficult to recruit workers at any level into positions from which there is no possibility of moving upward, there should

also be provisions for the promotion of exceptional workers, with or without additional training.

6. Multipurpose Health Workers.

Insofar as possible, promotive, preventive, and curative skills should be incorporated in the training of all health workers. Integrating these functions in a single worker increases the intimacy of contact between the health system and village people. It capitalizes on the meeting of felt needs for relief of illness which may serve as a lever, moving people towards more effective health measures. Through frequent contacts with the village people the multipurpose health worker can develop better rapport. Each worker becomes better known to the people he or she is serving, gains greater credibility, and is better prepared to speak to the preventive and curative relationships of total health care. Workers also need to be constantly reminded, through adequate supervisory visits and refresher courses, of the importance of promotive and preventive work. It may be wise to apportion the use of time of each worker to reinforce this concept.

In many situations it may not be possible or wise to insist on only multipurpose workers. If the curative load makes preventive work impossible, or if the level of edu-

cation is low and training of more than two months is out of the question, some division of labor may be essential. In such cases, the team concept needs to be strongly developed and made evident to the public, so that the goodwill developed through medical care can be transferred to those team members whose tasks are primarily promotive and preventive. Another situation in which a multipurpose worker may not be acceptable is when the medical politics are such that entrenched opposition to assigning even the simplest curative procedures to non-professionals is strong enough to prevent the development of the demonstration project or the implementation of such innovations on a wider basis.

#### 7. Representative Workers.

It has long been demonstrated in developing countries and among minority groups that behavior change can be more easily stimulated by peers than by others. Therefore, it is essential that every effort be made to recruit workers from the class, religious, or ethnic groups in which they will be working, although this may mean selecting and training people with little formal education. Local workers are more frequently willing to live among the people whom they serve, they more completely understand

the problems and attitudes of their peers, they are able to communicate in the local idiom, and they are trusted because they are not foreign to the group.

In addition, insofar as is possible, the supervisory, auxiliary, and professional staff should also come from the groups in which they work.

#### 8. Training

In planning for the preparation of health workers along the continuum from volunteer, to auxiliary, to professional, it is necessary to keep in mind the continuum between training and education. Most simply, this continuum might be said to range from the "how to" to the "why". Determination must be made for each category of worker and for each skill to show how far along this continuum the trainee must move. It is essential that the worker know how to do certain things and it helps if he understands, at least in part, why. But full development of that kind of understanding can be a lengthy procedure, which may be impossible or impractical.

Preparation of health workers at all levels needs to be task oriented. Although some classroom teaching and demonstration may be essential, the health center or community should be the primary location of training sessions.

Training for auxiliaries and volunteers should be done outside of institutions whenever possible.

The initial course for peripheral workers should not take more than four to six weeks. On-the-job supervision and refresher or add-on courses may increase the range of skills, after the first set are well established and demonstrated.

A method which has been used for small numbers, and may be feasible for larger groups, is that of training "in harness". In this method, practically all of the learning by the trainee takes place at the side of a skillful and proven worker of the same type.

Another point to emphasize is that good training in a few skills is more useful than superficial training in a wider range of skills. Tasks should be limited to those for which the worker can master the necessary skills during training and to those which he or she has enough time to do well.

#### 9. Supervision

Adequate supervision is required at all levels of the delivery system. Although this is a commonly voiced precept, it is difficult to persuade cost conscious administrators to budget for the salary and other costs of

supervisors who actually produce no "work". Nevertheless, planners must aim at designing a system that builds in supervision at all levels and provides mobility and traveling costs.

The adequacy of supervisory time is difficult to determine in situations where it has not been practiced before. The number of community health workers that an auxiliary can supervise properly depends on a number of factors, including the topography, transportation facilities, and distances between workers. Where supervisees are easily reached, a supervisor should generally work with only six to ten subordinates. Where communications are difficult, it may be even less.

