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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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January 23 - March 5, 1972

CONSULTANTS' REPORT

**PUBLIC HEALTH TEAM,
MISSION TO CENTRAL AND WEST AFRICA**

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No. 5.**

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PREFACE

This report is submitted in response to an agreement (Basic Agreement No. AID/csd/2604) Task Order #5 between AID* and the American Public Health Association. It has been prepared by a five-member team charged with assessing "the potential ways by which U.S. assistance can be used in strengthening the institutional development of public health services in Central and West Africa, working primarily through African Regional Organizations..."

The study reported herein was undertaken after discussions between AID and WHO**, Geneva and Brazzaville, and at the invitation of the Regional Director, WHO, Brazzaville. It is an outgrowth of the decision that the successful AID smallpox eradication program of 1966-71 for Central and West Africa should be followed by a collaborative health program among AID, WHO and other assisting agencies designed to improve the health capabilities of the countries of Central and West Africa.

The study group participated in intensive discussions with staff of the Regional Office, WHO, Brazzaville, and visited nine countries*** of the region. This report is a distillation of these observations and discussions, which provide the background for the recommendations to AID. The report represents only the consensus of the team and is not to be construed as AID opinion or policy. No effort has been made to repeat the documentation of commonly accepted observations or define commonly used terms. It is the opinion of the team that the priority health problems of the countries are well recognized, and that further inquiry and detail for purposes of this report are unnecessary. Inevitably in a report of this nature, based extensively on observations, interviews and discussions, frequently through translations, sometimes admittedly hurried and unfortunately superficial, errors and discrepancies will occur. For these we apologize; they are unintentional. We believe they are not of sufficient moment to affect the character of the recommendations.

The authors are indebted to many individuals for their assistance and helpful advice. We are particularly grateful to the staff of the African Regional Office of WHO, Brazzaville, under the leadership of Dr. O. Adeniyi-Jones, Director of Health Services, acting in the absence of Dr. Alfred Quenum, Regional Director; and to the several national representatives of WHO; to the U.S. Ambassadors, Embassy, AID and Peace Corps staff in the countries visited; to the Director Generals of OCEAC and OCCGE***** and their staff associates; to the Ministers of Health and their associates in the several countries and states; to the administrators and faculties of the professional schools visited; and to the representatives of the U.S. Department of Health, Education, and Welfare, Center for Disease Control, stationed in Cameroon, Nigeria, Liberia, Ivory Coast, Upper Volta and Senegal.

It is our hope that as a result of this study and report another firm step will be taken by those organizations mutually sharing the interest and responsibility for improving the ability of countries of Central and West Africa to provide better health services to their citizenry.

*Agency for International Development, Department of State

**World Health Organization

***Cameroon, Ghana, Ivory Coast, Liberia, Nigeria, Senegal, Sierra Leone, Togo, Upper Volta

****Organisation de Coordination pour la lutte contre les Endemies en Afrique Centrale

*****Organisation de Coordination et de Cooperation pour la lutte contra les Grandes Endemies

INTRODUCTION

I. Background

During the last year (1971) of the operation of the smallpox eradication/measles control program, AID recognized that the smallpox eradication program had been successful to the extent that no new cases of smallpox had occurred in West and Central Africa since May 1970. As had been anticipated from the inception of the program, measles was only partially controlled, although large numbers of cases had been prevented and the deaths of many children averted.

It was further recognized that in addition to the disease control results achieved, the operation of the program had begun to provide some of the participating countries with knowledge and resources for strengthening their own capacity to control communicable diseases. To some extent these countries would be capable of continuing surveillance for smallpox and conducting measles immunization programs if vaccine (relatively expensive) were available.

The countries of West and Central Africa openly hailed the success of the program, and United States officials generally recognized it, technically, socially and politically, as one of the most valuable and successful assistance efforts of AID.

The desire to pursue and strengthen the achievements of the smallpox-measles control program, to insure the capacity of the countries to continue basic communicable disease control programs, to support further specific measles control efforts by strengthening basic health services, and to follow a recognized successful health assistance program with further health assistance, led AFR/CWR/AID to extend the support of the smallpox-measles control program to the end of 1972. Consideration was also given to other forms of health assistance for follow-up support.

United States policy dictated that such support should emphasize the strengthening of the health capabilities of the countries concerned (rather than providing support for categorical disease control program), that assistance efforts should be coordinated with those of other donors for maximum effect and should be provided in collaboration with regional organizations serving the area. It seemed apparent that the most likely ways in which the infrastructure of health services of the 20 countries* concerned could be strengthened were in development of health planning capabilities, in manpower development and training, and in support of disease surveillance and epidemiologic activities. Other less promising approaches included support for health education activities, family health programs and major environmental control efforts.

Negotiations in late 1971 between AID and WHO, Geneva and AID and the African Regional Office for WHO, Brazzaville, led to an invitation from WHO, Brazzaville to AID staff members to visit Brazzaville in November and discuss AID future plans for health assistance in Africa. These staff discussions between AID and WHO, Brazzaville included plans for the present task force to explore more specific forms of assistance in collaboration with regional organizations, starting with a general briefing in Brazzaville in late January 1972.

*Cameroon, C.A.R., Chad, Congo, Dahomey, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, Upper Volta

The foregoing provides the background for the present mission, whose purpose and methods of procedure are described in the following sections.

II. Purpose of the Mission

The general purpose of the mission was to assess the potential ways for providing U.S. assistance to strengthen institutional development of public health services in Central and West Africa, principally through the African Regional Organizations such as OCEAC, OCCGE and WHO (Basic Agreement No. AID/csd/2604, Task Order No. 5).

More specifically, the mission's scope of work was defined to include the identification of:

- "1. specific needs of Central and West African Regional Organizations for the purpose of strengthening their service capacity, training of professional personnel, and administration.
- "2. priority health needs of participating countries as they relate to those problems which can be solved through assistance from the Regional multilateral or international organizations.
- "3. present and potential health input of regional organizations, international agencies and other donor countries to Central and West African Countries.
- "4. substantive areas in which AID could appropriately assist in the development of a regional program or programs for improving health service delivery systems including endemic disease control."

III Method of Procedure

Much of the information requested in the task order is available from references, briefings and notes of previous missions. Without trying to relate specific sources to details, a list of references is appended. (Appendix I)

The first four days of the mission's itinerary were spent in Brazzaville, in an intensive briefing by the regional staff of WHO. In discussions accompanying this briefing, three subject areas for strengthening institutional development of public health services in West and Central Africa were explored—health planning, disease surveillance, and manpower development and training. A report of these conferences will be found in Appendix II.

As a result of the Brazzaville conferences, it was mutually agreed that the mission, for purposes of discussion with Ministries of Health, Embassies, professional schools and representatives of other agencies, would propose that manpower development and training have first priority as a recommendation for AID support. In a series of open-ended interviews, examination of reports, field trips, the opinions of individuals (Appendix III) seen in the various countries visited* were elicited in the general areas included in the scope of work. The details of information elicited, data collected and observations made in the visits to the various countries have been recorded and are transmitted under separate cover. From the discussions with regional

*For itinerary, see Appendix IV

WHO staff in Brazzaville and the reports from the several countries, observations have been condensed and summarized under the section on Observations. The significance and the evaluation of these observations are presented in the Discussion, and the mission's Recommendations follow. Much of the information is necessarily subjective, but the mission believes that repetition and consensus give validity to its reactions and recommendations.

OBSERVATIONS

I. Discussions with WHO Africa Region Staff, Brazzaville

A. Africa Countries

The countries of West and Central Africa can be divided into groups with different characteristics on the basis of geography, ecology, tribal origins and ethnicity, economic development, colonial heritage, language, religion, medical services programs, natural resources, etc. But all share some important common factors: the high priority given to economic development in national development plans; the scarcity of health resources in relation to needs; the common priorities of health problems—manpower training, national health planning, development of basic health services, communicable disease control and environmental health; the interrelationships of health to education, nutrition, transportation, communication, housing and social welfare. All of the countries are motivated by a strong sense of nationalism, sometimes expressed in duplication of expensive health resources. At the same time, the participation of national governments in international and regional governmental activities reflects their common interests and their recognition of the need for regional solutions to common problems. All of the nations are young in terms of duration of national existence, frequently with governmental structure still in the process of development.

B. Central-West Africa Health Problems

The Final Report of the 21st Session of the WHO Regional Committee for Africa held in Brazzaville, September 8-14, 1971, refers to "dominant priorities in the programmes of the Regional Office" as:

- "
- training of staff,
 - national health planning,
 - development of basic health services,
 - communicable disease control and
 - environmental health."

AFR/RC21/R1 (page 6)

The same session of the Regional Committee adopted another resolution, AFR/RC21/R6 (page 9):

"Long-term planning for the development of human resources, education and training

"The Regional Committee,

"Having studied the report¹ on long-term planning for the development of human resources;

"Recalling resolutions AFR/RC18/R5 and AFR/RC19/R6 of the eighteenth and nineteenth sessions on education and training;

"Considering resolutions WHA21.49 and WHA22.53 on long-term planning in the health field;

"Taking into account resolution WHA24.59 of the Twenty-fourth World Health Assembly which stresses the importance of current and long-term planning of the training of national health personnel in accordance with each country's objectives, needs and existing social and economic resources,

"1. CONGRATULATES the Regional Director and his staff on having begun progressive implementation of a long-term planning process for the development of human resources in the health field;

"2. RECOMMENDS that Member States:

- " (i) develop, as from 1980, ten-year health plans;
- " (ii) improve the collection and analysis of statistical data with a view to rational planning of health personnel needs;
- " (iii) establish or develop the necessary training centres for producing qualified professional and auxiliary staff in sufficient numbers and possessing the requisite qualities;
- " (iv) accord particular attention to the problem of rational utilization of trained staff by evaluating activities in regard to development of human resources every five years;

"3. INVITES the Regional Director to use every available means of:

- " (i) strengthening assistance to governments in the field of national health planning, particularly with regard to human resources;
- " (ii) accelerating the teacher training programme in Africa;
- " (iii) developing the teaching of public health particularly the administration and management of health services;
- " (iv) intensifying activities concerning applied research in the fields of educational methodology and technology for the training of health personnel in Africa;
- " (v) developing activities relating to the dissemination and exchange of scientific information;
- " (vi) strengthening the fellowship programme, particularly for studies in educational establishments in Africa;
- " (vii) evaluating every five years at the regional level the activities on development of human resources and fellowship programmes;

- "4. RECOMMENDS to the Regional Director that he transmit to the Director-General these long-term estimates of the future development of human resources to meet the needs of the health services;
- "5. REQUESTS the Director-General to place at the disposal of the Regional Director all the necessary means and resources for the implementation of a programme so vital to public health in Africa."

The minutes of this conference refer repeatedly to problems of manpower development (page 24: the importance of the time factor in the training of national health personnel...; pages 28-29: Long-term planning: Program for the development of human resources...; pages 55-60: The place of the teaching of public health in programs for the training of health team personnel; page 67 (Annual Report of the Regional Director)-"the training of health team personnel..." etc. The reference (pages 28-29) to long-term planning for the development of human resources is of sufficient importance to quote at length: (use of italics is ours).

- "4. *Long-term planning: Programme for the development of human resources, education and training*

"The Committee demonstrated its growing interest and involvement in long-term planning of human resources and education and training. Vivid and stimulating discussions followed the presentation of documents AFR/RC21/8 and AFR/RC21/8 Corr. 1-'Long-term planning: Programme for the development of human resources, education and training'.

"The document prepared by the Regional Director was appreciated and seen as a successful attempt in detailed analysis of the subject, although its indicative character was recognized. The principal objectives and trends in the orientation of the Organization's programme up to the year 2000, as indicated in the document, were approved.

"Emphasis was laid on the necessity of a comprehensive long-term planning of human resources and educational planning in the manner indicated in the document. The needs for more health personnel able to identify the priority health problems and prepared to solve them was considered a keystone for the further development of health services in the Region. At the same time more efficient collaboration among national bodies involved in planning, training and utilization of health personnel was advocated; also a better coordination between national, bilateral, multilateral and international agencies in the field of development of human resources, education and training was considered necessary.

"More knowledge of the existing situation and special effort were needed in collecting, storing and analysing data and in carrying out socio-economic planning. Once the needs and resources were known, rational planning of the development of human resources and training of health service personnel would be possible. It was gratifying to note

that one country had declared its intention to start a comprehensive health manpower study in 1972 and requested the Organization's assistance for this purpose.

"It was stressed several times that although training facilities should be established and studies done as much as possible within the African Region, it was recognized that this would not automatically bring about any improvements *unless the structures of the African training institutions and their teaching programmes and methods were well adapted to the African socio-economic and socio-cultural situation and the priority health problems of the Region*. Such an approach might also avoid the still alarmingly high-rate of non-return of graduates after termination of their studies outside Africa as well as the appreciable losses of already trained personnel. It was nevertheless recognized that in view of the existing situation in some medical schools in the Region, justified exceptions should be considered favourably in awarding WHO fellowships for medical studies outside the Region.

"A *multidisciplinary training* aimed at ensuring close coordination of the activities of all members of the health team was being advocated and some examples of the efforts being made in this field were reported. More information on experience accrued with the new type of university centres for health sciences was requested to serve as a guide for those countries which were still contemplating the establishment of medical training facilities.

"In view of the particularly difficult health situation, it was necessary that maximum efficiency be achieved with the very limited human and material resources available. For this purpose, well-constituted health teams, organized and structured for the solution of health problems were recognized as the best solution.

