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THE DESIGN, DEVELOPMENT, AND IMPLEMENTATION OF
A MANPOWER PLANNING SYSTEM
FOR THE
MINISTRY OF HEALTH AND SOCIAL SECURITY
GOVERNMENT OF JAMAICA

A Report Prepared By:
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PREFACE

This consultant report summarizes five consultant visits (August 1979 through March 1980) to Jamaica. The services were provided to the USAID/Health/Nutrition/Population Division and the Government of Jamaica, Ministry of Health and Environmental Control (MOHEC), later changed to the Ministry of Health and Social Security (MOHSS).

The consultant providing the service was John W. McCollum from Social, Educational Research and Development, Inc. (SERD), Washington, D.C. During one consultancy he was assisted by Alexander Curtis, McBee Systems, Columbia, Maryland.

Portions of this report were written by Dr. Dorothy Blake, Medical Officer of Health, Portland Parish, Jamaica. Dr. Blake was responsible for Chapter IV and Appendices K, L, M, N, and O.

Considerable assistance, counsel, guidance and useful criticism was provided by a number of people, including:

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EXECUTIVE SUMMARY

This report is based on five consultant visits to Jamaica on behalf of USAID/Jamaica. The visits extended over a period from August 1979 to March 1980.

The consultant's original assignment was to work with the Personnel Division in the Ministry of Health and Social Security (MOHSS) to design a manpower inventory survey of ministry employees. This assignment was carried out primarily during the first two visits (August 1979 and September 1979) and on an intermittent basis during the next three visits.

The second assignment was to design and conduct two workshops for senior-level MOHEC staff. This task was completed during the third visit. Sixty-one staff were trained in two 10-day workshops. The focus of the training was competency-based curriculum planning and development.

During the third visit, the consultant was also assigned the task of producing the Manpower Development Component for a USAID/MOHSS Health Sector loan proposal. This effort started in visit three and was completed during visit five.

The entire assignment completed these efforts:

1. The design and testing of the manpower inventory has been completed. At this writing it is in the field being completed by MOHSS's approximately 14,000 employees. The inventory is intended to be a permanent tool for manpower planning purposes. Information will be updated as an individual's status changes.
2. The training workshop produced training plans for 13 of Jamaica's 14 parishes and 25 curricula for short-term parish-level in-service training. At this writing several curricula have been taught. One is discussed in this report as an example.
3. A manpower development component was produced. It consisted of the manpower inventory discussed in item 1 above, a manpower development plan linked to competency-based curricula, and a redesigned training branch. In addition, the Manpower Development Component calls for more than 300 in-service training programs, primarily at the parish level, plus a variety of national-level training programs focusing for the most part on primary health care.

In developing the Manpower Component, especially the manpower development Plan, the consultant reviewed a variety of manpower plans previously produced for underdeveloped countries. Many of these plans stressed overall manpower planning, especially forecasting manpower requirements, and tended to ignore improving the utilization of existing manpower; others were based on esoteric forecasting models calling for data not always available, valid and reliable. Still others required expensive data processing equipment. Most plans proposed national planning.

This project started with the notion that improving the utilization of existing manpower is more important than forecasting manpower needs to an uncertain future; also, most underdeveloped countries have such a shortage in key areas that manpower projections and forecasting are not necessary.

It was apparent that a simple model was needed to enable parish-level planning to be extended to the national level. As a result, a plan was developed using hand-sorted data cards; the overall effort was based on a simple input-output analysis linked to competency-based training programs. Major elements of the program, started in August 1979, are already underway.

It is quite possible that several components of this project--hand-sorted data cards, the input-output training plans and competency-based training--have a wider use beyond Jamaica.

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I. INTRODUCTION AND BACKGROUND

A. Purpose of the Consultancy

This consultancy consisted of a series of 5 visits to Jamaica to provide services on behalf of USAID/Jamaica (Health, Population and Nutrition Division) to the Government of Jamaica, Ministry of Health and Social Security (MOHSS).^{1/}

The original assignment was: ^{2/}

1. to develop a strategy and plan of action for designing and implementing an inventory of health personnel in Jamaica;
2. to identify MOHSS staff who might participate in short-term training; and,
3. to identify MOHSS staff who might be assigned to project activities in the USAID Health Sector loan project.

The second assignment broadened the consultant's scope of work to include: ^{3/}

1. The design and conduct of two trainers-of-trainers workshops.
2. The provision of technical assistance in the implementation of the manpower inventory.
3. The design and development of the manpower development component of the proposed USAID Health Sector loan project.

B. Itinerary Followed

Five trips were involved:

1. August 12 through August 28, 1979, all in Kingston.
2. September 19 through September 26, 1979, all in Kingston.
3. October 30 through December 8, 1979, all in Kingston.
4. January 1 through January 20, 1980, Kingston and Portland Parish. This trip was broken twice on nonproject activities; January 6 through January 8, to Washington, D.C., and January 13 to January 16, to Barbados.

^{1/} About January 1, 1980, MOHSS was reorganized from the Ministry of Health and Environmental Control (MOHEC).

^{2/} From the scope of work provided by USAID/Jamaica.

^{3/} From the scope of work provided by USAID/Jamaica.

5. February 21 through March 12, 1980, Kingston and Portland, Manchester, Clarendon and St. Catherine parishes.

Appendix A contains a list of individuals contacted during the consultancy.

C. Jamaica: Background and Characteristics

In 1962, Jamaica became an independent country and a member nation of the English Commonwealth, having been under English rule since 1655.

The country is populated largely by descendants of slaves from Africa (slavery was abolished in 1834 and the slave trade terminated in 1804). A small proportion of the population (less than 10 percent) is of English, Chinese and Indian origin.

Jamaica is located approximately 85 miles south of Cuba (which is about 90 miles off the coast of the state of Florida in the United States). The island is the third largest of the Greater Antilles (after Cuba and Hispaniola) and the largest of the Caribbean Commonwealth countries.

Jamaica has a parliamentary government with essentially a two-party system. The Prime Minister and cabinet members are selected from among the majority party in the Parliament or House of Representatives. The business of the government is conducted by the ministries, which prior to a recent reorganization consisted of 18 ministries. These ministries, managed on a day-to-day basis by Permanent Secretaries, are directed by ministers who report to the Prime Minister. Health services in the country are provided largely by the government through two ministries--MOHSS and the Ministry of Local Government (MLG).

The local focal point of government in Jamaica is the parish, of which there are 13. The City of Kingston and the Parish of St. Andrew are combined into an additional parish-type government unit. Parishes are governed by elected local councils which provide a variety of services, including some related to health, such as water supplies and local government. Parish health services are financed by the central government through MLG. Some health staff (primarily Public Health Inspectors) work for parish councils but are assigned to parish public health offices in MOHSS.

Other health services, including hospitals and parish-level health staff, are funded directly by and are employees of MOHSS, with all public health staff at the parish-level reporting to the Medical Officer of Health in each parish, who in turn reports to the Chief Medical Officer of Health in the Central Office in Kingston.

The hospital superintendents of the 27 hospitals in Jamaica direct hospital staff and report to MOHSS in Kingston.

Jamaica places a high priority on the development of a primary care system, which is organized as follows:

Each parish has been divided into Health Districts which are the smallest administrative units responsible for the efficient and effective delivery of primary health care services. Each district "should be served" by a series of interlocking health centers: 4/

1. The smallest unit serves up to 4,000 people in the Type 1 Unit. These units are staffed by one midwife and at least two community health aides (CHAs) and are responsible for delivering basic maternal and child health, nutrition, family planning and immunization services.
2. The next highest level of services is the Type 2 Center, which has the same staff and responsibilities as a Type 1 Center, plus the additional responsibilities of a public health inspector (PHI), a public health nurse (PHN) and a staff nurse. The population served is approximately 12,000.
3. The Type 3 Health Center is the headquarters of the health district and serves a population of about 20,000. These centers have the same responsibilities and duties as Type 1 and Type 2 Centers, plus the services of a doctor and a nurse-practitioner.
4. The Type 4 Center consists of the health programs of the parish.

This system, underway for several years, is still in developmental stages and will eventually consist of 430 health centers, which obviously will increase the complexity of the manpower system of the country.

The basic goals of the system are to provide efficient and effective health services to all Jamaicans, to maximize the use of scarce health manpower, to push the delivery of health services down to the lowest level possible and to increase local community involvement in health.