Another aspect is quality of supervision. Supervisors will need special instruction in functioning as trainers and supporters, as well as evaluators. The tendency of supervisors is to allow for only a short stop, check a few items, and give a scolding. In contrast, it may be more fruitful for the supervisor to spend a day or two at each location, in order to allow sufficient time for training and supporting functions.

Another principle of supervision that needs emphasis is that the immediate supervisor should do the supervising.

In other words, if the Regional or District Health Officer and the supervising auxiliary visit a peripheral worker at the same time, the supervision should be carried out by the auxiliary. Normally the tendency will be for the highest ranking officer to do all the talking.

#### 10. Emphasis on Preventive Services

Because of their importance, preventive health services are mentioned in this paper under several sections. Constant attention must be directed to the fact that modest investment in the prevention of disease produces more health benefits than a similar investment in repetitive curative services. The objective is to build preventive services into the system in such a way that they continue to receive priority allocation of staff time and other resources.

#### 11. Outreach

It is obvious that a clinic-centered system must be augmented by community services in order to get population coverage of the degree required by the DEIDS contract. Therefore, the plan should probably provide for systematic home visiting, including a certain amount of census and survey work.

#### 12. Low Cost System

The over-riding constraint for planning will be the resources which are likely to be available to the host country. This will necessitate the designing of a low cost system on the basis of stringent priorities. Costs and resources of eventual replication must also be taken into consideration.

### 13. Evaluation

The total system must be designed with evaluation in mind. It will be necessary to gather and process data which is valuable in program decision making, which builds the morale of the various levels of workers, and which satisfies the requirements of the funding sources.

Another consultant committee met with the DEIDS staff concerning evaluation and is preparing a separate report. This mechanism may provide some comparability between DEIDS projects, although program objectives and evaluation capacity may not be the same in all countries.

#### C. Designing the System

The planning group, which includes nationals of the country concerned, will design a health delivery system, keeping the above "principles" in mind. Although numerous variations of facility and staffing patterns are possible, the system should provide a network of personnel capable of providing coverage to the major portion of the mothers and children within the area.

The concept of service modules of several sizes will help in planning and in the eventual replication of the projects. Although the following pattern need not be followed exactly, it is similar to the one which many countries have

seen fit to adopt.

At the periphery of this chain of services would be the community health worker (module I) who lives and functions within a specific small community. Several of these individuals could be supervised by and may refer problems to the health post (module II), which should be staffed by auxiliaries with somewhat broader training and greater skills. In turn, several health posts would be accountable to and the responsibility of the staff of a health center (module III). At health centers some in-patient facilities would be available and full-time professional staff (physicians and nurses) or senior auxiliaries would function in curative, preventive and supervisory capacities. A headquarters unit (module IV) with a greater range of backstop services and supervisory capacity could support a number of health centers. The appropriate terminology for such modules and the personnel to man them will vary from country to country.

The above four modules would probably cover the demonstration area for the DEIDS project. Above this might be a regional health office (module V) and/or a national health directorate or ministry (module VI). Although our planning teams are concerned with the ways in which modules V and VI function, the frame of reference for our contract and agreement with

governments does not include major replanning at these levels.

The major portion of this section on design will be devoted to discussion of staffing and function at the community level. Although auxiliaries and their functions are covered by many authors, it is seldom claimed that systems utilizing professionals and/or auxiliaries can provide any great degree of outreach into communities. The ways in which wide coverage of population groups can be attained are incompletely discussed in most treatises on rural health services. Since DEIDS projects must aim at delivering acceptable services to the majority of mothers and children in the demonstration area, this discussion will concentrate on one possible means of accomplishing this goal.

1. Community Level - Module I.

The health facility at this level would probably be the front room or porch of the community health worker's home, although some communities may set aside a small room in a religious or neighborhood center.

In the interest of reducing costs and increasing community participation, an attempt should be made to select and train volunteer community health workers to do as much of the work as possible. If prestige in itself is not enough, it may be necessary to arrange for some

remuneration, such as a small profit from drug sales, a modest honorarium, or a token bonus for achieving certain targets. If volunteers are utilized, the size of the population that each can serve is likely to be rather small--say 500 to 1,000. Experience has shown that the recruitment and training of voluntary leaders for the family planning program in India has to be carried on continually, since there is a high attrition rate.