"It was felt that the educational objectives should be rightly oriented also towards the appropriate attitudes of future graduates especially in stressing their moral duty and responsibility to meet the needs of their own countries and render service to their own population. A greater degree of international solidarity was also needed in order to put a stop to the unjustified retention of trained personnel in overseas countries.

"The *need for an intensified fellowship programme* was confirmed. It was also considered advisable to increase present activities in the dissemination of scientific information in the field of education and training as well as in the exchange of teachers of health training institutions in the Region. The Regional Office's assistance and technical guidance in establishing new teaching institutions was appreciated and was considered indispensable. The discussion on this subject was concluded by the adoption of resolution AFR/RC21/R6."

Although the "Notes for the Record on Discussions with AID Task Force" (Appendix II) prepared by the WHO Brazzaville staff, summarize the discussions with the WHO Africa Region staff, some further details are worth noting, particularly as they were emphasized in subsequent discussions in several countries.

C. Health Planning

The staff reported that all countries in the region have or are developing national health plans of variable quality. The formulation of plans is of prime interest, but the end result, the plans, are not utilized for several reasons. They are frequently unrealistic, resources are not available for implementation; personnel are not available for day-to-day adaptation of programs to plans; and health plans are too frequently unrelated to plans for development in such areas as agriculture, transportation, education, communication, industrial development, etc. Instruction in health planning has been provided, but manpower is frequently not available to translate plans into action. Five countries are totally lacking health statistics programs, and there is a serious region-wide need for a capability to utilize statistical data in health planning.

In brief, national health plans have not been developed and utilized to the extent desired for lack of competent planning personnel, failure to coordinate with planning in such related areas as agriculture, education, transportation, etc., unrealistic goals, and inadequate resources for implementation.

D. Surveillance and Communicable Diseases

The WHO-AID smallpox/measles program conducted by the countries of West and Central Africa from 1967-71 has created an awareness of the nature and significance of surveillance in all countries, and in some few, notably Ghana and Nigeria, epidemiologic personnel are being assigned to field offices and surveillance programs are beginning to take form. The manpower capabilities of the several countries to continue the measles vaccination program and a smallpox vaccination maintenance program vary, but some are reasonably well-staffed to provide immunizations.

Exact quantification of the magnitude of the communicable disease problem is not possible; on the other hand, no one disputes its significance as the major cause of morbidity and mortality. The D³ syndrome—disease, dehydration and deprivation—probably accounts for the death in the first five years of life of one-fourth to one-third of all children born in these countries. The picture may vary from country to country, but infantile diarrhea, measles, meningitis, whooping cough, malaria and other parasitism are among the major serious disease entities.

There are a number of adequate reference laboratories supported by WHO, and others in connection with major medical schools, but national systems of laboratories extending from the field to the national center capable of providing public health diagnostic services are almost totally lacking. Deficiencies in transportation and communication delay the transmission of specimens and the return of reports, so that in many instances the use of laboratory services is an academic exercise. Existing laboratories are primarily a clinical diagnostic resource in therapeutic medicine; the consolidation of public health laboratory data for use in health planning is essentially non-existent.

Adequate disease surveillance and health information systems fail at a number of points. There are both quantitative and qualitative deficiencies of personnel for diagnosis and reporting; communication services are slow or absent; in many

instances personnel to verify reports, tabulate and consolidate data are untrained or entirely non-existent; and a capacity to translate information into programmatic action is limited. The coordination of surveillance with the delivery of services poses a major problem in all countries.

Two existing inter-country surveillance centers, one in Abidjan and the other in Nairobi, collect, tabulate and analyze epidemiological data for West-Central and East Africa, respectively. Another is planned for Brazzaville, with centralization of computer resources at this new center. The epidemiologic consultation services of these centers are available on request, but as we were to learn later, at Abidjan there are long delays in the response to requests; and the services operate without immediate access to laboratory services. Little or no training is provided, and there is little liaison with the training programs in Lome and Lagos.

Some senior regional office staff feel that national surveillance efforts are deteriorating rather than improving, because services are becoming more expensive and there is no corresponding increase in actual budget support. Health budgets are not keeping pace with population growth, and with increased education there is a greater demand for therapeutic services and a corresponding neglect of preventive services.

In summary, then, surveillance, the foundation of disease control and health planning, breaks down for the lack of national systems or programs, inadequacies of manpower, underdevelopment of laboratory resources, and deficiencies in transportation and communication. Failure to utilize existing data for action programs is a major defect in health delivery systems.

Manpower Development

The African Regional Office of WHO has given major emphasis to training, extending their resources to cover the gamut of interests from professional school development to refresher training for auxiliary personnel. There is a region-wide need for training of all categories of personnel. Emphasis has been on the support of existing training resources and on job-oriented training. Much of the effort of their two major training centers at Lome and Lagos has been on refresher training.

The proposed education and training budget for fiscal '73 is approximately \$2,562,000 for the region (including East Africa), of which nearly \$200,000 is budgeted for support of various medical school-related activities; \$255,000 for the center at Lagos and \$215,000 for Lome. Of the remainder, a large portion goes to fellowships, stipends and trainee support. Without more detailed study of the budget than was undertaken in the time available, it is inadvisable to comment on the administration of the training program, but the number of professional staff in the regional office for such purposes appears not to exceed four or five individuals. A health manpower census was undertaken in 1969, and an inventory of current national training resources is maintained. It is undoubtedly difficult to maintain the latter, for national schools are constantly changing.

Discussions with the regional office staff indicate serious interest in an interdisciplinary team approach to training and in the training of multi-purpose workers. Mention was also made of the importance of training small teams to promote self-help programs in the environmental sanitation field. On the other hand, subsequent visits to Lome and Lagos did not confirm major efforts in these areas, nor was team training observed in any of the national training schools. The University Center for Health Services (CUSS) at Yaounde is being closely observed for the development of training programs for health workers to work with support physicians in a team approach. However, as subsequently observed, the CUSS project is in a critical phase, and the ability to accomplish its mission in integrated training of several disciplines is being doubted by responsible leaders at this time.

In addition to the WHO training centers in Lome and Lagos, which put major emphasis on refresher training (and the training of laboratory technicians in Lome), other small centers are supported for specialized training. Post-basic training in educational methodology and administration for nurses is provided in Dakar and Ghana; a program for training rural sanitary engineers exists in Upper Volta (OCAM*), and several pilot programs for training health educators, dental hygienists, and statisticians are in the process of development.

There are no schools of public health in this region of Africa, and public health training is the responsibility of Departments of Community Medicine in Medical Schools. Only the school at Kampala awards a degree in public health. The fact that a majority of physicians in West and Central Africa are governmentally employed and are responsible for both therapeutic and preventive programs emphasizes the importance of training in community medicine. Painfully, it is admitted medical schools are not making a major training contribution in this respect. The Regional Office is providing substantial medical school support in a variety of forms, much of it catalytic in the sense of supporting feasibility studies and pilot programs. To outsiders, the planned and properly programmed support of existing medical schools and the development of new schools poses almost insoluble problems. Intense national feelings and a desire for medical schools in practically every country plus professional pressures for additions to therapeutic programs in existing schools makes difficult, if not impossible, the application of limited resources to the high priorities of increased and improved training in preventive medicine. The development of training programs for personnel other than physicians is jeopardized. Associated with such pressures is the proliferation of large and expensive hospitals in some areas where manpower to staff them is not and for some time, will not be available.

The Regional staff view manpower training with mixed feelings,—hope and despair; hope in the sense that major resources are being devoted to the area of highest priority in the development of health services for West and Central Africa. Present policies dictate the development of training courses in response to national requests, efforts to develop some training activity in every country,

*Organisation Commune Africaine et Malgache

support of pragmatic training emphasis on teaching educational methodology to training school faculty and instructors, and to the strengthening of teaching community medicine. The despair arises from the limited resources available to support the laudable policies stated above, from the lack of national training policies and of programs to utilize trained personnel in some instances.

Major needs in a regional manpower development program are resources to support the development of truly comprehensive regional training plans, policies, and priority programs; to improve the determination of training requirements (both numerically and in content); to validate training requests; to improve the coordination of training interests both among the Regional Office, training centers and the countries, and within the countries themselves; to develop national field training centers properly staffed; to improve the relationships with professional schools, particularly schools of medicine; to subsidize increased operational or applied studies and research in education (educational materials and methods), training (motivation, behavior), and manpower utilization (attitudes, requirements, barriers, etc.); to increase postgraduate and refresher training; and to extend the follow-up of trainees.

Coordination of Basic Health Services

Basic health services are the bare minimum of health services necessary to maintain health, prevent disease and insure a healthful environment. They are a factor of economics, social customs and health practices. In West and Central Africa they are considered an amalgam of limited therapeutic medicine, communicable disease control, simplistic environmental protection of food, water, housing and disposal of waste, and selected protective and health care services for a population at high risk—mothers and children. Provisions for a knowledge of the prevalence of disease, health education and nutrition are also considered elements of basic health services in some countries.

Historically, they have been developed for segments of the population, without a comprehensive coordinated plan for serving the total population. Frequently, in West and Central Africa (as elsewhere in the world) the components of this amalgam have also been developed separately to give them emphasis and visibility. Desirable as this emphasis may be, the process has led too frequently to a lack of coordination in the provision of service, with resulting inefficiency, undue costs, waste of personnel time and administrative confusion.

The Regional staff noted the lack of coverage of 60 percent of the population of this region by basic services, the qualitative deficiencies in service, the inefficiencies of poor coordination and the serious gaps among surveillance, planning, and provision of service. A major part of this unfortunate situation can be attributed to lack of staff, inadequacies of knowledge and experience in existing staff, poor administration, planning and management processes, and inadequate resources with which to work. They commented particularly not only on the needs for applied research, but for the application of research findings to community health practice.

Four major elements—health planning, manpower development, health information and disease surveillance, and provision of basic health services emerge as areas of great need in the West and Central Africa health picture.

Common to all these elements is the need for informed and competent manpower. Without further and more detailed exploration, it was mutually agreed by Regional staff and the mission that manpower development and training might be the most fruitful approach to strengthening the health capabilities of the countries of West and Central Africa. The problems and needs in the additional development of this approach are discussed later.

II. Field Observations of the Mission

A. The Health System

1. Regional Characteristics

The health system of West and Central Africa is but a microcosm of patterns which characterize the entire scope of existence within this region. Three basic features predominate: scarcity of resources in relation to need, magnitude of need, and diversity in characteristics—economic, cultural, ethnic and ecological.

Scarcity of resources is reflected in a variety of socio-economic indices which portray this region as one of the poorest in the world. Some ninety percent of the population lives in rural areas, where subsistence agriculture predominates. Few roads are paved, many areas are difficult to reach and some are inaccessible except on foot. The per capita gross national product is some \$114 when averaged for the region as a whole, in contrast to \$3,980 in the United States. In addition, the meager capital wealth is concentrated in the hands of a few. While the United States is dissatisfied with an infant mortality rate of less than 20 per thousand, countries of this region have rates which vary between one and two hundred, and in some countries only one-half of the children born alive can be expected to live beyond the age of five years.

While the region's resources can be considered to be scarce judged on an absolute scale, that scarcity becomes even more dramatic when considered in relation to need. Need within the region is truly enormous, and applies to every aspect of existence. Safe water is an example. Water of any sort is scarce throughout the sub-saharan countries, making it difficult or impossible to maintain standards of personal hygiene. In the south, water is available, but then serves as the major disease vector of the environment because of contamination from human and animal waste. The need for food is another example. For much of the population, diets are deficient in both the quality and quantity of nutrients. Seasons associated with less than average crop yields leave mass starvation in their wake. Even in areas where adequate nutrients are available, cultural dietary taboos often lead to protein-calorie-malnutrition in children. As previously noted, an estimated 60 percent of the population are without medical services of any kind.

In spite of the inhospitality of the environment, the population of this region is estimated to be 120-130 million, and the current growth rate

is 2.6 percent per annum*. At his growth rate, it is estimated 240 million persons will inhabit the region 27 years from now, requiring all current resources be doubled simply to maintain the present standard of living.

Diversity is another characteristic of the region, and is reflected in the hundreds of dialects, in ecological zones which vary from dense tropical rain forest in the south through various gradations of savanna to desert in the north, in tribal heritages overlaid by colonial heritages, and in the oil, mineral and timber wealth of some countries to the poverty of the sub-saharan desert area. Although there are major concentrations of population in cities of 50,000 to more than one million, the vast majority of people live in rural areas. Such diversity has presented a difficult challenge to the newly independent governments who have been forced to promote national identity to prevent their nations from disintegrating into individual tribes, although recognizing the advantages that regionalization might offer for economic development.

2. Health Problems

The health problems of the region are dominated by preventable disease of mothers and children who comprise 65 percent of the total population. Among preventable conditions, infectious diseases, nutritional diseases, and accidents predominate. While certain of the infectious diseases, such as malaria, bacterial meningitis, yellow fever, and onchocerciasis strike populations severely in their own right, the virulence of others, such as measles, cholera, the bacterial diarrheas and tuberculosis, is accentuated by nutritional deficiency. Because infectious disease itself frequently affects nutritional status adversely, the vicious cycle of infectious disease and malnutrition multiplies the impact of both. Dehydration and intestinal parasitism are additional components of this cycle and add significantly to morbidity and mortality.

A second cycle, equally vicious, is imposed on the first: high infant mortality rates provide an inducement to have many children. The birth of many children to one mother leads to high rates of maternal morbidity and mortality. This leads back again to high rates of infant morbidity and mortality as the family's resources are divided among larger numbers of children with a resultant deterioration in nutritional and sanitary standards.