In terms of other developing countries, health care and the health status of the country are above average, though not without problems.

Mortality and Morbidity

...The death rate fell from 7.2/1000 in 1974 to 6.9 in 1977.

...Infant mortality was 30.9 in 1972 and 15.1 in 1977.

...Still births declined from 675 in 1972 to 532 in 1977.

...Diphtheria, measles, influenza, typhoid fever and tuberculosis affect large proportions of the population.

4/Taken from Ministry of Health, Jamaica, Primary Health Care: The Jamaican Perspective, Kingston: Jamaica Ministry of Health and Social Services, 1978.

Physical Facilities

...There has been a slight increase in the number of hospital beds from 1972 to 1977, though quality of service has probably been lessened.

Maternal Health Services

...In 1976, it was estimated that 58 percent of pregnant women received antenatal care.

...In 1976, 22 percent of all deliveries were either unattended or attended by an untrained person.

Nutrition

...Weights and heights of low-income school children are significantly lower than weights and heights of middle-class children.

...About 25 percent of children under 3 years of age are underweight.

...45 percent of pregnant and lactating women are underweight.

Health Manpower

There are acute shortages at professional levels. Some ratios are:

	<u>1974</u>	<u>1977</u>
Doctors	1:3,553	1:5,808
Dentists	1:18,925	1:22,800
Registered Nurses	1:802	1:1,090

The population of Jamaica increased by about 13 percent from 1970 to 1978 (1,890,000 to about 2,140,000) and would have been much higher, save for a net emigration over the same period of about 150,000.

Jamaica is largely a rural nation, with about 41 percent of the population living in urban areas and about 30 percent of the labor force (in 1975) engaged in agricultural activities. About 35 percent of the population lives in Kingston, and St. Andrew and St. Catherine parishes.

Jamaica is facing an increasingly serious economic situation. For the past seven years, the Gross Domestic Product has declined. Money available for foreign exchange is being reduced each year; the gross external debt is now 37.6 percent of the Gross Domestic Product. The "First Supplementary Budget Estimates" for 1979/1980, submitted in December, 1979, by the Minister of Finance, calls for increases in public expenditures. For example, the

Kingston-St. Andrew (KSAC) local government received J\$33 million for expenditure in the original 1979/1980 budget; new estimates call for J\$12 million more--an increase in a few months of more than 30 percent.

It is difficult to document declines in the quality of health services. However, there does appear to be a consensus both within MOHSS and among the public that, for example, the quality of hospital service has declined from a few years ago. The problems stem from a combination of skilled manpower shortages, decline in productivity due to lack of equipment and facilities, union-management conflicts and increasing personnel costs.

These seemingly unrelated issues argue for increasing the productivity of health manpower, especially at low levels; expanding the job responsibilities of health workers, again especially at lower job levels; developing and delivering training services which focus more clearly on needs and provide assurance that workers are trained to carry out specific job tasks; and designing a vigorous health manpower planning process based on the health needs of the country.

II. FACTORS AND ISSUES IN DEVELOPING THE MOHSS MANPOWER PLAN

A. Introduction

The consultant's original assignment was to design a nationwide manpower inventory of MOHSS employees. A later assignment was to develop the manpower component for the proposed USAID Health Sector loan proposal and to link it to the manpower inventory. The factors and issues considered in defining the nature, characteristics and limits of all components of the plan were essentially the same--the availability of resources (human, equipment, materials and financial support), the structure of health services in Jamaica, the nature of the country's manpower needs, the fragile nature and inexactitude of planning at all levels the world over. All dictated that the plan be simple, quickly and easily applied, parsimonious and effective.

B. Factors and Issues

1. Resources available for carrying out the plan. Despite the fact that Jamaica is far ahead of most developing countries in technical and other resources, the country does not have the trained manpower or hardware to develop and implement a high technology health manpower planning system.
2. Jamaica, at this writing, is in serious economic difficulty and forcing severe budget cuts in public agencies. Thus, it would be inappropriate to propose a complex and expensive manpower plan.
3. At the time of the study, the MOHSS work force and the data available were not in a form conducive to manpower planning. No definite figures were available on the number and characteristics of the work force--the extent to which they were effectively employed, the kind of in-service training they have had, years to retirement, etc.
4. Personnel data in MOHSS are collected in personnel files. A file is started for each employee when employed. Information is "dropped" into each person's file as data become available. As a result, employee files travel about the ministry (sometimes there are several large files for one individual) and often are lost for long periods of time.
5. Not only was the personnel file system not conducive to producing manpower planning data, but at the time of the study, the ministry had only limited manpower development plans. These consisted largely of staffing and facility requirements. ^{5/}

^{5/} See MOHSS, "Manpower Requirements, Health Sector, Jamaica Calculated on the Basis of Facilities to be Staffed" (three pages, mimeographed, undated).

6. Perhaps the most serious health manpower problems facing Jamaica (aside from funds and staff shortages) are better utilization of existing manpower and greater concentration on primary health care.
7. There was no assurance that the proposed USAID Health Sector loan proposal would be funded and if funded that it would provide sufficient resources to support a sophisticated manpower plan. Thus, the plan to be developed had to be workable and supported, if necessary, by MOHSS resources.
8. It was agreed that the plan would focus on primary, secondary and tertiary health care, but that primary care would be the cornerstone of the system.
9. Primary health care in Jamaica, by definition, occurs at the point of need, that is, at the parish level. Thus, parishes should play an important role in planning and should produce manpower development plans, as should such vertical programs as Health, Education and Nutrition.
10. In most countries, and Jamaica is no exception, pre-service health manpower development, especially at professional levels, is the responsibility of established training institutions. It is difficult to get these institutions to participate in planning, except in scheduling numbers to be trained. It is especially difficult to get institutions to link training programs to work activities. Thus, in Jamaica it was felt important to concentrate on in-service training and make this an integral part of the plan.

A limited review of published studies and reports on manpower planning in underdeveloped countries reached two conclusions:

1. There is not much evidence that planning at central and sector levels has been a very fruitful process in either developed or underdeveloped countries. A variety of factors are involved--inaccurate and incomplete data, lack of commitment on the part of policymakers, shortage of funds to carry out even minimal plans and, especially in manpower planning, the inability to link input and output. ^{6/}
2. A limited review of published reports involving health manpower planning in underdeveloped countries revealed that for the purposes of Jamaica, most "plans" appeared to be either overly complex and data-oriented or ignored the linking of training to planning.

^{6/} See Albert Waterson, Development Planning, Baltimore: The Johns Hopkins University Press, 1979.

As a result of these factors, a specific manpower development plan was developed for Jamaica. It contains 4 components:

1. A manpower inventory.
2. The development of specific training plans based on a simple input-analysis.
3. Competency-based training.
4. The emphasis on training at the parish level with assistance from the ministerial levels.

These components are described in the next two chapters.

III. THE COMPONENTS OF THE MANPOWER DEVELOPMENT PLAN

A. The Manpower Inventory

At the time of the study, MOHSS did not have a systematic and routine process for collecting data for manpower and personnel purposes. Not only was such a system a luxury beyond the ministry's limited means, but reliance on a system of collecting and storing personnel information in files, communication difficulties (inadequate postal and telephone services), management problems, including lines of authority cutting across two ministries, and staff shortages made the collection of timely, accurate and usable manpower data impossible.

The major personnel data source in the ministry was personnel files. When an employee is hired a file is started. As an employee's tenure increases, so does the size of the file, eventually becoming, in many cases, several cumbersome folders containing a wide variety of information, not all of which is important.

When an official is in need of information on an employee (for example, a staff member may have applied for training, and it is necessary to verify his or her educational record), the file is called for and days may pass before it is found in another office. When a file is located after a search, the necessary information may be found.

The system is slow, time-consuming, contains a great deal of information rarely used and does not readily provide basic information often required. Finally, a fire or another disaster could destroy the system.

The nature of the system is such that information is not available for planning purposes (information is stored on an individual basis). There is no basic information for manpower planning. For example, there are no data on:

1. complete education and training experience;
2. speciality training and experience;
3. work and site assignments;
4. time to retirement; and,
5. job assignment.