The community health worker should be representative of the ethnic groups with whom he or she works and should preferably be of the same locality. In most countries, the educational level will not be very high, although the ability to read simple instructions and keep minimal records should be expected.

If a volunteer system is impractical, full-time paid (community health) workers may be required at the periphery. In this case, too, the worker should be of the locality and ethnic group. He or she will probably not have had much education, and training should be similar in time, techniques and content to the one for voluntary workers. It will probably be possible for one paid worker to serve approximately 3,000 people, depending on dispersal of the population and mobility of the worker.

If the system calls for community health workers to do a great number and variety of tasks, it will probably be necessary to limit the functions of any one person and to have two or three persons, whose skills complement each other, work in the same community. The kinds and numbers of tasks which can be assigned to a community health worker are also dependent on the kind and amount of supervision that can be provided. Generally, the supervisor must be skilled in all of the tasks assigned to the one he or she supervises. Again it may be necessary to arrange for supervision from more than one person, especially if the range of tasks assigned is great.

There are several assumptions on which the suggested activities for community health workers are based:

- these workers will not have had more than a month or two of training;
- they may be volunteers, part-time workers, or working full-time at a very low salary;
- they will be living among the people with whom they work;
- this may well be at a considerable distance

from health post or center, which, in any case, may be staffed by auxiliaries and is usually swamped with large numbers of patients;

- they would be mobile, would do home visiting and conduct village sessions to which mothers would bring their children at a suitable collecting place;
- equipment would be very limited;
- diagnosis would be based on a simple history, a few characteristic clinical signs and serial weighing;
- a very limited number of non-toxic, inexpensive and effective drugs are necessary, with training in their use and with written instructions in the vernacular; and
- their basic education might well be below the 9th grade level.

(The problem becomes more complicated with illiterate staff, but experience has shown that much can be done with instructions taught by rote, bottles labelled with symbols, and colored discs for sending information to the center.)

Community health workers would have six basic functions:

- advising villagers concerning the use of existing resources, including health, agriculture and other extension services;
- prevention of ill-health by education focused on major local problems during home visits and at demonstration-group discussions. The topics for education would include family planning, nutrition, and immunizations, and the prevention of communicable diseases;
- detection of ill health, probably early, by observation and serial weighing, during home visits and at village sessions;
- managing a selected list of common health problems by dispensing contraceptives, nutritional and minor therapy and appropriate referral;
- collection of community health data, including births and deaths, outbreaks of infectious disease, and prevalence of malnutrition;
- motivation and organization of the community to define its own problems, to develop its own resources, and to participate in occasional district health activities, such as campaigns.

Community health workers would necessarily be concerned only with the most common local health problems. Their functions can be categorized as prevention, sub-divided into health education and special procedures, and management, separated into detection and action.

Table I, "Common Health Problems, their Prevention and Management", categorizes activities in this way. It also assigns priority by underlining. Those functions not underlined may be important, but pre-suppose an additional set of skills for which it may not be feasible to train community health workers, at least not during the original training period. Short paragraphs under certain items give some of the "pros and cons". The various procedures suggested are entirely practical and can be taught to village-level volunteers by simple means. They cover the major problems usually seen in developing countries and they include preventive emphasis and a curative approach.

In planning for a specific project, it will be necessary to decide how many of these functions are going to be within the capability of that area's community health workers. It is possible that local priorities or capacities will make it necessary and possible to

add still other functions. However, planners must be careful not to over-burden community health workers of this assumed level of education, training, and pay.

2. Health Post - Module II.

The facility for this module would be quite modest, but might require several rooms. At least, there should be a clinic room and a room for desks allotted to the several staff members. Some countries expect to provide staff quarters for full-time staff, especially single women, and these may be included in the compound.