If the health problems of the region are characterized by preventable diseases of mothers and children occurring predominantly in rural areas, the health delivery systems of the region are characterized by an emphasis on curative medicine in urban areas. This emphasis has roots in the colonial heritage, since hospitals were originally built in capitals to serve the needs of the European populations. It has been augmented by the political needs of the new governments, which have frequently been forced to invest money in prestigious and highly visible health facilities which provide curative care for a small percentage of the population at high per capita cost, rather than to invest in preventive programs for a considerably larger rural population.

*World Population Data Sheet, Population Reference Bureau, Inc., (August 1971)

While private medicine is practiced to a certain extent in major cities, the bulk of rural medical services are delivered by health personnel in the services of their governments or by religious organizations. However, a variety of traditional healers practice in both urban and rural settings, and they are currently the major providers of "medical care" to the population, not the health personnel trained in the sense of Western standards.

3. Structure of the Health Delivery System

The structure of the health delivery systems is varied, roughly paralleling the structure of governments in the countries visited. Responsibilities for curative and preventive medicine are combined, usually with much greater emphasis on the former. Financial and administrative responsibility is entirely federal in Ghana and the Francophone countries; in Nigeria the lowest service unit, the dispensary, is a responsibility of local government and the additional levels of facilities are state financed and administered, thereby creating problems of authority and relationships.

In general, governmental health services are organized around hospitals which serve specified regions or areas (defined by trade patterns, transportation, communication and governmental authority). These hospitals serve as referral centers for subordinate units in providing diagnostic and therapeutic services, and administrative centers for the supervision of preventive (including sanitary) services at lower jurisdictions.

Regional Hospitals

The regional hospital is generally directed by a physician, varies in size from 40 to 100 beds, and serves as the major medical facility for a population ranging from 150 or 200 thousand to half a million. Under state (Nigeria) or federal auspices, it provides a broad scope of diagnostic and therapeutic services, including laboratory, x-ray, and specialized maternity and surgical care. As noted, staffing patterns vary, but in addition to a physician, there are usually senior-level staff of all the disciplines working in the subordinate units—health superintendents (administrators), public health nurses, community nurses, midwives, health inspectors (sanitarians).

Depending on the country, there are two or three levels of subordinate health service units responsible to the district or regional hospital. These units are called by a variety of names, are variously staffed and equipped. Again, depending on the country, there is some variation in the area and population served and in the services provided.

Health Center

The health service unit immediately subordinate to the district hospital is usually a rural or district health center, financed and administered under state or federal auspices. Four or five (or more) health centers are

immediately responsible to a single hospital. Ideally the health center, serving a minimum population of 25,000-40,000, is staffed by two or more midwives, clinic nurses, community nurses, public health nurses, a senior health inspector, and may have a health educator, nutritionist, and laboratory technician, all working under a senior health superintendent or senior nurse. The center includes outpatient services, pharmacy, possibly a modest laboratory, x-ray, and eight or ten maternity beds. It is the principal source of referral *from* community dispensaries and clinics and *to* the district hospitals. Preventive medicine clinics, such as well child clinics, pre- and post-natal clinics, immunization clinics, are a part of its services. Nurses and health inspectors may travel to outlying village dispensaries or clinics to provide preventive, therapeutic and sanitary services on a more or less regular interval basis. Each health center may have five to eight dispensaries or satellite clinics under its jurisdiction.

The health center or health post is probably the key unit in the health delivery system, receiving patients from the village dispensaries, referring some to hospitals, but always providing the maximum service consistent with its staffing and the major preventive services to a large geographic area. In some health centers in-service training and health education are provided. It is a potential focus for education and training.

Dispensaries

The five or six village dispensaries or satellite clinics responsible to a single health center are frequently located in schools, markets or other public gathering places. Their only permanent attendant is a dispenser, health auxiliary, or dispensary attendant who treats minimal minor injuries and provides symptomatic treatment with his limited resources—perhaps only a notebook and pencil, perhaps a few simple drugs such as aspirin, anti-malarials, antibiotics, and a disinfectant. The dispensary may serve as a local base for staff from the health center who visit periodically to hold a clinic, vaccinate, conduct a sanitation training or demonstration program. The dispenser ordinarily does not leave his station to provide outreach services; he frequently augments his meager income by charging for his services. The clinic may serve a population of 5,000 or more, and ideally is located so that no individual need travel more than six or seven miles to attend.

Mobile Teams

Mobile services supplement the static services provided by hospitals, health centers and dispensaries to a variable degree. The Francophone countries place more emphasis on mobile team operations than do the Anglophone countries, but mobile teams are used in both, and in both the attempt is being made to integrate mobile with static services. At present, most of the mobile services function as semi-autonomous units composed of teams which tour specified areas of the country providing vaccinations and, in the Francophone areas, doing "prospection", a form of mass screening for health problems.

Supplemental Health Services

In some instances governmental health services are supplemented by mission hospitals. These vary considerably in size, scope of service provided, and are usually therapeutically oriented. They have little, if any, training capacity beyond that necessary to satisfy their own needs. The health care system also includes a few scattered industrial health programs. Those of Kaiser at Tema in Ghana and Firestone at Harbel in Liberia are examples. Other than their services to a limited segment of the population, their value lies in the demonstration of quality care (though not necessarily by a system which is appropriate to the needs of the countries) using well trained non-professional indigenous workers.

4. Difficulties in the Health System

This network of dispensaries, health centers and regional hospitals, supplemented by a limited number of ambulatory teams, should ideally provide an adequate system for the provision of comprehensive health services. But like many other systems of comprehensive health service, this one is beset with problems and difficulties. Coverage is by no means complete, in terms of the population served and the scope of services provided. We have repeatedly quoted the WHO estimate of 60 percent of the population of West and Central Africa without health services of any kind. Too frequently, dispensaries can provide only minor symptomatic treatment. Severely ill patients must travel great distances (sometimes using minimal transportation facilities) to receive care, or remain to suffer and perhaps die. All of the countries visited are striving to extend the coverage of health services, but are handicapped by lack of funds and trained personnel.

Inadequacies of staff, both numerically and qualitatively, further compromise the quantity and quality of care. The demands for therapeutic services are frequently so overwhelming that no preventive services can or are provided.

The local dispensary attendant, as a health worker, has little stature in the professional community, is frequently poorly paid, has had little or no training or re-training although he may have worked for 10-20 years, must provide his own transportation and work with a minimum of pharmaceuticals and supplies. At the next echelon more experienced workers may be more technically competent, but their problem is the lack of the special training or skills in management and teaching essential to their role.

Services are too often fragmented and uncoordinated, characterized by unnecessary duplication, rivalry among disciplines, and an absence of supportive team work. Inadequacies of administration, communication, and transportation compound these difficulties.

5. Effects of Colonialism and Nationalism

The health care system is affected by the remnants of colonialism and recently acquired independence, as they influence the training of medical manpower. In a region where only a small percentage of the population is literate, the supply of physicians will not be sufficient to deliver basic curative and preventive health services for the foreseeable future. Present limited services are being delivered largely by non-physician personnel. Physicians serving within the national medical systems of the various countries generally devote much of their time to administration rather than direct provision of care. In more than one country there is substantial physician resistance to extending the responsibility of non-medical assistant, both administratively and technically. Countries within the region have chosen to place considerable emphasis on the training of physicians, to the detriment of the training and re-training of other categories of personnel. Unfortunately, the current physician training in African and European medical schools tends to equip the graduate to practice within the confines of a narrow specialty, and no training is provided to assist him to assume the role of a manager of a comprehensive health services delivery system where emphasis should be on prevention.

In spite of the shortage of resources and the economies offered by regionalizing the training of medical manpower, nationalism and the innate diversity of the region have contributed to the desires of each country to have its own medical school and teaching hospital. Where a national institution does not yet exist, countries have often preferred to send their students to Europe or America for "the best" preparation, rather than to regional or national institutions within Africa. Although much of the training within and outside of Africa tends to be inappropriate to the needs of the region, the tragedy of training given outside of Africa is that it often alters the student's life style to such a degree that he chooses not to return home.

Thus, the governments of this region are attempting to meet the health challenge posed by an overwhelming burden of preventable disease with resources which are basically inadequate, and a portion of which are being unwisely invested. The themes of overwhelming need and inadequate resources will recur as two health sub-systems are described in more detail—the health manpower training system and the surveillance system.

B. Training

1. Where African Medical and Paramedical Staff is Trained

Health personnel in West Africa receive their training in national training centers, international training centers, and foreign educational institutions. National training schools exist in all countries visited under the Ministry of Health and/or the Ministry of Education. The medical schools and a few paramedical schools are associated with a university.

The nine countries visited vary greatly in their capacity to train their medical and paramedical personnel. At one extreme, Ivory Coast, Senegal, Ghana and Nigeria are attempting to provide training for all categories and levels of personnel while Upper Volta, at the other extreme, depends largely on the training facilities of other countries, both African and European.

Medical schools have been established in Cameroon (1), Ghana (1), Ivory Coast (1), Liberia (1), Senegal (1), and Nigeria (5). Except for the schools in Senegal and the Ivory Coast where about half the students are foreigners, the schools draw their students mainly from the immediate country, including the Cameroon school which was created to serve the Central African Region. As previously noted, almost every country is intent on creating a national school of medicine even where it is not economically feasible. Although medical education is available in Africa, many Africans continue to go to France, Great Britain, United States, and U.S.S.R. for their medical education, some never to return. Nigerians estimate 30 percent of their annual medical graduates remain abroad.

All countries visited have at least one school of nursing. Only Senegal, Ghana and Nigeria provide post-basic nursing education (Cameroon is scheduled to begin the fall of 1972). A small number of qualified nurses obtain post-graduate training in public health, teaching, and other specialties in foreign institutions, usually under the sponsorship of WHO or bilateral assistance agencies. All countries prepare qualified nurses (state registered nurse, registered nurse or infirmier/infirmiere diplome d'etat) with courses and degrees equivalent to those of the former metropole countries. All countries prepare auxiliary level nurses who receive local diplomas or certificates. This group which enters nursing school with less than a full secondary education receives training varying greatly by country and even within countries. Curricula, entrance requirements, length of course, and teaching staff are in constant flux affecting greatly the quality of the training and the competence of the graduates. A large proportion of the nurses trained in Africa are male; the proportion of female nurses is slightly higher in Anglophone countries. Francophone countries train and utilize another category of personnel, assistant or aide sociale, to provide some maternal and child health services.

Qualified midwives are trained in national schools in all visited countries except Cameroon and Upper Volta. Auxiliary level midwives are trained in Cameroon. In Ghana, the Ministry of Health is considering extending by six months the Community Health Nurse and Public Health Nurse courses to include midwifery. Liberia has begun a special training program for untrained birth assistants or "granny midwives" to improve the practice of this important group.

The Anglophone countries have long established training programs for health inspectors and sanitarians, some leading to Certificates issued by the West African Board of the Royal Society of Hygiene, others to local diplomas. All of the Francophone countries with the exception of Upper Volta prepare techniciens d'assainissement, and some qualified, other auxiliaries.

The only national school training of qualified laboratory technicians is in Nigeria. The need for better training of qualified laboratory technicians is recognized by some countries. The Ministry of Health in Ivory Coast plans to establish a national school. It is the current practice in most of the countries visited to select promising nursing students from local diploma classes to follow laboratory technician training in regional schools or local hospitals. Pharmacy workers are generally selected and trained in this way also.

It is generally agreed that the largest number of African health workers are trained at the auxiliary level. Unfortunately, much of this training is inadequate for their generalized responsibilities. Such training as they receive is in specialized programs (leprosy service, health inspectors, endemic disease control, dispensary services, malaria control, hospital services) to carry out simple functions of dispensing medicines, performing tests, inspecting latrines or markets, vaccinating, etc. It is therefore difficult to absorb them in generalized programs, unless they receive further training.

In addition to the government schools there are in several countries missionary and private organizations that train health personnel (e.g., Firestone, various church-sponsored schools) usually to staff their own institutions.

Regional training centers serving the countries visited include the WHO Centers at Lome and Lagos, the CUSS at Yaounde, the Ecole Jamot at Bobo Dioulasso, and the OCEAC Center at Yaounde. The WHO Centers provide refresher training in technical subjects for qualified health personnel and courses to prepare laboratory technicians. CUSS provides medical education and is scheduled to begin post-basic nursing courses in the fall of 1972. The OCCGE and OCEAC-sponsored programs currently provide short-term orientation courses for physicians in tropical medicine. OCEAC staff provides short-term training to infirmiers diplomes, but the small staff limits sharply their ability to provide training. The Ecole Jamot which has been training infirmiers in endemic disease control for many years had to cancel the course for 1971-72 due to a cut in the number of WHO scholarships available, a source of financial support necessary to its operation. There is a real possibility that this training will be discontinued because of limited budget and a decreased demand for it resulting from the development of national training programs and the trend toward integration of the endemic disease control program with other health activities in the OCCGE member countries. The OCCGE hopes to establish a school for qualified laboratory technicians, replacing the Ecole Jamot.

In northern Nigeria two different states independently proposed the development of an additional WHO regional training center in that area. The reasons are stated more fully in the notes on Nigeria, but in essence are based on the size of the population in northern Nigeria, Niger and Chad; the differences in culture, language, attitudes, health practices, geography, etc., from other areas, particularly northern Nigeria; and dissatisfaction with the Lagos center based on distance, lack of housing, inappropriate training and the metropolitan environment.