The aim was to design a system which would:

1. provide quickly information now available as well as information not now available;
2. enable the grouping and tabulation of the information in terms of such categories as age groups, occupational groups, place of work, parish employed, etc.;

3. enable adding or deleting of information as an employee's status changes;
4. enable manpower planning at various vertical levels within the ministry (nursing staff, for example) as well as planning at the parish level;
5. be institutionalized within MOHSS, updated as necessary and be used throughout the ministry; and,
6. be inexpensive and not dependent on electricity or expensive data processing equipment.

The USAID Health Division in Jamaica supported the design and development of the inventory.

The consultant's first visit to Jamaica (August 12 through August 28) assisted in getting the process underway.

1. An instrument was designed in draft form. (See Appendix B for inventory instrument presently in use.)
2. Specifications for collecting the information were agreed upon.
 - a. Staff would be available at the Central Office to coordinate the project.
 - b. Parish and hospital staff would be delegated responsibility to collect the information.
 - c. Data would be transmitted from inventory instruments to "McBee" 7/ cards for manual tabulation. (See Appendix C for a copy of the card.)

7/McBee cards contain a series of edge coding holes on the four margins of a card (in this case 8 1/2" x 11"). A designated hole is assigned a characteristic (say, a nurse, or the parish in which a person works, or an individual's age). The card is punched (to denote the characteristic) leaving the edge open. Then when a thin rod is inserted through a set of the same holes in a stack of cards, the punched cards drop out of the stack enabling one to count and sort the characteristics on the cards sorted out. Inside the margins of the cards is ample space for writing in information which cannot be easily coded. The scheme is simple, inexpensive and appropriate in labor-intensive situations. Other approaches were considered, including designing a card system, but since it was possible to obtain McBee cards specially coded for the inventory it was decided to use McBee cards. In 1980, the 8 1/2" x 11" cards specially printed for MOHSS's inventory cost U.S. \$130/1,000 cards. A card is included in Appendix C.

The inventory instrument is designed for self-administration, except where illiterates are involved. An individual with 4 to 5 years of schooling should be able to complete the instrument in about 10 minutes. Supervisors should review completed instruments before turning them over to the next highest level.

Completed instruments are sent to the Central Office in Kingston where they are reviewed again. The data are transferred to the cards.

Plans call for providing each Parish and hospital with a set of cards for all employees in the parish or hospital, as well as providing major occupational groups with a set of cards for all employees in that group--nurses, for example.

The inventory collects data in such areas as:

1. Personal information: name, date of birth, sex, marital status, next of kin, national insurance number (NIS).
2. Education and training experience, including courses, programs, institutions and speciality training.
3. Work experience: work site, status of full- or part-time, job title, assignment.

The inventory went through several revisions during the first three consultant visits and was tested twice during the second visit (September 17 through September 26). The first test involved a group of employees in the MOHSS Central Office in Kingston. The second was a field test involving a sample of 150 employees in the Parish of St. Catherine. Following the field test the instrument was reduced to final form. A set of instructions was written and a letter provided. The nationwide administration of the survey got under way in December 1979.

A "Change of Status" form was produced during the third visit (January 2 through January 20, 1980). (See Appendix D.) This form is to be used to update or change inventory information. It will be completed by employees or supervisors and forwarded to the Central Office in Kingston.

The inventory will:

1. Replace much of the use of personnel files.
2. Contain current and easily usable personnel information for manpower planning and other personnel uses.
3. Contain basic manpower data.
4. Provide each parish, hospital and major occupational group with coded cards for all employees enabling manpower planning at the parish, hospital or occupational group level. In addition, the national inventory uses about 70 percent

of each card; parishes, hospitals and other groups will be able to record additional information, such as leave records, training preferences or plans, cost of services, performance evaluation information, etc.

Once data are recorded on the cards, the following planning can be done:

1. Manpower planning involving any level or group within the ministry.
2. The evaluation of the use of manpower. For example, are workers trained in specialities working in areas for which they have been trained?
3. The planning of training programs on a short- or long-range basis. For example, how many Public Health Inspectors are now at work? How many will retire in the next 5 years? How many replacements will be required?
4. The determination of whether or not groups of workers have had special training before conducting a training program. For example, should VD become a serious problem in Jamaica, before developing crash training programs, MOHSS can consult the inventory to determine if qualified workers are available.
5. The rationalization and improvement of the assignment of employees to training programs. Inventory data will be useful in selecting workers most likely to benefit from training.
6. The evaluation of the impact of training. Many MOHSS employees are not working in job posts for which they have been trained. The inventory will enable staff to assess the extent to which this occurs.

On the consultant's last assignment to Jamaica, one-day visits were made to four parishes to discuss the inventory process with parish staff.

Once in place, it is estimated that maintaining the inventory and providing interested groups with MOHSS data will require approximately 7 days a month from a junior-level staff person with recordkeeping experience and limited statistical experience. MOHSS will require about 1,500 new and replacement cards a year.

In sum, the inventory was produced as follows:

1. Discussions were held with MOHSS staff regarding the specific purposes of the inventory and data requirements.
2. A draft instrument was produced and tested.

3. The instrument was reviewed several times within the MOHSS.
4. Once a final instrument was agreed upon, sufficient copies were reproduced.
5. Specially printed McBee cards were printed for tabulating inventory data.
6. The inventory was completed by employees.

B. The Manpower Plan

At the time of the study Jamaica did not have an overall manpower development plan. This section describes the planning scheme developed for Jamaica. It meets the criteria discussed in Chapter II.

1. The plan is simple, parsimonious and capable of being carried out.
2. It focuses on better utilization of existing manpower rather than forecasting manpower needs and therefore fits in with the economic difficulties now facing the country, does not challenge existing pre-service training institutions and stresses in-service training at the parish level with national coordination.

In the past considerable in-service training activities were conducted in MOHSS. As might be expected, more effective planning and task-oriented training focused on primary health care would have been helpful. In addition, training was not always based on well thought out curricula.

To deal with some of these issues, especially curriculum development, program evaluation, task-oriented training, etc., staff training in competency-based curriculum development was provided. This component is discussed in Chapter IV.

Also needed was a planning process which could be linked to the curriculum development approach discussed in Chapter IV. More attention should have been given to factors 1 and 2, noted above.

The planning process consists of 3 components:

1. Status variables.
2. Input variables.
3. Output variables.

1. Status Variables

Status variables are the "givens" in the planning process--the characteristics of the work force. They include such factors as:

1. Number of workers in various job categories.
2. Age, sex, time to retirement.
3. Present job assignment of workers.
4. Job qualifications.
5. Training, education and experience.
6. Work activities now being carried out by employees and the extent to which work assignments can be transferred to other employees.
7. The efficiency and effectiveness of existing manpower.

Data for the status variables for the most part are derived from the manpower inventory. (See Section A, this chapter.) However, other sources are available, such as the length, quality and kind of training (both pre- and in-service) workers now receive. For example, the manpower inventory will enable the collection of information on, say, Community Health Aides (CHAs) in areas of age, formal education, time to retirement, in-service training completed, etc.

A statement of these "givens" for a group under consideration for training will fulfill the status variables component for the training plan for that group.

2. Output Variables

Output variables consist of the ministry's plans and expectations of the kinds of contributions specific occupational groups should make to the health care system. For example, the ministry has goals on the number of CHAs who should be employed in any given year.

To some extent the output variables involved are policy issues, such as specifying the numbers of employees deemed necessary in each job category and the contributions occupational groups should make to the health care system. However, other sources of data will be involved.

The inventory will identify the number of CHAs (or members of other occupational groups) employed at any one time. It will also reveal estimates of the number who are expected to leave the system in any given year. In addition, an analysis of the educational and training experience of an occupational group will provide information indicating the kind and quality of training individual members and, to some extent, members of the entire group can absorb.

3. Input Variables

The third variable in developing training plans are input variables. They consist of these elements:

1. Needs assessment.
2. Numbers to be trained.
3. Curricula and training programs.

Needs Assessment: In November 1979, the Center for Educational Development in Health (CEDH), at Boston University, trained 61 senior staff "trainers-of-trainers" in a competency-based training methodology called the "Systematic Curriculum Development Model" (SCD)^{8/}. It is a logical problem-solving process based on a series of steps starting with a course and job description, the latter of which is derived from a needs assessment.^{9/} A needs assessment consists of an analysis of what workers can do (by virtue of training, education experience, job constraints, etc.), are doing and could be doing. Needs assessments are completed by staff responsible for curriculum development as one of the first steps in preparing training plans. A variety of techniques are used: interviews, survey research, diaries, etc. Needs assessments are not difficult to conduct; the extent and scope depend on the complexity of the proposed training programs.