This category of facility would probably be staffed by paid, full-time auxiliaries. Auxiliary refers to a category of health workers who have distinctly less than professional competency. They usually will have had seven to ten years of education and technical training of six to twenty-four months. They may be expected to work as subordinates to a physician or as a substitute for a physician. They must have greater skills than the community health workers, and one of the main functions of some them will be supervision of community health workers.

Though the types and grades of auxiliaries will differ from country to country, careful consideration must be given to the duties and responsibilities they will assume,

the skills they require, their status in the health hierarchy and their opportunities for promotion.

Table II gives Dr. N.R.E. Fendall's classification of types of auxiliaries with functions often assigned them.

Auxiliaries at the health post level should also be ethnically representative and be native to the general geographic area. On the staff of the health post, but not necessarily residing in the same settlement, would be the supervisors who would regularly visit the community health workers. The number of supervisors needed would be governed by the number of community health workers and the mobility of the supervisors.

At the health post level there is need for several multi-purpose workers, but it may be necessary to plan for some specialized personnel. Curative skills might be the specialty of a single auxiliary. Then, one especially trained in MCH activities and one in sanitation and community education might round out the team. These "specialists" should also be involved in the supervision and on-the-site training of the community health workers.

In some countries, where the production of physicians and nurses is high enough and where government regulations require a year or two of rural service, some health

posts may have to utilize their services. Adequate indoctrination and supervision must be supplied to gain maximum possible benefits from such workers.

The health post would be visited at regular intervals by a physician, a public health nurse, a sanitarian, a health educator, a record clerk, and possibly other designated individuals, who will do the supervision. The frequency of supervision would normally be greater over newly trained workers and be more widely spaced over those who had gained experience and demonstrated ability.

The population covered by such a health post and its staff might range between 10 and 20 thousand.

### 3. Health Center - Module III.

The health center need not be pretentious, but should include adequate out-patient facilities, some office space and a few beds for emergency patients. Although many buildings presently used as health centers may be inadequate and overcrowded, some countries have over-planned for space. This has resulted in capital wastage, which planning teams should work towards avoiding. The compound may also include housing for certain categories of staff, according to government rules.

Each health center facility might serve a population

of 50,000 to 100,000. Under its control would be five to ten health posts and the supervision of the workers in those posts would be the major activities of health center personnel. This staff should include one or two physicians, a public health nurse-midwife or health visitor and a senior sanitarian, in addition to a suitable number of auxiliaries.

4. Headquarters - Module IV.

The direction, support and supervision of each DEIDS Project will emanate from a headquarters unit. Hopefully this can be located near the central communications point for the area.

Its training, supervisory and back-stopping operations will be carried out by well-trained and experienced public health staff.

Clinical facilities at this level will include a range of medical specialists for in-patient and out-patient consultation. X-ray and laboratory diagnostic work will be available. Upward of 100 beds will probably be required.

5. Regional and/or National Facilities - Modules V and VI.

At these levels, persons and institutions with greater sophistication and more specialization will be available, in both the preventive and curative fields. They

represent the ultimate that the country has to offer as referral centers for unusual or difficult patients and as training, supporting and supervision sources for the problems of community medicine and public health.

#### D. Conclusion

The MCH Guidelines explains briefly some of the concepts and principles upon which DEIDS is based. It concentrates on ways to provide optimal health services to mothers and children. It suggests ways and reasons for advisable procedures.

The MCH Guidelines contains the essence of long experience of authorities in international health. Because of its authoritative nature, it can be used as a basis for negotiations with health professionals in the countries which will host DEIDS projects.

Planning teams may find that one or more of the principles do not apply in a particular country. Latitude is allowable in their final application, providing they have been thoroughly considered.

The health service structure briefly described is a likely possibility for adaptation. Again, latitude in planning is allowable, providing the system designed has a real chance of making services accessible to and acceptable to a large majority of the mothers and children in the project area.

TABLE I

COMMON HEALTH PROBLEMS, THEIR PREVENTION AND MANAGEMENT \*

(a) Activities suggested for community health workers are underlined.