2. Training Facilities

The development of practical training sites in communities and health centers is a critical need. Most of the practical training centers now in use fall short because they are not typical of the trainee's future work situation, and they do not offer skilled teachers and supervisors. What is needed is better planning of the practical training experience, selection of practical training sites consistent with training requirements, provision of realistic working conditions in these centers, and preparation and assignment of practical trainers to this important activity. Several health officials questioned the value of demonstration centers because so often they are not representative nor reproducible models. Effective demonstration-training centers were observed at Yaba, Nigeria, for community nurses, at Kano, Nigeria, for health inspectors, Vogan and Lome, Togo for preparation of auxiliary health personnel and sanitation workers, respectively. WHO and UNDP* had provided assistance in the development of the Togo facilities.

Although improvements are needed in classroom facilities and libraries of many training centers, this is not the most urgent problem.

Lack of adequate lodging for trainees (and in some instances for staff) was pointed out to be a serious deficiency of all training centers with the exception of the Ecole Jamot. The availability of student lodging facilities is a critical determinant of the number of trainees enrolled; the quality and sex of those recruited, the extent of their effective participation in the training opportunities offered. This problem is particularly acute at field practice centers.

Another impediment of practical training programs is inadequate transport for trainees and trainers. UNICEF has provided some vehicles but most centers are seriously restricted in providing field training experiences because they lack efficient transportation for these activities.

3. Teaching Staff

The full-time teaching staff was reported numerically inadequate at most training centers visited, both national and regional. Generally much of the classroom instruction is given by visiting lecturers or part-time staff usually drawn from the health agencies in the immediate community. The WHO Regional Training Centers rely almost entirely on temporary consultants to direct refresher courses. Directors of training and teachers are usually selected from program staffs on the basis of their technical competence or seniority. The majority of the instructors have had no preparation in pedagogy. Nor do they have access to educational specialists from whom they might obtain help in preparing lesson plans; in developing, communicating and demonstrating teaching skills; in preparing classroom demonstrations, audiovisual and other teaching aids.

*United Nations Development Program

members of the WHO Lome Center staff and one medical educator interviewed described seminars in educational methodology which they had recently attended and expressed interest in obtaining additional help in this field. One Department of Preventive Medicine has a health educator on its staff. Trained medical educators and nursing educators serves some of the schools; the majority are foreign specialists provided either by WHO or other technical assistance agencies. Curriculum construction and program direct-on rests mainly in the hands of foreigners. Overloaded teaching schedules leave little time for careful planning and development of new approaches better adapted to African requirements. Foreign systems are thus perpetuated. There is almost no follow-up of former trainees in the field and no evaluation of training in terms of application and utility.

The Directors of the WHO Regional Centers at Lome and Lagos and the acting Director of OCEAC expressed a strong desire to expand their training staffs, particularly with full-time instructors and specialists in teaching methodology and teaching materials preparation.

On an encouraging note, the staff of Departments of Community Medicine in African medical schools is generally of high quality, and includes some of the outstanding medical educators of Africa. Although only two Deans of Medical Schools were interviewed, both were impressive in their interest, knowledge and concern with community health. The failure of medical schools to train their graduates to assume managerial responsibilities for governmental health programs was cited by one as a major defect in the medical educational system.

4. Teaching Methodology

Instruction, particularly at the national school, places emphasis on theoretical knowledge which is usually imparted through lectures by senior health staff. Except for medical students, trainees have very limited access to books and reference materials. It was reported that often instructors, while technically competent, are not skilled teachers and have no special training in pedagogy. The content and presentation is often not adapted to the students' educational level, training needs, and job requirements. Curricula tends to follow traditional patterns usually based on a standard selection of subject matter. Curriculum planning is rarely based on job analysis. Personnel of all the training centers reported a lack of teaching aids such as instructional and course manuals, audiovisual aids, and basic demonstration materials. Practical experience is often perfunctory—poorly planned and inadequately supervised.

Teaching personnel at WHO Lome and Lagos Centers and one medical school visited expressed interest in improving teaching skills and obtaining assistance in developing modern teaching aids.

One of the greatest weaknesses in the teaching programs is the lack of coordination and connection between the various experiences offered the trainee—the classroom teaching, the practice in the laboratory, the hospital ward, or community. Another serious weakness is in the lack of follow-up

of the graduates on the job. The majority of graduates of training programs have no further contact with the training center. Faculty of the training centers rarely have contact with the program directors or supervisors in agencies where their former students work. There is no planned continuity of the trainees' development through basic training and continuing training. Evaluation of training programs, where it is done, seems to be very superficial indeed. There was no evidence of "mobile" training, i.e., refresher training offered to trainees close to their working environment. Although lip service is frequently paid to "team training", nowhere was it in evidence, and no national training programs for "multidisciplinary training" of individuals was mentioned.

5. The Content Emphasis of Health Training Programs

Expert advisors of international and regional health organizations are in agreement that greater emphasis should be given to preventive medicine than is currently done in most health training programs. However, national health programs continue to give priority to curative medical services and hospital posts are made more attractive to health personnel. National training programs frequently draw their instructors from hospital staffs as temporary lecturers and use hospital facilities for practice training sites. The approach taught is to render a technical service to individual patients, not to the family or community. The student is taught to treat specific diseases in individual patients, not to seek basic causes of the illness in the family or community environment. Trainees are generally not prepared to provide health education as part of their service to patients, nor to work with health and other relevant personnel to solve individual or community health problems.

Refresher training opportunities are rarely provided by national programs and usually only at the instigation of external assistance agencies. The limited training resources are focused on basic training. Supervisory training or on-the-job training is virtually non-existent. Many rural health workers are isolated from headquarters personnel, and written communications are minimal. Once basic training has been completed, it is unlikely to be reinforced.

6. Relation of Training to Health Program Development

Lack of sufficient numbers of properly trained health workers critically limits development of health services in all countries. Although high priority has been given to preparation of health staff, poor planning and administration has led to much waste of limited training resources and much inappropriate training activity. Time pressures, lack of expertise and separation of training from program operations have all contributed to this. Very little attention has been given to development of national training strategies that include systematic setting of priorities for staffing, planning of training programs, and coordination of program and training activities to take advantage of the mutually reinforcing and cumulative effects that these inputs could produce.

Even the planning of courses of study is carried out in relative isolation from health programs where trainees will be assigned.

Where national training goals have been defined it is in terms of numbers of the various categories of health workers per persons to be served or health facilities to be staffed, not in terms of health program objectives. Health manpower goals are extremely modest in relation to the nature and extent of health conditions; yet they are grossly unrealistic in relation to financial and human resources available for health programs in these countries.

In order to accommodate staffing goals, health agencies have tended to resort to short-cut and stop-gap training measures. These have included reduction of length of the training period, lowering of basic educational requirements and standards of performance of the trainees, and neglect of in-service and on-the-job training.

These compromises are particularly flagrant in the case of training of auxiliary level personnel for whom there are no formalized standards of certification or licensure. On the other hand those health workers—physicians, nurses, sanitary engineers, health educators—whose qualifications are set by nationally and internationally accepted standards are reported to be too highly trained in many instances to be accommodated by the limited budgets and civil service posts in African countries.

Separate from the need to train health auxiliaries, middle management personnel (e.g., health superintendents, public health nurses, etc.) and physicians, is the issue of the training of a cadre of health workers who could assume much of the burden of the more mundane, less scientific activities traditionally the domain of the physicians. This cadre of para-professionals is variously identified in the United States as "physicians' assistants", "medical assistants" or "health assistants" or in the case of the nurses—the "nurse practitioner". The development of this type of health worker has been an issue in both Anglophone and Francophone Africa long before its consideration in the United States. Efforts to train such personnel in West and Central Africa have been opposed by the academic/professionals in both medicine and nursing, and attempted training programs have failed. In a region where the need is to provide at least minimal clinical services to that large segment of the population now completely without resources, it would appear that many of the needs of the health delivery systems would be well met by the development and utilization of such health para-professionals.

C. The Surveillance System

1. Surveillance

Surveillance systems have four components; recognition or diagnosis, reporting and data collection, data tabulation and analysis, and response. The data must have some inherent validity if they are to be useful. The

processing must be timely, the interpretation accurate, and the response, i.e., the action taken on the basis of analysis, prompt. Response is not only important in preventing or curtailing morbidity and mortality, but indicates to the individuals responsible for submitting the basic reports that their efforts are being monitored and the results utilized. Unfortunately, analysis and response are often neglected in the operations of surveillance systems in West and Central Africa, which tend to deteriorate into empty routines of data collection for its own sake.

2. Existing Systems

In theory, every country in West and Central Africa has a functioning surveillance system. The development of many of these is an outgrowth of the smallpox/measles program. The reporting procedures followed in the Benue Plateau State in Nigeria are typical. All hospitals, health centers, dispensaries, and clinics are required to report infectious and communicable diseases to the State Ministry of Health, which then forwards the reports to the Federal Ministry, Lagos, which in turn reports to WHO. The four internationally quarantinable diseases (smallpox, yellow fever, cholera, and plague) are to be reported immediately by radio, telegram or telephone. Some 17 others (including influenza, poliomyelitis, measles, malaria, typhoid, and typhus) are to be reported by mail each week. Other diseases (including leprosy, tuberculosis, onchocerciasis, schistosomiasis, syphilis, and gonorrhoea) are to be reported by mail each month. These reporting requirements are similar throughout the region. However, the degree to which they are met in practice is variable.

In the Benue Plateau system, reports are tabulated, consolidated and analyzed in the State Ministry of Health communicable disease office in Jos. The feedback information to the field not only includes morbidity and mortality analyses, but also data on the completeness of reporting.

Probably the most significant aspect of this system is the prompt action taken in response to reports—diagnostic assistance, investigation of outbreaks, initiation of control measures including educational programs, assistance in therapy including provision of drugs, and dissemination of epidemiologic information to adjacent areas.

This particular system is mentioned for it operated more successfully than any other observed. Admittedly, it has many defects. More information is collected than can be utilized. The diagnostic deficiencies inherent in all systems dependent upon non-medical personnel are present. Reporting is far from complete; for example, only 60 percent of the reports due during the third quarter of 1971 were received. Deficiencies in communication and transportation delay reports and impede response. Information is limited to that concerning communicable diseases. But for all of these defects, the system operates so effectively that the Ministry of Health has asked the Communicable Disease unit to take responsibility for all local health services, including maternal and child health—a request which has wisely been refused in order not to overwhelm the mechanism and limited resources of the program. The motivation and dedication of

the personnel associated with the activities is impressive. Their interest, skill and devotion obviously account for much of the success of the system. The other factor is the capacity to respond, including appropriate material resources (supplied in part by UNICEF and WHO). The project will eventually offer a valuable opportunity for demonstration and training, but should not be overwhelmed at this time, nor in the future without additional staff and resources commensurate with added responsibility.

3. Weakness of Existing Systems

Visits to the several countries confirmed the many reasons for the weaknesses of African surveillance systems which were discussed in Brazzaville and recorded earlier in the Observations. They are briefly restated here.

Diagnosis is frequently symptomatic, made without benefit of laboratory tests. Dispensaries are generally the basic reporting unit. Although many dispensers and nurses have developed unusual diagnostic skills, this unfortunately is not the rule.

Immediate public health laboratory support is almost totally lacking in rural Africa. Such laboratory services as are available are too frequently unreliable and limited in scope. Use of reference laboratory services for confirmation is discouraged by factors of distance and time.

Reporting is incomplete, even in the best systems, and is frequently handicapped by lack of facilities for communication and transportation. Understanding and motivation, as well as knowledge, are important factors in successful reporting. Too frequently this understanding has not been developed, either through experience or training, and is not encouraged by the lack of evidence of action following reporting. Without valid data, useful summary reports, and the resources to take prompt and appropriate action, there is little incentive to improve reporting.

Personnel are often lacking to verify and correct reports, and lack the "know-how" for tabulations and preparation of meaningful summaries. Knowledge of filing, orderly record systems, and simple statistical procedures is not always present.

Information developed during the operation of the smallpox/measles program confirmed many of the shortcomings of the surveillance systems. The same program activities also demonstrated that workable surveillance systems could be established. When personnel were given special instruction in diagnosis, taught the rudiments of data processing, and particularly when it became apparent that such resources as vaccine and equipment would be allocated on the basis of reports--then smallpox and measles surveillance developed rapidly. Enthusiasm for searching out the last case of smallpox and for maintaining a smallpox-free environment did not materialize until it was evident that increased resources offered the promise of achieving and maintaining eradication of smallpox.

Some of the inadequacies of surveillance systems arise from the lack of carefully thought out plans for such systems, with attention to procedures, necessary manpower and training, laboratory support, delineation of responsibility at various levels, requirements of communication and feedback, and resources for appropriate response. One of the great gaps in national health services is the breakdown between surveillance and action.

4. Utilization of Surveillance

Despite basic problems with the surveillance systems of the region, they continue to offer not only a basis for immediate program activity, but also an excellent means for evaluating the efficiency of the expenditure of health resources. Ideally, information on selected communicable diseases should be supplemented by other health-related information so that an overall health strategy could be evolved which would reduce morbidity and mortality to a minimum, given the resources available. Information derived from the surveillance system should feed directly into training programs for health personnel so that priority problems receive priority emphasis, and should remain as a final criterion of the effectiveness of both training and disease control programs. Countries with scarce resources can least afford the inefficiencies associated with the operation of a weak surveillance system, and a major priority for this region remains the strengthening of these systems.