Needs assessments are also linked to output analyses. For example, policy-makers might determine that community health aides and public health inspectors are responsible for the delivery of certain health services. The needs assessment produces a job description consisting of a series of specific tasks to be performed by the group.

Numbers to be Trained. The number of individuals to be trained in each category and overall will be determined by resources available, policy determination and results from status variable analyses and output variable analyses.

Training Efforts. The needs assessment phase dictates the nature and scope of training, including prerequisites required, content, training methods, etc. The curriculum which emerges is a competency-based curriculum (sometimes called mastery learning, task-oriented learning, etc.). It focuses on the specific skills, knowledge and attitude the learner must acquire to adequately perform the job.

A curriculum usually consists of a series of competencies or checkpoints the learner acquires starting with entry-level performance, that is, what the trainee can do upon entry into a program regarding a particular task. Then the

^{8/}See CEDH, Systematic Course Design for the Health Fields, Boston, Massachusetts; Boston University, 1979.

^{9/}See Appendix E for a brief description of the SCD process.

Learner proceeds on a step-by-step basis to the point where he or she is able to demonstrate in the classroom acquisition of the skill or knowledge under review. Next, the learner goes to the field to demonstrate ability to perform on the job. (See Appendix E.)

Each step along the way, the learner is tested to demonstrate both to himself and the teacher acquisition of appropriate skills, knowledge and attitudes.

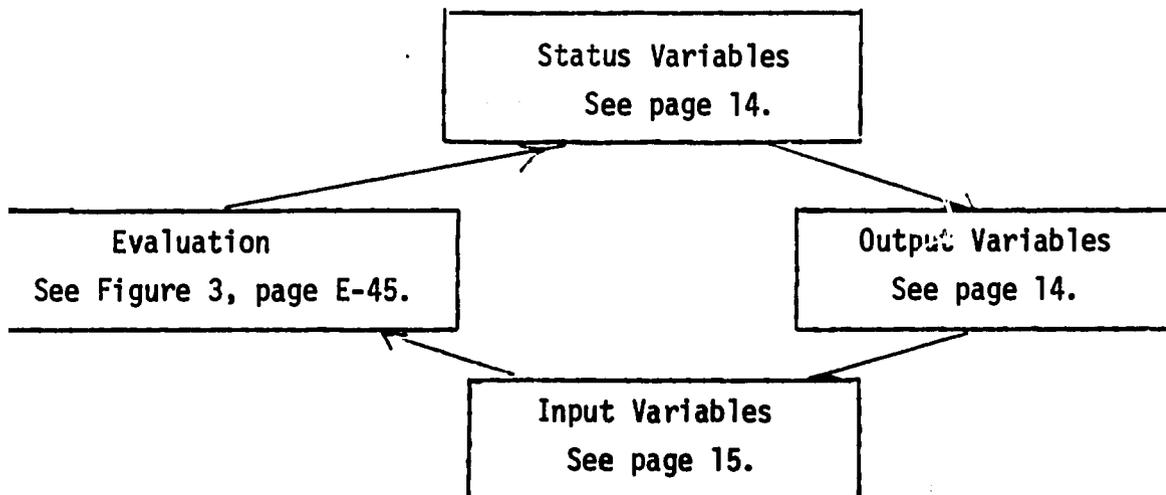
These three elements--status variable, output variable and input variable--constitute the training plan.

This approach is quite suitable for underdeveloped countries:

1. It is not based on elaborate computer models which require data not likely to be available and when available not likely to be accurate.
2. The plan is suitable for planning by an occupational group, provincial-level planning or national-level planning.
3. The improvement of existing manpower, which is usually ignored in manpower plans, can be planned and manpower needs can be forecast.
4. Most important, the approach links training to planning, an element usually ignored.
5. It is an economical approach in that trainees are trained specifically in terms of the needs assessments. Thus, training programs are usually of shorter duration than ordinarily would be the case and there is more assurance than is ordinarily the case that the worker can perform as trained.

The planning model is depicted in Figure 1.

FIGURE 1. MOHSS Manpower Planning Model



Chapter IV describes how the specific plan is implemented in terms of one curriculum.

C. Training Plans

Using the scheme described in Section B above, training and/or manpower development plans are produced as follows:

1. Each parish or MOHSS unit produces a plan for each training course or group to be trained.
2. The sum total of all training plans for a parish or MOHSS unit constitutes that group's training plan.
3. The training plans for all MOHSS units and parishes represent the MOHSS training and/or manpower development plan.

Appendix G contains a proposed training plan format.

IV. IMPLEMENTATION OF THE PLAN

A. Introduction

At this writing, the manpower inventory of health workers in MOHSS is still underway. As a result, there has not been a test of the entire system. However, these components are in place and have been used to develop training plans and conduct training programs:

1. Training trainees to develop competency-based curricula.
2. Conducting needs assessments based on policy determination.
3. Development of competency-based curricula.
4. Teaching competency-based curricula.

B. Training Trainees to Develop Competency-Based Curricula

MOHSS's Training Branch, in conjunction with Boston University's Center for Educational Development in Health (CEDH), conducted two workshops on Systematic Course Design (SCD) from November 5 through November 30, 1979. Sixty-one senior staff members from 13 of 14 MOHSS parishes participated. Also involved were representatives of the nurse-practitioner faculty, the Dental Education Unit and Health Education Unit. See:

- Appendix F for a list of courses developed.
- Appendix H for a list of Workshop Participants and parishes represented.
- Appendix I for the Workshop Outline.
- Appendix K for workshop evaluation results.

The first workshop enrolled 25 participants, the second 36. Each followed the same process:

1. As the workshop outline (in Appendix I) indicates, training was broken down into segments corresponding to the SCD process.
2. Participants were assigned to teach specific segments to fellow participants, thus enabling some practice teaching.
3. All participants developed courses during the workshops.
4. Following the completion of the curricula, participants exchanged courses and taught another participants' course to the entire group. These brief exercises not

only provided additional teaching experience, but also demonstrated that most courses could be taught by non-experts with little preparation.

5. Toward the end of the workshop participants from each parish presented parish training plans.

C. Selecting Curricula and Defining Courses to be Developed

This component is an element in the input variable category. In the case of the MOHSS-Boston University workshops, these steps were followed:

1. Tentative course descriptions were produced by workshop participants.
2. The course descriptions were subjected to needs assessments.

The course description is a tentative and initial statement of the instructional situation of the proposed course containing proposed title, purpose, students, resources and constraints. The course description for the course described in this chapter--"Training in Sputum Testing Techniques for Parish Health Workers"--is given in Appendix K.

The extent and scope of a needs assessment phase depends on a variety of factors, including the complexity of the course to be developed, existing knowledge of the problem area and the workers to be trained. There are about 10 methodological approaches which can be utilized--survey, research, critical incident techniques, diaries, checklists, observation interviews, work participation, individual and group interviews, technical conferences and bibliographic searches.

The needs assessment for the sputum testing curriculum was based on an MOHSS policy for an improved tuberculosis control program. This policy stemmed from recommendations arising from the first Caribbean Workshop on Tuberculosis, conducted by the Caribbean Epidemiological Centre Pan American Health Organization, in Trinidad in 1979. This workshop recognized the need for expanded horizontally-integrated control programs in all Caribbean territories. Portland was chosen as the pilot parish for the program because of its existing program in tuberculosis control, as well as the community interest, both a response to an increase in the incidence of the disease in the Parish of Portland.

The sputum testing course used the technical conference approach; other courses used other approaches.

The needs assessment was conducted by the author of the course, who was also one of the two principal directors responsible for the conduct of the course.^{10/}

^{10/}Dr. Dorothy Blake, Medical Officer (Health), Parish of Portland, Jamaica. Also involved in the organization and direction of the course was Dr. Michael Richardson, Medical Officer, National Chest Hospital, Kingston, Jamaica. Dr. Blake wrote this chapter and the appendices.

D. Organization and Conduct of the Course: Sputum Testing Techniques for Parish Health Workers

The course was organized and presented in two sections: One group (25 staff) was enrolled in the "half course" and received training in sputum smearing and fixing. This course was offered over a two-week period from March 10 to March 12, and from March 17 to March 19. Enrolled were District Midwives and Community Health Aides.