(b) Clinical picture is abbreviated to CP.

(c) Routine and emergency referrals should be distinguished during training.

<u>Health Problems in Women</u>	<u>Prevention</u>		<u>Management</u>	
	<u>Health Education</u>	<u>Special Procedures</u>	<u>Detection</u>	<u>Action</u>
1. Malnutrition, especially during pregnancy or lactation	<u>Diet</u> (Multimix)		<u>CP</u> (weakness)	<u>Nutritional supplement or refer if serious or intractable</u>
<p>The diet referred to as "multimix" is based on the concept that the range of nutrients required in a normal diet in pregnancy or at any other time can very frequently be obtained by combinations of local foodstuffs, especially five items - a staple (preferably a cereal), legumes, dark green leafy vegetables (DGLV), compact calories (oils and fats), and small amounts of animal products.</p>				
2. Anemia, especially during pregnancy or lactation	<u>Diet</u>		<u>CP</u> (pallor)	<u>Iron tablets or refer</u>
3. Antepartum care	<u>Prenatal Supervision</u>		<u>CP</u> (missed periods, morning sickness, enlarging uterus and breasts)	<u>Refer</u>
<p>The number of visits will depend on how early in pregnancy the woman can be brought under observation. In general, aim at three. At the first visit a history should be taken, including nutrition and previous difficulty in pregnancy or labor. Minimum height may be used as a screening device. Each visit should include blood pressure, urinalysis, and weight. Hemoglobin should be estimated by color of the conjunctiva. Pelvic examination to anticipate obstructed labor should be done if the local customs will permit this and if a suitable trained person is available. Papanicolaou tests would be useful, but are probably impractical for a large scale program. Iron tablets should be prescribed routinely in the last trimester.</p>				

\*Adapted from table originally supplied by Dr. Jelliffe.

<u>Health Problems in Women</u>	<u>Prevention</u>		<u>Management</u>	
	<u>Health Education</u>	<u>Special Procedures</u>	<u>Detection</u>	<u>Action</u>
4. Spontaneous or illegal abortion			<u>CP</u> (cramping, bleeding during pregnancy)	<u>Refer</u>
5. Malaria		<u>Malarial suppressant</u>	<u>CP</u> (fever with chills)	<u>Suppressant therapy</u>
<p>It is important to maintain maternal health and the use of malarial suppressants during pregnancy may result in a more normal birth weight, thereby improving the chances for better infant health and development.</p>				
6. Delivery		Midwifery	<u>CP</u>	<u>Indigenous or refer abnormal</u>
<p>In any area there are recognizable three conditions of delivery: (1) in a hospital or health center, (2) at home with a trained midwife or auxiliary nurse - midwife present and (3) at home with an indigenous midwife present, for example a "dai" or "dukun." How the cases are distributed under these three categories will depend on present infrastructure and customs, and on what additional funds may be available for construction, training, and salaries.</p>				
7. Postpartum care		Postpartum checkup	<u>CP</u>	<u>Refer</u>
<p>In the first postpartum week, one home visit by a trained person to check on the welfare of mother and child is advisable. At the end of the first month, there should be a second visit, preferably to the health clinic or center, for family planning, as well as check-up for mother and infant.</p>				

Health Problems in Women

8. Improvident  
maternity

Prevention

Health Education      Special Procedures

Teach about the  
advantages of  
family planning  
and child spac-  
ing

Resupply of con-  
traceptives

Defaulter noti-  
fication

Management

Detection      Action

CP (too many  
or too fre-  
quent child-  
ren)

Distribute condoms,  
foams, etc., where avail-  
able

or

Prescribe oral con-  
traceptives after ask-  
ing set questions

or

Refer when requested by  
patient for injectible  
contraceptives, IUD  
insertion, surgical con-  
traception or abortion  
(where legal)