DISCUSSION

I. Priority for Assistance

The foregoing observations have emphasized that in the area of West and Central Africa where medical needs are as acute as anywhere in the world the efficacy of the health systems is compromised by a lack of human and material resources. The problems are compounded by the low priorities assigned to health by planning ministries and by inefficient utilization of existing resources by health ministries.

In seeking ways to be of assistance, the Mission (supported by WHO Brazzaville staff opinion) has placed highest priority on the development of manpower, who can contribute not only to training programs, but can also assist with the strengthening of national and regional surveillance systems, the delivery of preventive medical services, and health planning.

The team conceives of manpower development in a broad sense; it includes not only the selection and training of personnel but also the utilization of these individuals in appropriate job situations where they can effectively utilize their new skills. It emphasizes support for the training of selected teachers and trainers and recognizes the necessity for providing material resources for surveillance and health delivery programs where lack of such resources constitutes the major constraint to effective personnel use.

The team believes that a manpower program conceived of in this broad sense should form the basic thrust for AID assistance to West and Central Africa in connection with this project. The infrastructure of the entire health system can more readily be strengthened by this means than by any other single program.

II. Training Proposal

A training program, very similar to that conceived in the Brazzaville discussions is envisioned. In brief, the purpose of the proposal is to strengthen the health capabilities of the national government of West and Central Africa, working with and through WHO and other regional organizations, by

1. strengthening the administration of the WHO-assisted training program,
2. expanding the regional capacity for training with the emphasis on training of trainers, supervisory and administrative personnel,
3. expanding the training of surveillance and epidemiologic personnel and extending the services of the Abidjan epidemiology center,
4. assisting in the development and initial operation of selected national field training centers, where practical training could be provided under supervision and in an environment generally resembling the trainees' working situation,
5. strengthening the relationships among regional organizations and Ministries of Health on the one hand and national professional schools (particularly Medicine) on the other, in order to enlist academic assistance in training programs and to encourage consideration of practical concepts and problems of community health in academic education.

The target population for eventual assistance is the infant and maternal segment of the rural population. Not only is the magnitude of this population greatest, but its needs are critical and the opportunities to provide effective service substantial. The services most immediately required—the prevention of communicable diseases, the improvement of the environment, and the development of special services for mothers and children—can best be provided by emphasizing the training of three categories of personnel: the physician-epidemiologist, the health superintendent-sanitarian, and the public health nurse-midwife. In the long view, infant mortality rates will be available as an index of evaluation.

III. Requirements for Improvement in Training

Needs of the Central and West African Region for the training of health personnel obviously are not being met satisfactorily by the present programs of the national governments and regional organizations concerned. Strengthening these programs through a regional project will require tackling fundamental problems not yet clearly defined by health authorities in the region. As it is highly unlikely that resources available to these agencies for training can be even modestly increased in the near future, it will be important that assistance be directed toward increasing the efficiency of training as well as its effectiveness.

The problems that concern those responsible for health training seem to indicate that technical assistance in this field should be directed toward three major priorities:

1. improvement of the planning of training programs,
2. application of more effective teaching methodology, and
3. provision of some basic facilities and materials.

Planning of training needs to be strengthened at all levels, the national, the training institution, the individual training program. Each country varies in its readiness and capability to tackle this crucial problem and perhaps no country should attempt to tackle the problem at all levels at once.

Improving the planning at any level in the training system can serve as a pivotal entrance to the rest of the system and to the overall health service system which training should be developed to serve.

Provision of short-term highly qualified expertise in planning manpower and training strategies, and training programs could help focus the attention and facilitate the involvement of the health service program administrators and training directors in this endeavor. Their active participation is needed to set more precise goals for training programs, to arrive at more practical strategies for utilizing training to effect successful program implementation, to develop training programs that prepare health personnel to perform effectively in the implementation of health programs and to evaluate training efforts.

The short-term expertise might be used either in small regional seminars or in individual country consultation situations.

Health training programs in this region remain trapped in traditional teaching patterns and methodologies. Standard courses are offered in static centers where the health knowledge imparted is not salient to the trainee's future work, the teaching process is not conducive to his learning insights and skills necessary on the job, nor are the models for future practice well selected and presented.

Possible approaches to helping national training programs break out of these unproductive patterns include developing trainer expertise; developing laboratory and field training demonstrations; experimenting with different ways to improve training, e.g., mobile training teams, preceptor programs; mechanisms for keeping trainers closely in touch with program operations; field study and testing of job functions; follow-up of trainees in the work situation; evaluation of programs; and studies of training methods and techniques.

Assistance of this kind might be located in a regional center where seminars and special courses could be conducted and from which specialists might travel to individual countries to provide short-term assistance in developing demonstrations and experimental projects, and follow-up of training offered in the regional centers.

Resources for training facilities, equipment and materials are so strictly limited that tackling the technical problems without considering these needs would not be realistic. Such basic requirements as lodging, transportation, living expenses, books and teaching materials must be provided in many instances in order to improve training activities.

Plans for technical assistance in health training to countries in the Central and West African Region must permit a reasonable degree of flexibility in implementing the project over the proposed five-year period. It is to be anticipated that changing situations in the region and each country will affect the practicability of various approaches envisioned for the project at this time. Project directors must be in a position to respond to these changing conditions; to revise approaches according to experience and to take advantage of opportunities that will be presented by other developmental projects in health care systems, training, and health services as they mutually reinforce each other; and to participate in communicating and exchanging their experiences.

IV. Support for Regional and National Surveillance Systems

Simultaneous with other requirements for proper performance, the information about health and disease itself must be improved. Such support for regional and national surveillance systems is merited both in its own right and as a natural adjunct to the manpower training proposals. In its own right, investment in strengthening surveillance systems is the single most important means for protecting the investment which national ministries of health, WHO and AID, have made since 1966 in freeing the region from smallpox. As an adjunct to the manpower training programs, the surveillance system offers the potential for orienting training to priority disease problems, and for assessing the impact of programs on morbidity and mortality.

WHO has begun strengthening regional and national surveillance systems by establishing an epidemiological center in Abidjan, and by funding the establishment of epidemiological units in several countries of the region, and in several states in Nigeria. It is essential that AID assist Central and West African Regions (countries)

in this effort. Augmentation of the staff of Abidjan so that center can undertake certain training functions in epidemiology, expand its role in providing epidemiological consultation to the countries of the region; provide close liaison among the various national and state epidemiological units being established; promote and assist in the use of data in planning, programming and evaluation, at the request of individual countries; and perform evaluations concerning the effectiveness of various types of health service delivery programs. In addition, this center must cooperate closely with the WHO training programs at Lagos, Lome and/or at the other centers so that they would have the benefit of epidemiological expertise in planning their curricula, and the epidemiologists would have the benefit of learning pedagogic methodology to strengthen their own training efforts. Additional support for other regional and national surveillance systems will be required.

A core staff to combine administrative, teaching and epidemiological consultative activities will be necessary. This staff should be responsible not only for a center training program, but should participate in field consultation, evaluation and follow-up of former trainees.

To perform both its training and epidemiological functions, the center will need the services of an epidemiological laboratory. Laboratory facilities exist in Abidjan, in the various WHO regional reference laboratories, and the Center for Disease Control. A new laboratory building is not necessary at this time, but the center should have adequate funds to purchase needed laboratory services. An individual (such as a biochemist, microbiologist or pathologist) with broad expertise in laboratory procedures to assure that the center's needs were being adequately met by these various laboratories is desirable. He could also provide instruction in laboratory methodology and work with all the laboratories of the region to standardize laboratory methodology in epidemiologic investigations. Other personnel such as an administrator, editorial assistant, and additional data processing staff may eventually be necessary.

There are two broad training functions that the epidemiology center should undertake: the training of physician-epidemiologists who would be expected to return to their own countries to direct national programs, and the training of individuals similar to the operations officers used in the measles/smallpox program to apply epidemiological and management skills to implement specific disease prevention and control programs at the sub-national level. For each of these two categories of trainees, three types of training experience might be considered. The first would be short-term (six to eight weeks) training courses at Abidjan. The second would be short-term (one to two weeks) training courses, seminars, and refresher courses given to personnel within their own country, using facilities of national training schools, demonstration projects, or other local resources. The third would be long-term (one to two years) programs for a few candidates selected from the above training experiences, where the candidates would work as counterparts to the center staff, receiving on-the-job training. The last type of training experience has proved very successful in recruiting young American physicians to long-term careers in public health and preventive medicine through the Epidemic Intelligence Service of the Center for Disease Control. (It should be noted that other countries, including the United States, would benefit from being able to send medical officers for one or two years of training in this context.)

Ideally, a surveillance team, functioning as a unit should be trained as a group, both at a center such as Abidjan and at national training centers. The knowledge of each other's responsibilities, the ability to function as a coordinated team, and the understanding and appreciation of the entire surveillance system will all be enhanced. In team training particular importance can be placed on the value of immediate use of epidemiologic data. The circumstances of operation of most groups will preclude the use of sophisticated equipment; hand tallies, simple analyses and rapid action are the keys to effective response. Prompt investigations are more important to the prevention of disease than time-consuming machine manipulation of data.

The desired end, point of all epidemiologic activity, is the use of data for programmatic purposes. For this reason, and because the mother/child population is of prime concern, the center should include in its staff individuals knowledgeable in the maternal and child health field (pediatrician, nurse midwife, etc.) to advise on the suitability of data, to facilitate its field application, to provide program consultation and liaison with other training centers. This special attention to the three-way linkage of information production to program application to training will provide a coordination now lacking in many situations, and hopefully create an environment for application and evaluation of the resources of the Abidjan center.

Other staff requirements of the center should include individuals skilled in record keeping, tabulation and analysis. One individual should be sufficiently well-trained and experienced as to advise and assist in statistical curriculum planning, teaching and program evaluation.

V. Improvement in Health Delivery Systems

The health delivery system itself must be improved if the trainees are to perform successfully. As long as ambiguities of responsibility, confusion in organization, absence of procedures, ill-defined job descriptions and relationships exist, the individual's performance is compromised. He must have proper equipment and adequate logistic support. Perhaps above all, he must have the respect and encouragement and moral support that gives him motivation, job respect and recognition. Many of these are responsibilities of top management, where training and indoctrination will be important. How these improvements in the working environment are to be attained is a subject of great concern that must be the responsibility of those operating the health systems.

VI. Improvement in Health Planning

Health planning is the element which integrates the other components of the total health system. The objectives of health programs are determined by the health needs as portrayed by the information from the surveillance systems. The actual provision of service or program execution is dictated by many factors, not the least of which are human and materiel resources. The estimates of resources are based on the requirements of specific programs; priorities are partially dependent upon severity of need, availability of appropriate resources, probability of accomplishment. Accomplishment, as measured by evaluation, relates to the specificity and realism of goals, successful management in program execution and availability of resources.

These few elementary interrelationships among selected components of planning--definition of objectives, program implementation, establishment of priorities, determination of resources and the ultimate evaluation, indicate where some of the weaknesses in health planning can occur. The weaknesses in the health plans of West and Central African countries, as pointed out by the planning staff of WHO, Brazzaville, lie in unrealistic goals, limited resources, inadequacies of manpower and failure to integrate health plans with other elements of the national plan.

Successful health training programs start with realistic planning. The deficiencies in manpower and resources, the inadequacies of management and failures of coordination must ultimately be remedied. The problem is a cyclic one; the most logical point of initial interception would again appear to be manpower development.

VII. Regional Health Organizations

The assistance being proposed by AID in this project cannot in itself support all these requirements. AID must, therefore, seek to join its resources with those of other regional and international agencies and with those of the host countries themselves in an attempt to achieve these ambitious goals. Three major health organizations exist within the region of West and Central Africa: WHO, OCCGE, and OCEAC. WHO is the largest and the oldest, and is the only one with representatives in all of the countries within the region. It is logical that AID should work closely with WHO. Although covering only the Francophone countries of the region (with the exception of Guinea), the OCCGE and OCEAC are also both worthy of recognition and support.

While none of these organizations are ideal, they have strengths which more than offset their weaknesses. WHO has world-wide recognition and respect as a health organization, and is engaged in virtually every aspect of health work. It has experienced staff in each of the countries of the region, and is now operating regional training programs at Lagos and Lome, and a regional epidemiological center at Abidjan. Both OCCGE and OCEAC recognize the limitations in their charters and both are attempting to "Africanize". Both emphasize the need to apply simple effective techniques through mass campaigns to control the region's major endemic diseases as an intermittent measure, at the same time working to develop the health infrastructure on which WHO has set its sights.

The importance of involving these organizations in the planning of a new project is self-evident.

VIII. Project Development and Administration by AID

The team is fully aware that the information it has been able to compile during the course of its six weeks' trip to West and Central Africa, as helpful as that experience was, is not a sufficient basis for the complete development of this project. There is a major need for further African national input in the proposal. Representatives of the principal countries concerned as well as staff of WHO, OCCGE, and OCEAC, and other appropriate international organizations should be asked to criticize it, to meet as a group to discuss it and recommend modifications, and particularly to advise on its implementation and evaluation. To assist in keeping the project effective and responsive to the needs of the region, this expert regional

advisory group might also be charged with a second function—the reviewing of the project objectives and operations of six-month intervals during the developmental stages (which will last for at least a year) and at a minimum of yearly intervals thereafter. This group may need expert consultants from within and from outside the region in the fields of epidemiology, public administration, public health nursing, teaching methodology, health education and manpower development. While being delegated no responsibility for operations, the opinions of this groups would be expected to be given emphasis in defining and implementing policy. Their opinions would also be important for choosing methodology to determine objectively how well project goals were being met.