The second group received 8 days of training as opposed to 4 days for the first group. The "full course" was held from March 10 to 14 and March 17 through March 21. This group received the same training as those in the "half course" plus training in staining and reading slides with a microscope. Both courses met for 7 hours a day.

Appendix L provides a list of the trainees by job category and other basic characteristics.

In addition to Drs. Blake and Richardson, these MOHSS staff served as instructors and/or resource persons:

Mrs. D. French, Supervisor of the Central Laboratory, Kingston
Mrs. I. Chutckan, Nurse-Practitioner, Health Department, Portland
Mr. S. Davis, Public Health Inspector, Health Department, Portland
Miss E. McKoy, Assistant Health Educator, Health Department, Portland
Mr. M. Berry, Health Educator, Ministry of Health, Kingston

The format used for sessions varied according to subject area taught and constraints of time, venue and resource persons.

Lectures/discussions were used for purely theoretical teaching or recapitulation sessions. Lectures/demonstrations were given before practical sessions, which formed 60 percent of all sessions. Tests were included. Here students either worked at tables in the Methodist Church Hall or in a laboratory (Titchfield High School or the hospital) in teams of 2-3 participants. Role playing was used in teaching, interviewing and counseling skills as well as in practicing sputum collection techniques.

Participants were issued folders at the start of the course containing a Course Description, List of Participants and a Syllabus. (See Appendix O, Sputum Testing Techniques for Village Health Workers.) Printed materials were made available at various sessions throughout the course.

An overhead viewer using transparencies developed by Drs. Blake and Richardson was used in 90 percent of the sessions.

At the end of the two (2) weeks of training, a practical manual developed by Drs. M. Richardson and D. Blake was issued to participants. In addition they were given a small booklet, "T.B.: 20 Questions Answered," to be used as a guide to health workers and for distribution to their community leaders. (See Appendix M, Materials Distributed to Workshop Participants.)

Appendix K includes the entire sputum testing curriculum. It contains all the steps involved in the Systematic Course Design Model, from the Course Description to Session Plans (See Appendix E, The Systematic Course Design Curriculum Development Process). The entire curriculum is presented here to illustrate the curriculum development process. Readers interested in using this curriculum will want to examine how the course was developed to assess its appropriateness for their particular situation. The syllabic section contains the basis student handout materials; session plans are aides and guidelines for instructors.

The course (produced in the MOHSS-Boston University Workshop; see Appendices E, F and I) was largely followed and shown to be usable by all resource persons. The curriculum was modified in limited ways due to constraints of space and resource personnel as follows:

Day Two:

--Only in the second week was a post-test (in the class) carried out as scheduled in the curriculum. Then, a multiple choice questionnaire was administered (the same as the pre-test). In addition, all candidates smeared and fixed three slides and wrote up the proper dispatch and recording forms. In the first week, the practical components of the post-test were not administered because of the lack of materials and equipment for testing. A general question/answer test and demonstration oral testing were substituted. This served as a progress test for Group II (full course).

Day Three:

--This marked a major departure from and an improvement in the curriculum. Due to the availability of the supervisor of the central laboratory for Days 3 and 4 only, it was decided that the group doing the full course should on Day 3 be separated from the half-course group (Group I) which was then doing its post-test (on the job). Group II went to sessions on staining techniques and the use of the microscope originally scheduled for Day 4.

--Fixed slides and accompanying dispatch forms prepared by groups on the job were used by Group II in the practical sessions on staining and reading that afternoon. This had the advantage of simulating on-the-job conditions. The reports received on the quality of the slides and the information transmitted were used as a part of the rating scheme for the Group I on-the-job post-test. In Week 2 this worked very well, as it was not only fully integrated into the curriculum, but feedback from Group I arrived in time for Group I's final evaluation.

Day Four:

--Because of the preceding changes and as a result of a brief recapitulation, practical fixing, staining, and reading of slides exercises were held both morning and afternoon, the afternoon session being the "In the Class Post-Test."

--An added component to this test was a series of multiple choice questions included in the test section of the curriculum. (See Appendix K.)

The system of rating was changed. Originally, students were to be graded on a scale of one to 100. Instead, students were assessed to have attained an "adequate" or "inadequate" level, based on their performance in each section of the on-the-job post-test exercise as well as on aptitudes noted throughout the course.

The Ziehl-Neilson technique was not taught.

E. Cost

A total of Jamaican \$2,486.00 (U.S. \$1,397) was required to support the program. Travel and subsistence costs (Jamaican \$1,350 or U.S. \$771.00) were paid to all qualified participants. Stationery and repairs to three (3) microscopes, slides, reagents, disposal bins, rental of Church Hall and miscellaneous items came to a total of Jamaican \$750.00 (or U.S. \$430). The balance will be used to help equip and install a small laboratory for sputum testing at the Parish Health Office in Port Antonio.

The cost per classroom hour (for a total of 1,400 classroom hours) was Jamaican \$1.77 per classroom hour (or U.S. \$1.00 per classroom hour).

F. Evaluation and Follow-up

Evaluation questionnaires were distributed to all participants to assess the extent to which participants thought the course had achieved its objectives or where they thought modifications could be made in future courses.

The majority of participants felt the course met its objectives and was relevant to their work situations. The theoretical training sessions were adequate, as were the practical sessions. Demonstration exercises were felt to be a great help to the understanding of the techniques. Visual aids used were either inadequate or helpful to some extent only. The immediate applicability of the techniques was similarly rated. Appendix O includes the evaluation instrument as well as participant responses.

This training course marks the first step in decentralizing sputum testing in Jamaica; all specimens are now being sent to Kingston, the capital, for analysis. It is expected that within 25 days following training one-third of the students (located in Type 3 Centers) will be carrying out approximately

30 sputum smears per month. In addition, it is the policy of MOHSS, to the extent possible, to decentralize to the parish level sputum testing in the country.

1. Immediate follow-up will consist of the following:

- a. Special attention in the form of coaching and tutoring will be paid to the 8 "problem" participants (4 incomplete attendance, 4 inadequate performance).
 - b. For the first 6 months, 3 sputum specimens will be taken from each patient, 2 tested in the parish and 1 sent to Kingston as a control. A check will be made of all discordances to determine if a technician (or technicians) here is not operating adequately--or, of course, if the error is with the Central Laboratory. This double test is also necessary at the Central Laboratory as all sputum are routinely tested for sensitivity and negatives cultured. This was not included in the parish program.
2. Long-term follow-up will consist of random samplings sent at intervals to the Central Laboratory for independent checks.

G. Summary and Implications

The development and teaching of the course discussed in this chapter (Sputum Testing Techniques for Parish Health Workers) illustrate and support many of the arguments advanced in this report.

1. Decentralized training (at the parish level) as opposed to centralized training is a much less expensive venture. If this training program had been conducted in Kingston or another part of the country in a residential setting, the cost would have been 10 to 15 times the Jamaican \$1.77/classroom over this course cost. This, of course, is an obvious argument, given the present economic situation in Jamaica.
2. Perhaps a more important argument is that decentralized training increases the possibility that the workers' new skills will be better utilized. The individual who developed the course and who was responsible for teaching the course is also the supervisor of the workers who were trained. In the previous sections it was noted that:
 - a. Problem students will receive individual attention.

- b. A goal has been set for trainee productivity, that is, within 25 days following the training. One-third of the students will be expected to complete an average of 30 sputum smears a month.
 - c. Independent checks will be made of the trainees' sputum smears.
- 3. Though the incidence rate of tuberculosis is low in Jamaica, the rate is increasing. ^{11/} Given MOHSS's emphasis on primary health care (one aspect of which is delivering health service as near to people as is possible), the conduct of this course is an excellent example on how to implement primary health care.
- 4. The course discussed in this chapter is a competency-based curriculum in which trainees are taught specific competencies and tested to determine whether or not they can display the competencies on the job. There are several implications:
 - a. The individual who developed the course, though a trained medical practitioner, is not a curriculum development specialist. Nevertheless, the course as developed in the workshop described in Appendix I was taught as developed with only minor modifications.
 - b. Competency-based curricula focusing on specific competencies and the structuring of a trained worker's activities, as is occurring in the situation described here, should be important components of training programs in developing countries. All too often health workers in developing countries are trained with little attention given to the skills and knowledge they are acquiring and how these skills and knowledge will be utilized on the job.
- 5. Throughout this report an argument has been advanced that manpower planning in underdeveloped countries places too much emphasis on forecasting manpower needs and developing sophisticated planning schemes. This course and the planning system of which it is a part may be based on a somewhat complex technology, but the basic ideas are easily learned and applied and, most important, document the benefits which occur from focusing on upgrading existing manpower rather than being concerned with overall planning.