<u>Health Problems in Newborn</u>	<u>Prevention</u>		<u>Management</u>	
	<u>Health Education</u>	<u>Special Procedures</u>	<u>Detection</u>	<u>Action</u>
1. Tetanus	<u>Clean umbilical cord</u>		<u>CP</u> (hyper-reactivity)	<u>Refer</u>
<p>The question of the feasibility of immunizing the mother was discussed. Under some circumstances this might be practical, but cost and the logistics of giving women spaced intramuscular injections on two or three occasions may be difficult obstacles to overcome in most developing countries. It might be cost effective for young mothers, providing it can be demonstrated that immunity lasts long enough to protect her and infants through several subsequent pregnancies. The supply of sterile cord packets might also be considered.</p>				
2. Septicemia	<u>Clean umbilical cord</u> <u>Cleanliness</u>		<u>CP</u> (redness and exudate)	<u>Refer</u> when fever or inflammation persists
3. Birth injury	Prenatal and natal supervision		<u>CP</u> (abnormality)	<u>Refer</u>
4. Monilia	<u>Breast feed</u> <u>Cleanliness</u>		<u>CP</u> (white spots and coreness in mouth)	<u>Treat</u> (gentian violet 1%)
<p>It is important to be able to treat some more obvious, worrying conditions. In this way, rapport may be more easily built up with the parents.</p>				
5. Ophthalmia	<u>Routine eye treatment</u> <u>Cleanliness</u>		<u>CP</u> (redness and exudate)	<u>Treat</u> (silver nitrate drops or penicillin ointment)

C. Health Problems in  
Young Children

Prevention  
Health Education      Special Procedures

Management  
Detection                  Action

Child care and follow-up services encourage continuation of family planning. The proposed schedule is for visits by mother and child every three months during the first and second years. These visits would be scheduled to coincide with the proper timing for child immunizations and nutrition assessment. The availability of supplementary food for distribution by the clinic is an important point to consider. Child health supervision and family planning follow-up should be done at the same time and place, perhaps even by the same person. The availability of each service will reinforce the other in women's minds.

Immunization is frequently carried out on a mass basis by workers other than those concerned with MCH. Reintegration of immunization into MCH will provide occasions for general review of the child's health and of the mother's family planning performance.

Caution must be used in the use of oral contraceptives early in lactation, so as not to run the risk of suppressing milk production. Other methods may be used, including the progestogens, either orally or by injection. The possibility of combining injections of vitamin A and iron with Depo-Provera might be investigated.

Health Problems in  
Young Children

1. PCM (Protein-calorie  
malnutrition)

Prevention  
Health Education      Special Procedures

Breast feed  
(dangers of bottle  
feeding)

Weaning diet (Mul-  
timixes)

Serial weighing

The same principles regarding multimixes apply as have  
been mentioned earlier.

Family planning (see above)

Appropriate family planning advice is essential, both in  
relation to the malnutrition in young children and in re-  
lation to the health of women.

2. Pneumonia

Penicillin, especially the long lasting varieties, is a  
life saving drug when the chances of getting an infant with  
pneumonia to go to the referral clinic are minimal. There  
are at least two potential difficulties which must be taken  
into consideration. First is the "Pandora's box" which is  
opened by teaching peripheral workers to give injections.  
Second is the fact that a stock of penicillin will encourage  
its use for non-life-threatening conditions, with the  
possibility that stocks will be exhausted when the most  
critical needs arise.

Management  
Detection      Action

Early (failure  
to gain weight)      Extra supervision and  
nutrition education

Moderate (loss  
of weight)      Ditto and nutrient  
supplement

Severe (loss  
of weight/or  
edema)      Refer

CP      Services (see above)

CP (cough,  
fever, nasal  
flare)      Refer

Health Problems in  
Young Children

	<u>Prevention</u>		<u>Management</u>	
	<u>Health Education</u>	<u>Special Procedures</u>	<u>Detection</u>	<u>Action</u>
3. Diarrhea	<u>Breast feed</u> <u>Cleanliness</u> <u>Boiled water</u> <u>Adequate water supply</u> <u>Early management</u>		<u>CP (dehydration)</u> <u>none/mild</u>	<u>Treat</u> (oral rehydration mixture)  <u>Treat</u> (oral) and <u>refer</u>
4. Tuberculosis		<u>Immunization</u>	<u>CP</u> (prolonged cough, fever, plus contact)	<u>Refer</u>
5. Malaria	<u>Mosquito net</u>	<u>Chloroquine</u> (twice a month, weaning period)	<u>CP</u> (fever with chills)	<u>Treat</u> (Chloroquine)

Immunization with BCG has proved particularly successful in most parts of the world. In addition, this immunization has the advantage of being able to be given to the newborn baby and only needing one attendance.