There also exists a need for someone stationed within the region to serve as the principal liaison among WHO, OCCGE and OCEAC, the individual countries, and AID as the details of implementation are developed. His role ought to be broader than providing internal coordination for AID, however. A major portion of his efforts should be directed toward assisting in preparing a receptive environment for project activities and objectives within individual Ministries of Health and by means of participating with WHO, OCCGE and OCEAC in regional seminars, workshops, and conferences aimed at formulating regional educational and surveillance strategies, and gaining their acceptance.

The importance of dedicated and capable staff to the success of this project cannot be overemphasized. Project impact will depend not only on each individual technician performing well within his particular field of expertise, adapting his practice to fit the needs of the region, but also on his ability to function as a member of a team. Each individual must be an effective ambassador for the new technology he brings—presenting it to students and government policy makers alike in a manner which objectively demonstrates its advantages without forcing it upon them by weight of technologic superiority.

AID has not infrequently chosen to contract out projects to an American university, which is charged with providing staff and administrative support. While this approach may offer certain administrative conveniences, it is not recommended for this project. The breadth and caliber of advisors and technicians required will not easily be found within the resources of a single university, and the project goals relate to implementing policy appropriate to the region, not to meeting the dual needs of a university and the region.

IX. Evaluation

While it is rational at this stage of the project to devote a major investment in planning for development and implementation, mention of phasing out plans is also merited. It would be useful from the project's beginning to plan for an independent comprehensive evaluation of the project to be completed by the end of the third year of full field operations, i.e., having given the total field staff of the project two years of work opportunity. Although this is relatively early in the life of the project, an evaluation of this sort needs to be completed early enough to permit the correction of faults uncovered, and early enough so that the results can be utilized in AID budget cycles affecting any support beyond the initial five years. From the beginning, AID should recognize that five years is an extremely short time during which to achieve project goals, and funding for a longer period of time should be considered.

Most of the evaluation measures used in the initial phases of the project will be "process" rather than "outcome" measures. (A "process" measure might be "number of faculty taught" or "number of new national training centers operating effectively" in contrast to an "outcome" measure, such as "reduced infant mortality rates" from conditions specified as project targets.)

X. Role of Other Donors

The determination of other possible donors to the project, and solicitation of their interest and support is better done by AID staff than by the mission. The staff are more familiar with the interest and resources of such donors, regulatory, legal and diplomatic requirements for liaison and solicitation, and will be responsible for continuing negotiation.

There are, however, certain activities which other donors might support—activities which will greatly enhance the project, increasing its scope and effectiveness. The value of such support from regional, international and national organizations should be measured not only in terms of the magnitude of support and the nature of the contribution to the training program, but also viewed in the sense of their participation, the interest and responsibility generated and the possibility of support for other health-related interests in West and Central Africa.

Donor interest might be solicited in the following:

1. Support of housing for trainers and staff at training center—either by outright grant or donation, or by long-term, low interest, self-liquidating loans.
2. Provision of scholarships, stipends and support for trainees.
3. Provision of materiel, supplies, equipment, and transportation for training centers, especially national field training centers.
4. Support of additional national and regional field training centers.
5. Sponsorship of conferences, seminars and workshops in connection with the expanded training program, either for evaluation, exchange of experiences or technical impact.
6. Support for technical expertise.

There are probably other potentials that prospective donors may themselves suggest, but the justification for the foregoing has been established.

XI. The Realistic View

A major new proposal such as this appropriately creates enthusiasm and excitement, and stimulates hopes and desires. Such optimism must be tempered by a sober assessment of the realities of the situation.

The impact of the project will be compromised by a number of factors. The first is budget—funds far beyond those conceivable for this project, even by the most enthusiastic supporters, will be required to make a major impact on the training needs of this region of Africa.

The second limiting factor is time. The major strategy is the training of trainers. The time required for this, plus the further time necessary to develop resources for them and put their experience to work, is going to delay the impact of their influence on the quality and quantity of health services for a number of years; perhaps this may never become measurable.

The project's impact will be limited by a third factor: the basic lack of resources in the region. Graduating excellent trainers from regional schools will improve training little if they are provided with no new teaching resources when they return to national schools. Improving the quality and quantity of information available to Ministries of Health through the surveillance system will not have a significant impact on morbidity and mortality unless their response capabilities are also strengthened.

A fourth factor also comes into play: improved teacher quality and improved surveillance system data will not in itself alter the various national medical care systems of which they are components. Work will be needed within the individual Ministries of Health to modify existing teaching, planning/management, and health service delivery systems to be responsive to these new project inputs. Without broad gauge support from the Ministries, these innovations will risk being crushed by the routine of bureaucratic operations.

The impediments do not in our minds mean that the investment should not be made—on the contrary, every dollar is desperately needed, but its expenditure must be wisely guided. The need to assist individual Ministries of Health, as well as regional organizations, not only through this project but by possible related and supplementary projects must be recognized. Maximal impact from regional training and support of surveillance systems will be diminished if this is not done.

The foregoing obstacles are real. They must be recognized in developing the program and in setting the standards by which program success or failure is measured.

RECOMMENDATIONS

I. Summary of Project Objectives

The guidelines established for this project delineated three major areas in which AID would be interested in assisting the countries of West and Central Africa on a regional basis: surveillance, manpower training, and health planning. Given the nature of the health problems and the resources existing within this region, the team feels that the funds made available through this project should be directed toward the prevention rather than the cure of disease, should be directed toward rural rather than urban populations, and should give first priority to the 65 percent of the population composed of mothers and children.

Our experience, substantiated by the opinions of many knowledgeable Africans and other professionals with long experience in that region, leads us to believe that manpower development and training provide a basic approach for strengthening preventive health services and for achieving objectives in surveillance and health planning.

Within the area of training, we believe priority must be given to training of trainers; to the ultimate training of that group of health auxiliaries who actually provide service, to administrative and supervisory personnel and to the disciplines necessary to conduct surveillance programs--epidemiologists, health statisticians, etc.; to the development and strengthening of national field training facilities for practical, on-the-job training; and to increasing emphasis on teaching methodology, supervision, administration and program management in the curricula. The management of regional training programs should be supplemented, and increased efforts devoted to involving professional schools in the training of public health workers for governmental health programs.

The effect of the training effort on surveillance systems is particularly important. It should be reflected in prompt recognition of disease, increased efficiency in reporting, and greater utilization of data.

The terminal objective for this project is to improve the quality of life for a maximum number of persons as measured by morbidity and mortality rates. It is assumed that lower rates are associated with a higher quality of life.

However, it is unlikely changes in morbidity and mortality rates within the region as a whole can be used to assess the success of the project. Other more immediately measurable criteria are necessary. Intermediate measures of process will be required so that the project's success in meeting sub-objectives, such as increasing the efficiency of reporting, or increasing the number of health workers trained to function according to specified criteria, can be monitored as the project progresses.

II. Recommendations

To achieve the above general objectives, it is recommended that:

1. AID devote substantial financial support for a minimum of five years to the strengthening of the preventive health capabilities of the countries of West and Central Africa, with a project giving high priority to manpower development and training.

2. AID develop and implement the proposed project in cooperation with the African Regional Office of WHO primarily, supporting and strengthening other regional organizations, such as OCEAC and OCCGE, working through WHO.

Discussion—The project is envisioned as a collaborative effort by AID (and hopefully other donors) to support and complement the WHO-assisted program, fully integrated with that program. AID will conduct such monitoring and evaluation of the project as may be required by Congress, the State Department and the Agency.

3. The general purpose and more specific objectives of the project be the strengthening of the health capabilities of the national government of West and Central Africa, working in collaboration with WHO and other regional organizations.

The primary modalities should be:

- a. strengthening the administration of the WHO training program,
 - b. expanding the regional capacity for training, with the emphasis on training of trainers, supervisory and administrative personnel,
 - c. expanding the training of surveillance and epidemiologic personnel and extending the services of the Abidjan epidemiology center (bilingual),
 - d. assisting in the development and initial operation of selected national field training centers, where practical training could be provided under supervision and in an environment generally resembling the trainees' working situation,
 - e. strengthening the relationships among regional organizations and Ministries of Health on the one hand, and national professional schools (particularly Medicine) on the other, in order to enlist academic assistance in training programs and to encourage consideration of practical concepts and problems of community health in academic education.
4. AID assist in the development of regional training facilities.
 - a. Focus regional assistance on the training of trainers who will return to teach in national institutions.
 - b. Focus regional training assistance in three areas of preventive medicine: communicable disease prevention and control, environmental health, and maternal-child health.
 - (1) The training of three categories of personnel should be emphasized:
 - (a) physician-epidemiologists,
 - (b) health superintendents/health inspectors, and
 - (c) public health nurse-midwives.

- (2) The training curriculum for all personnel should include the following elements, with emphasis on each being varied as appropriate for the particular categories of personnel being trained:
- (a) refresher training encompassing skills appropriate to specific position requirements,
 - (b) teaching methodology,
 - (c) surveillance methodology,
 - (d) management skills,
 - (e) team approach to delivery of basic health services,
 - (f) health education skills.
- c. Provide WHO centers (Lome, Lagos, Abidjan) with necessary resources to offer consultative assistance to national training stations.
 - d. Explore jointly with WHO means of providing the training centers at Lagos and Lome, and the epidemiological center at Abidjan, with the resources necessary (including housing) to discharge their training and consultative responsibilities.
 - e. Explore jointly with WHO means of strengthening ties between classroom and field training at WHO training centers.
 - f. Increase pre- and post-training contact between regular training staff and trainees in their employment situations.
 - g. Explore jointly with WHO the establishment of an additional regional training center in northern Nigeria.
 - h. Explore jointly with WHO and other regional organizations the specific needs for, and of other existing regional training centers for single categories (disciplines) of health personnel.

Discussion—The training at both Lome and Lagos will need to be considerably reoriented and will require additional resources if it is going to be directed at training teachers, providing consultation to national training centers and increasing field contact between staff and trainees. In the meantime, technical refresher training will have to continue until additional national resources are available. The addition of permanent staff qualified to teach educational methodology and public administration, as well as staff for technical subjects is required.

The additional center at Kano (or Kaduna) appears warranted by the opportunity to serve one-fourth of the population of West Africa—people of differing racial, cultural, economic and educational backgrounds.

5. AID assist in the development of a bilingual WHO epidemiology service center at Abidjan in order that it may become a major epidemiology training and consultation resource.

Discussion—This center as envisioned would, in addition to collecting, analyzing, interpreting and disseminating epidemiologic data, assist in planning and developing national surveillance systems, provide epidemiologic consultation and investigative assistance to countries on request, serve as the major source of epidemiology training for the region, advise and assist in translating surveillance data into program action, and assist in evaluating training programs.

The center must have broad functional responsibilities and adequate resources, including statistical and computing personnel and equipment, laboratory services. These are required if it is to train epidemiologists to lead and direct national surveillance programs, provide the epidemiologic component in the education and training of other disciplines, and provide the liaison between epidemiologic surveillance and program directors (M.C.II., Environmental Sanitation, etc.). Further functions should include the coordination of teaching at the Abidjan center with that of the other two centers, follow-up consultation and assessments after completion of training, and setting up short-term on-site training seminars and courses.

We cannot emphasize too much the significance of the development of this important resource. It is the key to preserving the accomplishments of the smallpox/measles program; it is essential to communicable disease control and the ultimate provision of adequate health information for planning, executing and evaluating programs. This is a bold innovation for a developing area that has almost unlimited potential. Its concept and support must not be compromised.

6. Assist WHO with the further development of national and other regional surveillance systems, particularly their training component. Specifically, AID should:
- a. Jointly explore with WHO, OCEAC and OCCGE the possibility of assigning the present epidemiologists in Bobo Dioulasso and Yaounde through WHO to serve as liaison between the Abidjan Epidemiological Center and the OCCGE and OCEAC, and the provision of any additional epidemiological resource in the Francophone countries by this means.
 - b. Explore with WHO the continuation of the surveillance demonstration project in the Benue Plateau State of Nigeria, under WHO auspices, retaining present personnel if possible. Other surveillance demonstrations should also be developed, devising other models as appropriate.
 - c. Explore jointly with WHO mechanisms for linking the activities of the Abidjan Epidemiological Center with the training activities of Lagos and Lome as a means of focusing epidemiological training activities on improving the efficiency and effectiveness of the delivery of preventive medical services.

Discussion—Consideration might be given to mechanisms such as:

1. Using staff from Abidjan to assist with the training given in the other centers, and vice versa.
2. Using surveillance and other epidemiological information analyzed at Abidjan to orient training courses toward prevention of the major causes of morbidity and mortality, or toward prevention of major potential causes.
3. Using the staff of Abidjan to assist the staff of other training centers to evaluate:
 - (a) the performance of teachers who have returned to national schools following training, and
 - (b) the impact that students of such teachers are having on reducing morbidity and mortality rates within the areas to which they are assigned to work after having completed training.
7. AID provide support in collaboration with WHO (and other donors) to the development and support of national training centers, particularly field training stations for practical job-experience training.

Discussion—Such centers must realistically be developed on a selective basis where they serve major populations, the sponsoring country providing adequate resources for the maintenance and operation of an acceptable health services system, where training can be superimposed on service without compromising the quality of service and where a need is demonstrated. A sine qua non is the submission of an acceptable plan for a center from the sponsoring country or professional school, including plans for support at the eventual phase-out of WHO-AID support, and agreement to periodic joint (sponsor-WHO) evaluation.

The centers at Lome, Lagos and Abidjan should provide consultation and short-term advisory service in development and operation of these national field training centers.