^{11/} In Portland Parish, with a population of approximately 76,000, there is a marked increase in tuberculosis:

<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
0	2	6	23	16

APPENDIX A

Individuals Contacted
During the Consultancy

First Consultant Visit, August 12 through August 28, 1979

Mrs. Baker, Branch Chief, Personnel Division, MOHEC
Mrs. Biggenstaff, Branch Chief, Personnel Division, MOHEC
Hyacinth Bulgin, Chief, Training Branch, MOHEC
Miss Burnett, Personnel Division, MOHEC
Gary Cook, USAID - H/N/P
Miss Davidson, Personnel Division, MOHEC
Mr. Ferron, Training Branch, MOHEC
Osmand Gordon, Director, Health Information Systems, MOHEC
Mark Gross, MOHEC
Linda Haverberg, USAID - H/N/P
Robert Johnson, USAID, Education Advisor
Donor Lion, Director, USAID
John Massey, USAID, Washington
Dr. Christine Moody, Director, Primary Health Care Services, MOHEC
Mrs. Scherban, Consultant on Midwifery, MOHEC
Cedric Taylor, Director, Personnel Division, MOHEC
Terry Tiffaney, USAID - H/N/P
Edwina Tulloch, Director, Planning and Evaluation, MOHEC
Miss Joyce Vincent, Planning and Evaluation, MOHEC
Mr. Hugh Wallace, Director, Training Division, Ministry of Public Service
Fay Williams, Assistant to the Director, Personnel Division, MOHEC

Second Consultant Visit, September 19 through September 26, 1979

Nellie Allison, Intern, MOHEC
Milton Berry, Intern, MOHEC
Hyacinth Bulgin, Chief, Training Branch, MOHEC
Dr. Michel P. A. Cayemittes, Medical Officer Health, St. Catherine Parish
Gary Cook, USAID - H/N/P
Osmond Gordon, Director, Health Information Systems, MOHEC
Mark Gross, MOHEC
Linda Haverberg, USAID - H/N/P
Mrs. Enid Lawrence, Director, Nurse Practitioner Program
Cedric Taylor, Director, Personnel Division, MOHEC
Terrance Tiffaney, USAID - H/N/P
Fay Williams, Assistant to the Director, Personnel Division, MOHEC

Third Consultant Visit, October 30 through December 8, 1979

Mrs. Julia Allen, Director, Nutrition Education Bureau, MOHEC
Ms. Nellie Allison, Training Branch, MOHEC
Edward Baker, USAID
Milton Berry, Training Branch, MOHEC
Dorothy Blake, MOH/Portland, MOHEC
Hyacinth Bulgin, Chief, Training Branch, MOHEC
Peter Carr, PAHO Consultant
Gary Cook, USAID - H/N/P
Darnell Dolley, USAID/Jamaica
Mr. Ellington, Director, Supply Management, MOHEC
Osmond Gordon, Director, Health Information Systems, MOHEC
Lynnette Harris, Assistant to Chief Medical Officer, MOHEC
Mr. King, Administrator, Kingston Public Hospital
Susan Lee, PAHO Consultant
Douglas Manley, Minister, MOHEC
Tony Meyers, USAID/Washington
Donald Miller, Permanent Secretary, MOHEC
Dr. Christine Moody, Director, Primary Health Care Services, MOHEC
Ramon Ricardo, PAHO Consultant
Peter Rouselle, USAID Consultant
Yvonne Sinclair, Bureau Health Education, MOHEC
Cedric Taylor, Director, Personnel Division, MOHEC
Terrance Tiffaney, USAID - H/N/P
Edwina Tulloch, Director, Planning and Evaluation, MOHEC
Fay Williams, Assistant to the Director, Personnel Division, MOHEC

Fourth Consultant Visit, January 1 through January 20, 1980

Mrs. Julia Allen, Director, Nutrition Education Bureau, MOHEC
Ms. Nellie Allison, Training Branch, MOHEC
Edward Baker, USAID
Milton Berry, Training Branch, MOHEC
Hyacinth Bulgin, Chief, Training Branch, MOHEC
Gary Cook, USAID - H/N/P
Alexander Curtis, Consultant
Daisy Goldson, Health Education
Lynnette Harris, Assistant to Chief Medical Officer, MOHEC
Ms. Hosang, Nutrition Division
Daphne Kelly, Health Education
Dr. Christine Moody, Director, Primary Health Care Services, MOHEC
Cedric Taylor, Director, Personnel Division, MOHEC
Terrance Tiffaney, USAID - H/N/P
Arthur Walton, UNDP Consultant
Fay Williams, Assistant to the Director, Personnel Division, MOHEC

APPENDIX B

MOHSS Manpower Inventory



MINISTRY OF HEALTH & ENVIRONMENTAL CONTROL

ANY REPLY OR SUBSEQUENT REFERENCE
TO THIS COMMUNICATION SHOULD BE
ADDRESSED TO THE PERMANENT
SECRETARY AND THE FOLLOWING
REFERENCE QUOTED:-

No. HH 423/53/032

10 CALEDONIA AVE.,
P.O. BOX 478,
KINGSTON, JAMAICA.

23rd November 1979

To: Health Workers

Subject: Personnel Inventory

The Personnel Division of the Ministry of Health & Environmental Control is conducting an inventory of persons now working in the Ministry and includes Health Personnel of the Ministry of Local Government.

The purpose of this inventory is to assist in improving the record keeping system in the Ministry.

As a result we have designed the attached questionnaire which we hope will provide the necessary information for the system.

We suggest that you read carefully the Instruction Sheet, which is attached, as you proceed through the questionnaire. Your Supervisor will assist you if you have difficulty in completing this questionnaire.

When you have answered all the questions, insert your completed questionnaire in the envelope provided and give it to your Supervisor.

Please be assured that the information you are providing will be handled in strict confidence.

Thanks for your co-operation.

CEDRIC TAYLOR
Director of Personnel
Ministry of Health & Environmental Control

INSTRUCTIONS

1. **NAME** : Please print your name in the boxes provided, use one box for each letter. Print last name first.
2. **MAIDEN NAME** : For married women only.
3. **DATE OF BIRTH** : Fill in the boxes provided the day, month (number) and year of birth.
4. **SEX**
5. **MARITAL STATUS** : Place an X in the correct box.
6. Print in the boxes provided the name of your nearest relative or next of kin.
7. Indicate whether or not you have a National Insurance Scheme Number (NIS No.)
8. Include your National Insurance Scheme (NIS) Number. If you do not know it, go on to the next question.
9. Write your permanent address in the following order: (a) Street address, (b) Post Box, if any, (c) Village or town, (d) Parish.
10. If you are a Jamaican citizen, check the YES box. If you are not, check the NO box.
11. If you are assigned to work in or out of a facility, department, unit or building, place an 'X' in the YES box and list the facility, department or unit. If you do not work out of a facility, department or unit, check the NO box.
12. Write in the name and location (including the street address, post office and/or town or village, and parish) in which you work.
13. If your work assignment on the day you complete this questionnaire is a full-time assignment, check the YES box.
14. Check the box or boxes which best describe your appointment with MOHEC or MLG. If you check the 'other' box explain your answer. If you do not know, or if you are not sure, check the DON'T KNOW box.
15. Job information - Substantive job title (your permanent job title)
 - Your substantive post number
 - Include the classification grade of your substantive post number.
16. If you are now working in your substantive post, check the YES box and go on the Question 17.

If you are not working in your substantive post, check the NO box and then:

 - Check the next YES box if you are in an acting position and write in the name of the position in which you are acting.
 - Check the next NO box if you are not acting and write in the nature of your present assignment.