The referral in these cases should automatically include the whole family. Contact chemoprophylaxis and patient therapy would be supervised by the peripheral worker.

It was noted that not everybody would agree with full scale chemoprophylaxis in children. It would only be necessary in areas where malaria is hyper-endemic. Under this circumstance, chloroquine could be given every two weeks from the age of six months to about two years. During this time the child would be passing through a very difficult period from a nutritional point of view directly and also indirectly from the effects of the very large number of infections with various microbial organisms, parasites, etc. By protecting the child during this "transitional period," it is felt that at least one of the cumulative burdens that the young child has to undergo at this particular time in life could be postponed until later. Also, with a rather more spaced dosage of chloroquine than usually advised, there is some evidence that there would be less interference with the development of natural active immunity than if anti-malarials were given at the more frequent time intervals.

Health Problems in  
Young Children

Prevention  
Health Education      Special Procedures

Management  
Detection                  Action

6. Intestinal Worms

Feces disposal  
Cleanliness  
Sandals  
Adequate Water Supply

CP  
Visible roundworms      Treat (Piperazine)  
Pallor-hookworm              Refer

These infestations cannot be diagnosed in village circumstances by auxiliaries or volunteers, unless the adult worms are actually passed in the stools and therefore visible. A visit might be made by a laboratory attendant at spaced intervals when stools could be examined, intestinal parasites diagnosed, and subsequent treatment undertaken. However, in some circumstances where roundworms are exceedingly common, it might be desirable and economical to undertake regular deworming at appropriate intervals.

7. Measles

Immunization

CP (rash, fever, cough, red eyes)      Home nursing; nutritional supplement  
Refer with complications

8. Whooping Cough

Immunization

CP (peculiar cough)      Home nursing; nutritional supplement  
Refer (with complications)

Most probably, the village-level auxiliary would not be trained to undertake immunization procedures. However, immunizations could be undertaken either by referral of children to health centers, or immunization might be undertaken by means of a mobile team which could come through the particular village at spaced intervals.

9. Accidents

Burns, scalds, fractures,  
drinking kerosene, wounds

CP                      First aid, refer

Health Problems in  
Young Children

Prevention  
Health Education      Special Procedures

Management  
Detection                  Action

10. Anemia

Diet

CP (pallor)

Refer

The diet to prevent anemia would be based on local foods, with the highest possible content of various hematinic substances, particularly iron and folic acid. The importance of dark green leafy vegetables in this context was noted, especially as being low cost, usually available sources of folic acid in village circumstances.

11. Skin Diseases  
scabies

Cleanliness and water supply

CP

Treat (benzylbenzoate and insecticide for patient and family)

sores, impetigo, etc.

Cleanliness and water supply

CP

Treat (gentian violet 1%)

While these are not usually of serious or lethal consequence, they are an extreme nuisance to the mother and child, extremely obvious, and amenable to treatment. Their therapy by simple means is to be desired as this is an excellent way in which to ensure acceptance by the patients concerned.

12. Eye Infection  
conjunctivitis

Cleanliness

CP

Treat (sulphacetamide ointment)

Health Problems in  
Young Children

Prevention  
Health Education      Special Procedures

Management  
Detection                  Action

13. Ear Infection  
    chronic discharge

Chronic discharge is often a common condition in many tropical regions. Simple therapy may be attempted by means of mopping out the ear with cotton balls and a wooden applicator, followed by the use of spirit drops. The whole procedure has to be repeated several times each day.