8. AID, through this project, provide substantial resources for the stipends and support of trainees in this project at both regional and approved national training programs.

Discussion—The importance of such support is self-evident, but it is particularly important the trainee not be forced to make a major financial sacrifice to receive training. The other aspect of this recommendation is the implication WHO will approve the choice of national schools for which trainees will be stipended. This should automatically assure the wise use of funds, assist in improving the quality of training and perhaps lead to a regional accreditation system. Priority of stipend support should be compatible with the priorities of training recommended in this program, and should be restricted to those national schools which support the objectives of the programs.

9. Assist in the immediate selection, training (if necessary) and support of African nationals counterpart personnel to replace foreign professionals in the operation of the project program.
10. AID explore with other donors their possible participation in this project, including financial support for items such as the following (but not limited thereto):
 - a. fellowships and stipends,
 - b. equipment, including vehicles, supplies and material as appropriate to training-related and demonstrated activities,
 - c. housing for trainees and staff where necessary, and particularly at regional training centers,
 - d. conferences, seminars, workshops, etc., designed to disseminate information and experience from national and regional training programs,
 - e. technical expertise.

Discussion—It is important this exploration be done before the project is completely planned, in order that donors have an opportunity to participate in the development of the project.

11. AID explore jointly with WHO the budgetary requirements for this program.

Discussion—For guidance, we consider the approximate percentage division of total resources as generally appropriate:

WHO Regional Office training program administration, contingencies, and support of professional school—Ministry of Health Liaison	10
Stipends and fellowships	20
Regional training centers	25
National Field Training Stations	25
Abidjan Epidemiology Center	20

Obviously this distribution will have to be altered as the program develops, with increasing support for trainees as capital outlay decreases. Suitable resources must be maintained for salary increases for personnel.

12. Administrative agreements with WHO provide for a clear understanding of AID's administrative relationship to the project; AID's responsibilities for periodic monitoring, comprehensive evaluation at the end of three years of operation; adequate advisory and consultative services for the project; definition of the role of any assigned AID technicians, and support of African counterparts for expatriate technicians.

13. AID appoint an advisory group of selected governmental and professional leaders from the African countries (some countries may contribute several). WHO and other regional organization staff to provide further African input and reaction to this proposed project (or appropriate modification); and that AID convene these individuals as a group, before any proposal is submitted to WHO and/or other possible donor agencies.

Discussion--The African nationals should be selected for their competence, interest, recognized stature and ability to further participate in an advisory capacity, and not as representatives or advocates for any country. Regional organization staff should not be expected to commit their organization, but to serve as highly qualified technical experts. The group should have available such expert consultants as necessary, particularly in subjects such as educational psychology and administration, public administration, epidemiology, public health administration, and public health nursing. Consideration should be given to the continuing periodic use of this advisory group in evaluating the program.

14. AID, in selecting any personnel who may participate in this project, give particular attention to the calibre of staff recruited.

Discussion--Even recognizing the problems of recruitment, the quality of staff cannot be compromised. A unique United States contribution may be from those fields where the United States has developed outstanding technology, such as educational methodology and epidemiology. AID should also be prepared to supplement WHO salaries (with WHO approval) for outstanding non-U.S. participants in the development of this program. The *sine qua non* for success is the high quality of staff.

15. AID and WHO conceive of this program not as a resource limited to West and Central Africa (though it should be designed to African requirements), but as a potential WHO resource to serve other countries and regions when appropriate.

Discussion--Although this must be designed to serve West and Central Africa, there are potentials in this project for other regions of the world. The countries must select the trainees (and provide the teaching and work opportunity after training), and WHO reserve the right to approve and accept all trainees, keeping in mind the international potential of this project extends beyond education and training. The appeal to other donors may be increased by these considerations.

16. AID, in its efforts to seek collaborative support from other agencies, and as a supporting agency, provide funds for the development of health programs such as maternal and child health, family planning, disease prevention and control, etc.

Discussion--The training of personnel could become a relatively sterile exercise unless support as necessary is given to the programs in which these trainees will apply their skills. The lack of material resources often acts as a major constraint in the development of basic health infrastructures.

In developing and supporting other health projects in West and Central Africa, AID should seriously consider their potential as supportive training resources and carefully coordinate the development of such projects with WHO and regional organizations.

17. A schedule or timetable for the project be developed to provide interim goals, to assist in ultimate evaluation and to give due regard to phasing out, or continuing support. The following is attached for discussion purposes.

**Suggestions for Project Phasing
(dating from date of receipt by AID)**

0-6 months

1. Submission of APHA report to WHO, Geneva and Brazzaville, OCCGE and OCEAC and potential donors for review and comment.
2. Select and convene recommended Advisory Group for review of report, after earlier submission to members of the group.
3. Submission of AID proposal to WHO, Geneva and Brazzaville, and other potential donors.
 - a. Further develop details of project.
 - b. Negotiate as necessary.
 - c. Sign appropriate agreements.
 - d. Solicit support of other donors.

7-12 months

1. Recruit additional WHO (and any AID) staff.
2. Staff orientation, to include, for example, program objectives, national, governmental, cultural and health; social requirements; consultative processes; and relationships to other professional disciplines.
3. Publicize expanded training program to countries of West and Central Africa.
4. Initiate study of surveillance systems and specific course content needs for training, assess national training schools and national demonstration project needs and opportunities.
5. Solicit, review and accept or reject national plans for Field Training Stations.
6. Review project development with expert advisory group and technical consultants.

12-18 months

1. Develop expanded plans for training programs, including other donor input.

2. Recruitment and selection of candidates to participate in training activities.
3. Recruitment and selection of additional technicians as necessary.

18-36 months

1. Full project operation.
2. Annual meeting of Advisory Group.

37-42 months

1. Full operation.
2. Independent evaluation and report to WHO, AID, etc., and expert advisory group.

43-48 months

1. Modified (on basis of evaluation) program operation.
2. Decision re continuation of phase-out at end of month 60.

49-60 months

1. Continued operation.
2. Final evaluation and report.
3. Develop plans for continued operation beyond 60th month, if appropriate.

Appendix I**REFERENCE MATERIAL**

1. Basic Agreement No. AID/csd/2604-Task Order #5, AID/APHA.
2. Notes for the Record on Discussions with AID Mission to the WHO Regional Office, Brazzaville, November 10-11, 1971, Spencer et al.
3. Preliminary Trip Report--West Africa, September 11-October 3, 1971, Marshall et al.
4. Population Program Assistance, AID Office of Population, October 1970.
5. WHO Regional Office for Africa--Final Report and Minutes of Meetings, 21st Session of WHO Regional Committee, Brazzaville, September 8-14, 1971.
6. WHO Regional Office--Inventory of National Training Resources, 1969.
7. WHO Africa Regional Office: Proposed Program and Budget Estimates 1973 (AFR/RC21/2).
8. Evaluation, Smallpox Eradication and Measles Control Program, West and Central Africa, January-March 1971 (AID/APHA Contract No. AID/csd/2604-Task Order #2), Dyar et al.

Appendix II

NOTES FOR THE RECORD ON DISCUSSIONS WITH AID TASK FORCE* Regional Office--Brazzaville 25-30 January 1972

I. INTRODUCTION

The visit was a follow-up of that made to the Regional Office in November 1971 by an AID headquarters group which was reported upon in "Notes for the Record" dated 11 November 1971.

The Task Force of AID consultants comprised:

Dr. R. Dyar	Epidemiologist/PHA
Dr. G. Lythcott	PHA/Educator
Dr. R. Henderson	Internist/Epidemiologist
Miss J. Anderson	Health Educator
Mrs. L. Yergan	Nurse Educator

Discussions were held at the Regional Office on 26, 27 and 28 January 1972, while on the 29th, members of the group had discussions with the UNICEF Representative, Central African Area Office, Brazzaville.

II. DISCUSSIONS

A. The Task Force's Brief

This was to assess opportunities for developing and for the improvement of health capability and health organizations of the countries of Central and West Africa, working through regional organizations.

These general terms were viewed as imposing two limits on the Task Force:

- I. Activities which could be supported, evidently excluded service projects but comprised, rather, assistance to the countries to provide their own services. Three broad areas were identified:
 - Health information; i.e., surveillance as a means of support and evaluation of health programs, not necessarily limited to communicable disease programs. This would include collection, compilation, analysis and utilization of data.
 - Manpower development, including training.

*Prepared by Staff, WHO Regional Office, Brazzaville, January 28, 1972.

- Health planning at two levels, namely, formal systematic planning resulting in the production of "Plan" document; and more pragmatic planning for performance and improvement in day-to-day activities.

These three broad subject areas were recognized as being linked with delivery of health services.

2. Regional organizations. No USAID action in the field of health would be undertaken without the collaboration of WHO, but that of sub-regional and other organizations in Central and West Africa could also be envisaged. In this respect, improvement of the coordination existing between organizations assisting in the field of health was assigned high priority.

There was also interest in the activities of international and other donor organizations engaged in the area with a view, wherever possible, to attracting their resources as a contribution to the total effort.

In the course of discussion, a third constraint on the scope of the Task Force's mission was identified, namely, finance. It was indicated that while no firm decision had yet been taken, it was anticipated that the AID funds which could be made available would be of the order of \$1 to \$1.5 million annually for five years.

Potential additional support could, however, be envisaged from CDC, the AID's Family Planning Program (with a budget of \$125 million x 2 years), expertise from any source, as well as other organizations, e.g., FED and FAC.

B. Purpose of the Visit

The Task Force expected that as a result of the visit to the Regional Office its members would:

- Become familiar with the needs and resources of the countries concerned; WHO's interests, policy and activities which would serve as a guide to AID;
- Explore opportunities for assistance to the countries;
- Learn of the WHO Representatives and their activities, especially those in the countries to be visited by the Team, namely, Cameroon, Nigeria, Upper Volta, Ivory Coast, Ghana, Togo, Liberia, Sierra-Leone and Senegal.

C. General Review

Staff of the Regional Office in turn presented a general review of the situation and policy statements on the following main subjects:

- **Manpower Development**
- **Research**
- **National Health Planning**
- **Communicable Diseases Control**
- **Vital Health Statistics**

D. Detailed Review

At a subsequent session a more detailed review for the countries of the Zone of interest was presented along the following lines:

- **Priority health problems as outlined in general terms in Regional Committee Resolutions, AFR/RC21/R1, R4, and R6, viz:**
 - **Education and Training**
 - **National Health Planning**
 - **Development of Basic Health Services**
 - **Communicable Disease Control**
 - **Environmental Health**

and in priority zones described in document ARF/RC21/8:

- **Long-term Planning;**
- **Existing WHO-assisted projects in the countries. These were presented for each of the AFR WHO sub-regions concerned, grouped under the above five priorities.**
- **Priority interests of other organizations active in the area. This was presented in respect to: UNDP, UNICEF, OCCGE, OCEAC, FAC, FED AND IBRD;**
- **Common applied research needs in the area, identified under the above five priorities;**
- **High-risk ventures, defined as either identified needs which could not be immediately financed by WHO or activities of interest which do not readily fit into the framework of WHO policy;**
- **The Regional Office's views on possible areas of AID assistance.**

III. OUTLINE OF TASK FORCE'S PROPOSALS

The tentative proposals formulated by the Task Force were presented as an item for discussion only at this early stage of their mission in the African Region. These had been formulated partly in terms of the five health priorities of the Region and partly in terms of AID's requirements.

In general, these proposals focused on training and manpower development but had been formulated within a general framework which would permit exploitation of other forms of support for the total WHO training program for the countries concerned. The proposals comprised the following elements:

- A. Strengthening of the administration of the WHO training program by various methods which may be identified as falling within the needs of WHO.
- B. Expansion of the regional capacity for training in the field of personnel of the basic health organization with emphasis on training of trainers and of supervisory and administrative personnel.
- C. Expansion of the training of epidemiological service personnel, both professional and auxiliary.
- D. Broadening the scope and relationships of Lagos and Lome Training Centres and the Abidjan Epidemiological Surveillance Centre.

This element envisaged increasing the emphasis of training presently assigned by WHO to the Abidjan Epidemiological Surveillance Centre so that with those at Lagos and Lome for health service personnel (TCHSP), it could be considered also as a Training Centre.

For these three Centres, the proposals envisaged were as follows:

- Establishment of a relationship with selected ministries of health, in particular reference to development and/or further development of existing national training centres.
- The national training centres would be engaged in the training of nationals and the operation of field training areas where methods of improving delivery of health services could be taught.
- These field training areas could, under varying conditions obtained in the countries, undertake to develop different approaches to, and the assignment of, different emphases on various aspects of health service delivery. They should be developed in such a way as to attract assistance from other sources.
- The Abidjan Centre would assume responsibility for:
 - The training of epidemiological service personnel as well as introduction of an epidemiological surveillance component into the programmes of the TCHSPs;

- Consultations in health services, as required in the field training areas, with the object of linking epidemiological surveillance activities with those in general health services;
- Evaluation in the field of the training carried out by the TCHSPs, in conjunction with the national authorities.

E. Strengthening of the WHO relationships with academic training institutions via the Ministries of Health. This could be effected through the Abidjan Centre or directly through the Regional Office.

The main objective would be to ensure that the medical schools remained in close touch with local health problems and practice. A possible example could be joint ministries of health/medical school conferences sponsored by WHO.

F. Implementation

Details for implementing the above proposals were yet to be worked out, but in general, possibilities were envisaged in:

- Reinforcement of staff at the Regional Office;
- Reinforcement of staff at the Training Centres;
- Assistance to the field training areas through the ministries of health;
- Stipend support for trainees.