17. Write in the months and years in which you have been working in your present post or position.
18. Retired : If you are retired from any job, check the YES box. If you are not retired, check the NO box.
19. Training in a speciality : If you have formal training in any speciality or specialities (related or not related to your work) check the YES box and list the titles of the specialities in which you have been trained. If you have not had formal training in a speciality, check the NO box and go on to Question 21.
20. If you checked the YES box in Question 19 and are working in a speciality for which you have been trained, check the YES box in Question 20 and list the speciality or specialities. But if you are not working in a speciality or specialities for which you have been trained, check the NO box in Question 20 and list the area in which you are working.
21. Educational attainment : Check the box which represents the highest level of education you have completed.
22. This question concerns your formal schooling. For each diploma, certificate, degree, etc., write in the institution, year completed, the length of the schooling and source of financial support. If you have not received any certificate or degree, go to Question 23.
23. In-service training programs refer to courses, schooling, training, etc., you may have received while employed by MOHEC or MLG. If you have participated in programs of this kind since 1976, list the programs, the agency or organization which conducted the programs, the length of each program and the year completed.
24. If, in your work, you regularly do work activities for which you have not been trained to do, check the YES box and describe.
25. If during any training (school or on-the-job) you learned work activities that you never carry out in your job, check the YES box and describe.
26. Briefly describe the kind of training you think will make you a more efficient and effective worker.
27. Include here any comments or suggestions you think will improve the MOHEC or the MLG Personnel System.
28. The date, month and year you complete the inventory.

THANK YOU.

Insert your completed questionnaire in the envelope provided and turn it in as instructed.

12. List the town/village and parish in which you work:

Town/village

Parish

13. Are you now working full time? Check one - Yes No

14. Is your appointment: Check ALL appropriate boxes

Temporary Contract Part-time Permanent Don't know

Other, please explain: _____

15. What is:

Your substantive job title _____

The classification grade of your substantive position _____

Your post number _____

16. Are you presently working in your substantive post?

Yes - Go to Question 17

No - Are you acting? Check one - Yes No Don't know

List your post: _____

Describe your assignment: _____

17. How long have you been working in your present position?

Years

months

18. Are you a re-employed pensioner? Check one - Yes No

19. Have you been trained in a speciality? Check one -

Yes - List your speciality or specialities: _____

No - Skip Question 20 and go to Question 21

20. Are you spending a major portion of your time in a speciality for which you have been trained? Check one -

Yes - List the speciality or specialities in which you are now working: _____

No - List the area in which you are working: _____

21. Check your highest level of education attainment. Check one

- No formal schooling - Skip Question 22, go to Question 23
- One to four years of primary schooling
- Five or more years of primary/elementary schooling
- Some secondary schooling
- Completed secondary school
- Technical or vocational school
- College
- University
- Other - Please explain: _____

22. List the certificates, diplomas, and degrees you have received and indicate where and when completed, the duration of the study, and how you were funded:

Degree, Certificate, Diploma, etc.	Institution	Year completed	Duration of Study	Source of support		
				Self	Ja.Gov	Other

23. If you have participated in in-service training programs since 1976, provide the following information:

Name of Programs or Courses	Institution or Agency	Length of Program			Year completed
		Days	Weeks	Mons	

(OVER)

24. In your job, do you regularly do any work for which you have never received training? Check one -

- Yes - Please explain: _____
- No _____
- Don't know _____
-

25. During your job training, did you learn to perform work activities which you have never had to carry out in your work? Check one -

- Yes - Please explain: _____
- No _____
- Don't know _____
-

26. Please describe the kind of training you think would increase your effectiveness on the job:

27. Please include any additional comments or information you feel will help improve the Personnel system:

28. Date of completion: _____
Day Month Year

PLEASE CHECK TO BE CERTAIN
ALL ITEMS ARE ANSWERED.

THANK YOU

APPENDIX C

MOHSS Manpower Inventory Data Card

OPTIONAL CODING AREA

MOHEC MANPOWER INVENTORY

DATE: _____ REF. NO.: _____

NAME (LAST) _____ (FIRST) _____ (MIDDLE) _____ D.O.B. _____

PERM. ADDRESS _____ MAIDEN NAME (IF MARRIED) _____
STREET/P.O. BOX _____

CITY/TOWN _____ PARISH _____ PHONE _____

NAME OF CLOSEST LIVING RELATIVE (LAST) _____ (FIRST) _____ (MIDDLE) _____

ADDRESS _____ PHONE _____

HIS #: _____ SEX: 1. MALE 2. FEMALE

MARITAL STATUS: 3. SINGLE 5. DIVORCED
4. MARRIED 6. WIDOWED

JAMAICAN CITIZEN: 7. YES 8. NO LIST ASSIGNED DEPT. UNIT OR FACILITY _____

PARISH: 9. ST. THOMAS 16. WESTMORELAND
10. PORTLAND 17. ST. ELIZABETH
11. ST. MARY 18. MANCHESTER
12. ST. ANN 19. CLARENDON
13. TRELAWNY 20. ST. CATHERINE
14. ST. JAMES 21. KSAC
15. HANOVER

APPOINTMENT: 22. TEMP. 24. PART-TIME 26. OTHER _____
23. CONTRACT 25. PERMANENT _____

WHAT IS:
A. SUBSTANTIVE JOB TITLE: _____

B. CLASSIFICATION GRADE: _____

C. POST NUMBER: _____

ARE YOU PRESENTLY WORKING IN YOUR SUBSTANTIVE JOB TITLE
27. YES 29. ACTING-30 30. YES 31. NO
28. NO LIST POST: _____

HOW LONG IN PRESENT POSITION:
32. < 1YR 34. > 5 YR. < 10 YR.
33. > 1 YR. < 5 YR. 35. > 10 YR.

REEMPLOYED PENSIONER:
36. YES 37. NO

SPECIALTY TRAINING:
38. YES LIST (SEE REVERSE)

MAJOR PORTION OF TIME IN SPECIALTY:
39. YES 40. NO-LIST ARZA

IN-SERVICE TRAINING PARTICIPANT
50. YES (SEE REVERSE)

AWARDS, CERT., ETC.:
51. FIRST DEGREE 53. CERTIFICATE
52. SECOND DEGREE 54. DIPLOMA

GOVERNMENT OF JAMAICA
MINISTRY OF HEALTH AND
ENVIRONMENTAL CONTROL
PERSONNEL DIVISION

DESCRIBE ASSIGNMENT: _____

EDUCATIONAL ATTAINMENT:
41. NO FORMAL SCHOOLING 46. TECH/VOCATIONAL SCHOOL
42. 1-4 YRS PRIMARY 47. COLLEGE
43. 5+ YRS PRIM/ELEMENTARY 48. UNIVERSITY
44. SOME SECONDARY 49. OTHER (EXPLAIN) _____
45. COMPLETED SECONDARY

NOTES

JOB	PRES POS	PERM	SPLC	EDUCAT	ATTAIN	YR SURVEY																																																																																														
						1	2	3	4	5	6	7	8	9	10	11	12																																																																																			
FACT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

APPENDIX D

MOHSS Manpower Inventory Change of Status Form

PERSONNEL ACTION FORM

OHSS - Jamaica
Personnel Branch

For Revising and Updating the Manpower Inventory

Personnel Action No. _____

.. Name Mr. Mrs. Miss [] [] []	2. P.F. No. _____
Surname Given Names	
3. <u>Present or Previous Status</u> Department or Institution _____ Section or Unit _____ Location _____ Post Title _____ Post No. _____ Salary Group and Scale _____ Nature of Appointment _____ Incidence of Charge _____	4. <u>New Status</u>

5. <u>Action</u> <input type="checkbox"/> Appointment <input type="checkbox"/> Promotion <input type="checkbox"/> Extension of Appointment <input type="checkbox"/> Transfer <input type="checkbox"/> Termination of Appointment <input type="checkbox"/> Dismissal <input type="checkbox"/> Acting Appointment <input type="checkbox"/> Resignation <input type="checkbox"/> Assumption of Duty <input type="checkbox"/> Retirement <input type="checkbox"/> Renewal of Contract <input type="checkbox"/> Interdiction from Duty	6. <u>Effective Date</u> _____ <input type="checkbox"/> Leave with Full Pay <input type="checkbox"/> Leave with Half Pay <input type="checkbox"/> Leave without Pay <input type="checkbox"/> Study Leave <input type="checkbox"/> Extended Sick Leave <input type="checkbox"/> Completion of Training or Education <input type="checkbox"/> Other
---	--

If date of assumption differs from Item 6, the Supervisor should notify Estb. & Pers. Div. of new date.