As a preventive measure, it might be wise to provide sulfadiazine at least for the more severe and long-lasting upper respiratory infections.

CP                      Treat (mop out; spirit)

TABLE II

PRINCIPAL TYPES OF AUXILIARIES, BY WORK AREA\*

A. Auxiliary Medical Care

1. Diagnosis, treatment, and prevention of common diseases
2. Elementary nursing and first aid
3. Elementary epidemiology of health and disease, especially contact-tracing and follow-up methods
4. Medical entomology and parasitology
5. Child health and school health
6. Simple medical administration, records and law, personnel management
7. Maternal care (in relation to health and disease)
8. Pharmacy and dispensing
9. Nutrition
10. Health education
11. Civics
12. Mental care
13. Dental care
14. Minor surgery and anesthesia
15. Family planning, and population dynamics

B. Auxiliary Community Nursing, Midwifery, and Child Care

1. Nursing care, including first aid and home nursing
2. Midwifery, including domiciliary midwifery
3. Maternal care
4. Child care
5. Home visiting, home hygiene
6. Applied nutrition, dietetics
7. Health education
8. Simple diagnosis and treatment of everyday childhood ills
9. Epidemiology and control of communicable diseases, especially contact-tracing and follow-up procedures

10. Home management and civics
11. Handling of social problems
12. School health
13. Records and biostatistics
14. Care of aged, infirm, and handicapped
15. Family health and family planning

1. Normal midwifery with special emphasis on domiciliary maternity
2. Antenatal and postnatal care
3. Infant care and feeding, including special attention to common disorders
4. Recognition of abnormalities of childbirth and pregnancy
5. Understanding of emergency measures
6. Home visiting and hygiene
7. Nutrition and food hygiene
8. Health education
9. Vaccination and preventive measures for common communicable diseases
10. First aid
11. Family health and family planning

D. Auxiliary Environmental Health

1. Epidemiology and control of communicable diseases including contact-tracing and follow-up procedures
2. Environmental sanitation
  - a. Housing and latrines
  - b. Disposal of sewage and sewerage systems

\* Auxiliaries in Health Care, N.R.E. Fendall, The Johns Hopkins Press, 1972

- c. Public cleansing and conservancy
- d. Vector-control, entomology, and parasitology
- e. Safe water supplies
- f. Food hygiene, including meat inspection and sampling
- g. Industrial hygiene and offensive trades
- h. Pest control
- 3. School health and child health
- 4. Health education
- 5. Applied nutrition and dietetics
- 6. Records, administration, and vital statistics
- 7. Public health law
- 8. International health and quarantinable diseases
- 9. First aid
- 10. Immunization procedures
- 11. Population dynamics and family planning

#### Auxiliary Pharmacy

- 1. Dispensing
- 2. Compounding
- 3. Simple pharmacy standardization
- 4. Management of dangerous drugs
- 5. Distillation and preparation of sterile fluids and solutions
- 6. Sterilization service
- 7. Simple forensic medicine, poisons, antidotes, and pharmacy jurisprudence
- 8. Quantitative and qualitative analysis
- 9. Diagnosis of and prescribing for simple ailments
- 10. Management of dispensary records and inventory
- 11. Patient counseling

- 12. Hospital administration
- 13. First aid
- 14. Food chemistry, nutrition, and dietetics
- 15. Medico-cosmetic preparations

#### F. Auxiliary Dentistry

- 1. Oral hygiene and preventive care
- 2. Relief of pain
- 3. Dental diagnosis
- 4. Cleaning, scaling, and fluoride applications
- 5. Temporary and simple amalgam filling
- 6. Extraction
- 7. Local anesthesia
- 8. Periodontal care
- 9. Impression-taking for dentures
- 10. Dental epidemiological surveys
- 11. Dental education
- 12. Applied nutrition and dietetics
- 13. Clinic management and records
- 14. Technical repairs and maintenance of apparatus
- 15. First aid
- 16. Recognition of serious mouth pathology