Appendix III

ALPHABETICAL LIST OF INDIVIDUALS INTERVIEWED
 BY APHA-AID AFRICA HEALTH MISSION
 January 23-March 5, 1972

Brazzaville--WHO Regional Office--January 26-30

Dr. O. Adeniji-Jones	Director of Health Services
Dr. Charles	Assistant Director of Health Services I
Dr. Vysohlid	Assistant Director of Health Services II
Dr. Atayi	Assistant Director of Health Services III
Dr. Geller	Assistant Director of Health Services IV
Miss Potts	RA/OHS(NURS) I
Dr. Noguer	RA/ESCDC(MAL)
Dr. Paviot	RA/ESCDC I
Dr. Abou-Gareeb	RA/ESCDC II
Dr. Shimia	RA/OHS(CHE) II
Dr. Lyonnet	RA/OHS(CHS) II
Dr. Sofoluwe	RA/OHS(CHS) IV
Dr. Agbessi	RA/FH II
Mr. Wilson	RA/EH I
Mr. Edwards	CAF
Mr. Roy	STAT/EU
Dr. Dakey	RA/ET I
Dr. Kondakis	RA/ET II
Dr. Quincke	RA/HLS

Cameroon--Yaounde--January 31-February 2

Robert Baldwin	CDC Operations Officer, OCEAC
Dr. C. Gateff	Acting Secretary General, OCEAC
Ian Gilchrist	Canadian Epidemiologist (CUSS)
Charles Grader	USAID Director
Lewis Hoffaker	U.S. Ambassador, Togo
Dr. S. Joseph	USAID Regional Health Advisor
Ivanka Markovic	WHO Nurse Consultant, Cameroon Ministry of Health
Dr. Monekosso	Director, Centre Universitaire des Services de Sante (CUSS)

Ghana--Accra--March 1-4

Lt. Col. J. C. Adjete	Commissioner of Health, Ministry of Health Ghana
Mrs. Afroko	Nurse, National Family Planning Program
Dr. J. Amah	WHO Representative
Dr. Amorin	Acting Head, Department of Preventive and Social Medicine, University of Ghana Medical School

Dr. Ashetey	Department of Preventive and Social Medicine University of Ghana Medical School
Dr. Baddoo	Acting Director of Health Services, Ministry of Health, Ghana
Dr. E. G. Beausoliel	Deputy Director, Medical Services, Ministry of Health, Ghana
Dr. Donald Belcher	Acting Chief of Party, U.C.L.A. Contract Team, Danfa Rural Health-Family Planning Project
Bruce Carlson	Population Advisor, Ford Foundation
Dr. Derban	Department of Preventive and Social Medicine, University of Ghana Medical School
Dr. Silas Dodu	Dean of the Medical School, University of Ghana
Burton M. Gould	Assistant Director, Program, USAID
Dr. Frank Grant	Senior Medical Officer, Epidemiology, Ministry of Health, Ghana
Dr. N. Hammond-Quaye	Senior Medical Officer, Planning, Ministry of Health, Ghana
Fred L. Hadsel	Ambassador, U.S. Embassy
Samuel Kurafo	Deputy Director, National Family Planning Program
W. Haven North	USAID Director
Miss Lois Richards	Program Officer/Operations, USAID
Glenwood Roane	AID Regional Population Officer

Liberia--Monrovia--February 10-13

Miss Herlinda Castro	USAID, MCH Project in the Division of Preventive Services, Monrovia
Miss Winifred Evans	USAID, MCH Project in the Division of Preventive Services, Monrovia
Miss Ann Middlemas	National Medical Center, John F. Kennedy Hospital Project
Randy Moser	Operations Office, USAID, Smallpox/Measles Program
Dr. Hans Van Volten	Medical Director, Firestone Rubber Plantation, Harbel, Liberia

Ivory Coast--Abidjan--February 6-10; February 16-19

Dr. Aye	Minister of Health, Abidjan
Dr. Blanc	WHO Representative
Dr. Brou	Director of the Cabinet, Ministry of Health
S. Coganoglu	Regional Office Program Officer, UNICEF
Professor Delores	Public Health Institute
M. Diwouta	Area Office Program Officer, UNICEF
Dr. Heuser	U.S. Embassy, Councilor for International Affairs
Cheikh Hamadou Kane	Regional Director, UNICEF
Dr. Koffi Emmou	Director of the Institute of Hygiene
P. E. Mandel	Regional Planning Officer, UNICEF
Dr. Hans Mayer	Director of WHO Epidemiological Center

Dr. Jean Rives	Medical Director, Southern Sector, Grandes Endemies Headquarters
John Root	U.S. Ambassador, Ivory Coast
Dr. Seri	Director-General of Social Medicine, Ministry of Health, Abidjan
Dr. Weber	U.S. Peace Corps Physician

Nigeria—Ibadan, Jos, Kaduna, Kano, Lagos, Zaria—February 9-17

Dr. A. Adeniji-Jones	Professor and Chairman, Department of Community Medicine, Lagos University School of Medicine
Professor I. Ahman	Associate Professor, Department of Pediatrics, School of Medicine, Lagos University
Dr. Andeyiba	Principal Medical Officer, Preventive Medicine, Benue Plateau State, Jos
David Bassett	CDC Smallpox/Measles Operations Officer for Northwest, North Central and Kano
Dr. E. Bayoomi	Epidemiologist, Ministry of Health, Benue Plateau State, Jos
Dr. Edmund Brink	CDC Epidemiologist, Kaduna
Mr. Chamma	Commissioner of Health, Benue Plateau State, Jos
Mr. Fajobi	Planning Officer, Social Services Section, Nigerian National Ministry of Economic Development, Lagos
Dr. Fason	Associate Professor of Community Medicine, University of Ibadan
John Ford, Ph.D.	Director, AID, Nigeria
Walter Furst, Ph.D.	Program Officer, AID
Dr. J. Galea	Director, WHO Regional Training School, Lagos
John Hummon	Deputy Director, AID, Nigeria
Alhadji Kasima	Acting Permanent Secretary of Health, Kaduna
Terrance Leirecke	Economic Officer, AID, Nigeria
Dr. F. E. A. Lesi	Associate Professor, Department of Pediatrics, Lagos University School of Medicine
Paul Lichfield	CDC Smallpox/Measles Operations Officer
Miss Miller	Commissioner of Health, North Central state, Kaduna
Dr. Thomas P. Monath	USAID Virus Research Laboratory, University Hospital, Ibadan
Mr. Nyon	Chief, Social Services (including Health) Section, Nigerian National Ministry of Economic Development, Lagos
Mr. Ogenyi	Permanent Secretary, Ministry of Health, Benue Plateau State, Jos
Dr. J. H. Patel	Medical Officer, Kaduna School for Medical Auxiliaries
Dr. Ronald Pust	CDC Tuberculosis Control Officer, Enugu, Eastern State
Dr. Ramson-Kutti	Professor of Pediatrics, Lagos University School of Medicine

John C. Reinhardt
Dr. J. Sheikh
Dr. U. Shehu

Dr. M. A. Silva

Dr. Emmanuel Smith
Mr. George Stroh
Dr. Sulliman

U.S. Ambassador, Nigeria
Principal Medical Officer, Kaduna
Chairman, Department of Community Medicine,
Amado Bello University, Zaria
Deputy Ch. Medical Advisor, Nigerian Ministry of
Health
Senior Epidemiologist, Ministry of Health, Nigeria
CDC Operations Officer
State Epidemiologist, Kaduna

Senegal, Dakar--February 22-March 1

Dr. A. C. Andriamasy
Edwin Clark
John Loughran
Dr. Michel

Jean Roy
Dr. Paul Saenz
Dr. Seck

Dr. Tommasi

WHO Representative, Dakar
U.S. Ambassador, Senegal
Charge, U.S. Embassy
Conseiller de Technique, Ministry of Health and
Social Affairs
CDC Operations Officer
Deputy Director, USAID Regional Office
Assistant Director for Health Services, Ministry of
Health
WHO Consultant

Sierra Leone--Freetown--February 13-17

Dr. P. Bhinder
Peter R. Chevas
Dr. E. C. Cummings
Dr. T. Devis

S.A.T.P. Horton

Dr. Hans Koek
Dr. L.R. Mills

Dr. Nair

Dr. E. M. Paulton
Donald Peterson
John Randall
S. Singh

WHO Advisor, MCH
U.S. Embassy
Director of Health, Ministry of Health
Population Council, Demographic Unit, Fourah
Bay College, University of Sierra Leone
Executive in Chief, Medical Statistics Office,
Ministry of Health
Peace Corps Physician
Demographic Unit, Fourah Bay College, University
of Sierra Leone
WHO Statistician, Medical Statistics Office,
Ministry of Health
WHO Advisor, Ministry of Health
Charge d'Affaires, U.S. Embassy
Deputy Director, Peace Corps
Head, Demographic Unit, Fourah Bay College,
University of Sierra Leone

Togo--Lome--February 3-6

Dr. Agbodjan Prince
Mr. Collas
Dr. Julien d'Almeida
Dr. Sabih Djazzar
Roger Ehlan
Dr. F. Esquerdo

Chief of Medicine, Grandes Endemies
Expert OMS, Tuberculosis
Director General, Public Health, Togo
WHO Regional Representative
Chef-Service de l'Education Sanitaire
WHO Liaison to Togo Demonstrations Health.
Department

Esaie Kloutse	Sanitary Engineer, National School for Environmental Health, Togo
Dr. Pierre Mikem	Directeur de Division de l'Assistance Medicale et des Services de Sante de Base
Felix Nassou	Chef-Service des Soins Infirmiers
Jonathan Nenonene	Sanitary Engineer
Miss Cathy Parker	Educatrice Sanitaire du Corps de la Paix Americaine
A. Van Hoagaerden	Equipment Technician, Lome

Upper Volta--Bobo Dioulasso--Ouagadougou--February 19-22

Dr. Ali Barraud	Minister of Health, Ouagadougou, Upper Volta
Dr. Campore	Director, Sante Rural
David Cardwell	Economic and Commercial Officer, U.S. Embassy
Neal Ewen	Center for Disease Control Advisor, U.S. Embassy
Dr. Milton Kogan	Peace Corps Physician
Dr. Mahoney	WHO Consultant, Basic Health Services Director, Sante Urban
Richard Matheron	Charge d'Affaires, U.S. Embassy, Ouagadougou
Carolyn McEvers	Nurse, U.S. Embassy
Dr. Ricosse	Director, Centre Musaz, OCCGE, Bobo Dioulasso
Dr. Cheikh Sow	Secretary General, OCCGE, Bobo Dioulasso
Other Personnel	Ministry of Health, Ouagadougou, and OCCGE, Bobo Dioulasso

Appendix IV

Itinerary--Africa Health Mission
January 23-March 5, 1972

<u>Date</u> <u>1972</u>	<u>DEP</u> <u>ARR</u>	<u>Destination</u>	<u>Participants</u>
Jan. 23-27	DEP	Washington and New York	Anderson, Dyar, Henderson Lythcott, Yergan
Jan. 24	ARR	Paris	
Jan. 25	DEP ARR	Paris Brazzaville	
Jan. 26-29		Brazzaville	
Jan. 30*	DEP ARR	Brazzaville Douala, Cameroon	Anderson, Dyar, Henderson Yergan
Jan. 31	DEP ARR	Douala Yaounde	"
Feb. 2	DEP ARR	Yaounde Douala	"
Feb. 3	DEP ARR	Douala Lome, Togo	"
Feb. 4-5		Lome	"
Feb. 6	DEP ARR	Lome Abidjan, Ivory Coast	"
Feb. 7-8		Abidjan	"
Feb. 9**	DEP ARR	Abidjan Lagos, Nigeria	Dyar Dyar, Lythcott
Feb. 10		Lagos	" "
Feb. 10	DEP ARR	Abidjan Monrovia, Liberia	Anderson, Henderson, Yergan

*Lythcott returned to New York January 30 and rejoined Dyar in Lagos February 9.

**Team split.

Feb. 11		Lagos	Dyar, Lythcott
Feb. 12	DEP ARR	Lagos Kaduna, Zaria	" "
Feb. 13		Kaduna	"
Feb. 13	DEP ARR	Monrovia Freetown, Sierra Leone	Anderson, Henderson, Yergan
Feb. 14	DEP ARR	Kaduna, Zaria Kano	Dyar, Lythcott
Feb. 15	DEP ARR	Kano Jos	"
Feb. 16	DEP ARR	Jos Ibadan	"
Feb. 17	DEP ARR DEP ARR	Ibadan Lagos Lagos Abidjan	" " " "
Feb. 17	DEP ARR	Freetown, Sierra Leone Abidjan	Anderson, Henderson, Yergan
Feb. 18		Abidjan	Anderson, Henderson, Yergan Dyar, Lythcott
Feb. 19	DEP ARR DEP ARR	Abidjan Ouagadougou, Upper Volta Ouagadougou Bobo Dioulasso, Upper Volta	Anderson, Dyar, Henderson Lythcott, Yergan
Feb. 20-21		Bobo Dioulasso	"
Feb. 22	DEP ARR	Bobo Dioulasso Dakar, Senegal	"
Feb. 23-29***		Dakar	"
Mar. 1	DEP ARR	Dakar Accra, Ghana	Anderson, Dyar, Henderson
Mar. 2-3		Accra	"
Mar. 4	DEP	Accra, Ghana	"
Mar. 5	ARR	New York and Washington, D.C.	"

***Lythcott and Yergan returned U.S.A. February 24 and 26, respectively.