7. Remarks: (Please use column fully in connection with 5)

8. Reference/Authority (e.g. Services Commissions, Min. of Fin., Min. of Health)

9. <u>Prepared by:</u>	10. <u>Authorized by:</u>
Signature _____ Date _____	for Permanent Secretary Signature _____ Date _____

11. Distribution:

1. Regional Office/Dept/Division	3. Accounts Branch	5. Officer
2. Personnel File	4. Section/Unit	6. Personnel Action Book

12. Enclosures () 13. Your Reference

APPENDIX E

**The Systematic Course Design
Curriculum Development Process**

The Center for Educational Development in Health (CEDH) Boston University as a pre-project activity conducted two workshops in competency based curriculum development. The approach is summarized here. The specific objectives of the workshops were to:

1. Train trainer-of-trainers in CEDH's Systematic Course Design (SCD) approach.
2. Develop specific competency based in-service training curricula based on the SCD approach.
3. Produce specific plans for in-service training programs.
4. Enable participants to practice teach in-service training curricula developed in the workshops.

Training Trainers in the Systematic Course Design Approach

CEDH's approach to course development is a competency based curriculum model and uses a workbook developed by CEDH under contract with USAID/DSB/Health.^{12/}

During the workshops (usually ten days in length), participants are taught the process of developing competency based curricula using the model. The steps are depicted in Figure 2. In this activity the aim is to enable participants to become sufficiently familiar with the SCD Model so that upon return to work sites, they could both teach the model to colleagues and develop additional courses using the model as a guide.

While participants were acquiring skills in learning and teaching the SCD model during the workshops, they produced to the Session Plan stage the 25 courses summarized in Appendix F. These courses contain detailed session plans (describing specifically what is to be taught) which will enable individuals other than those who developed the courses to teach the programs.

The courses also contain a series of entry and pre-tests and progress tests to be administered during a course and on-the-job post tests. Figure 3 depicts the process.

Another goal of the workshop was for participants to produce specific plans for teaching courses developed in the workshops. The development of these plans was hampered by the absence during the workshops of most of the Medical Officers.^{13/} Nevertheless, 13 parish representatives produced specific plans to teach courses developed in the workshop.

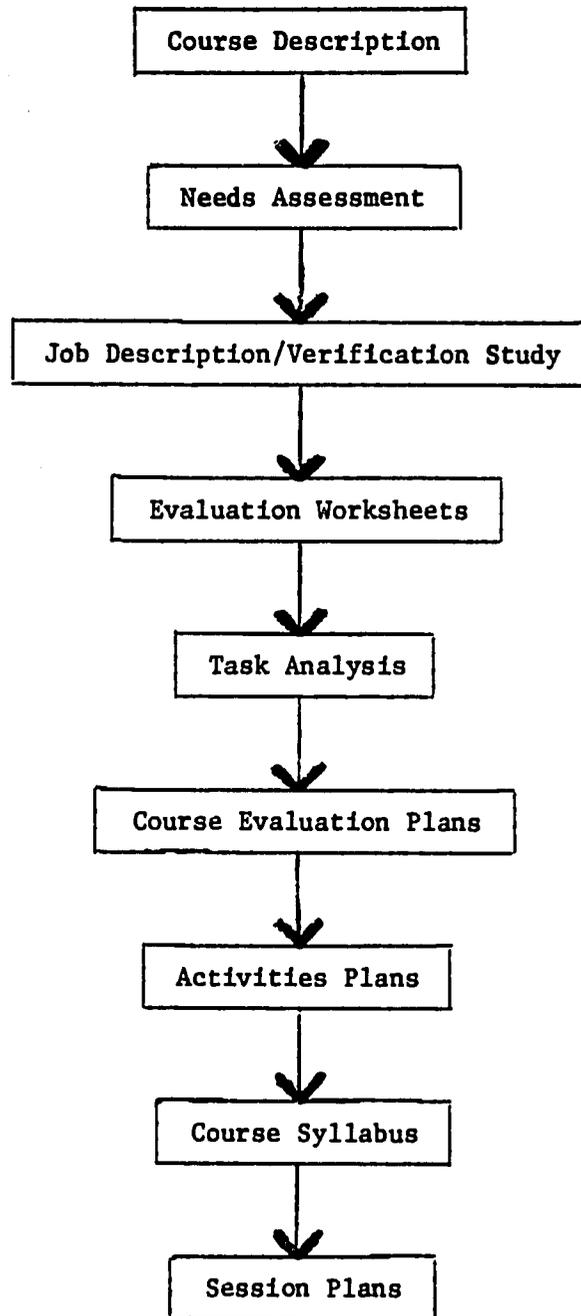
Workshop participants had opportunities during the workshops to teach each other's courses. This exercise was insufficient teacher training, but it did dramatize the fact that training courses produced in the workshops

^{12/}The workbook is Systematic Course Design for the Health Fields by Asher Segall, Hannelore Vanderschmidt, Ruanne Burglass and Thomas Frostman.

^{13/}These individuals are responsible for the administration of public health services at the parish level.

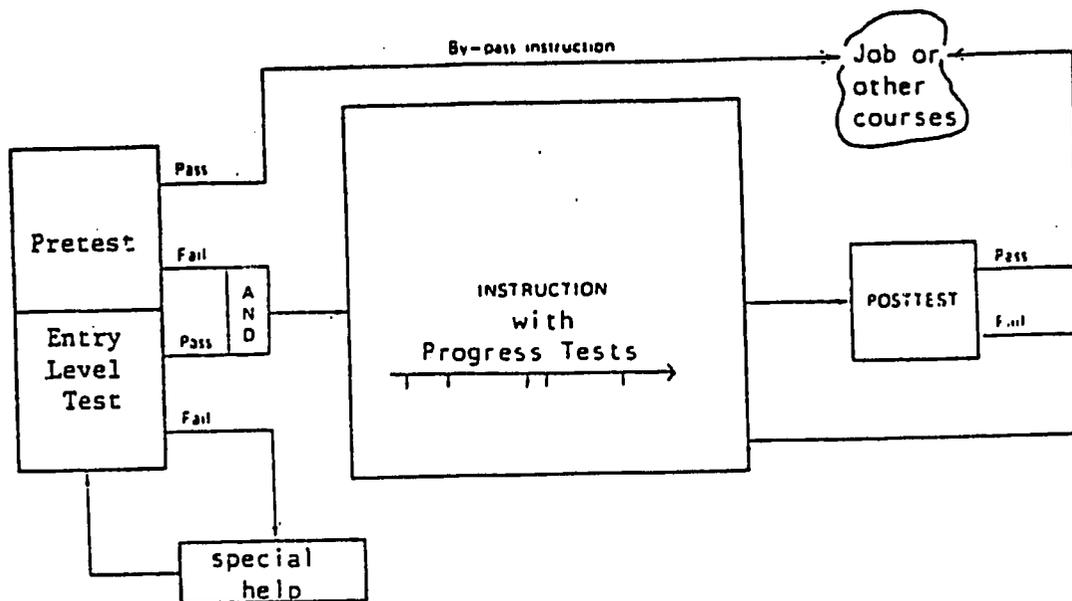
were so clearly described that most could be taught by skilled teachers even though they had not themselves designed a given course and had not communicated about how it should be taught with the teachers.

FIGURE 2. The Systematic Course Design Model ^{14/}



14/Adapted from Segall and Vanderschmidt, op. cit.

FIGURE 3. The Systematic Course Design Planning Evaluation Model



APPENDIX F

In-Service Training Courses Developed in MOHSS--
Boston University SCD Workshops

November 1979

Title of Course	Proposed Occupational Group to be Trained
Adolescent Fertility	School Nurses
Basic Nutrient and Requirements with Emphasis on Hypertension and Diabetes	Health Center Nurses, District Midwives, Environmental Nurses
Blood Letting Technique	Public Health Inspectors
Care and Treatment of Ulcers	Midwives, Community Health Aides
Counseling of Patients	Nurse Practitioners
Dressing	Community Health Aides
Dressing	District Midwives
Environmental Sanitation	Community Health Aides
Epidermiology	P.H. Nurses, P.H. Inspector
Family Life Education	P.H. Nurse, P.H. Inspector, Standard Nurse, Midwives
Family Planning	Community Health Aides
First Aid	All Categories
General Office Routine	Clerical Staff
Immunization	P.H. Inspectors
Interviewing and Counseling Techniques	District Midwives
Introduction to Dental Health	Senior Health Staff
Management Development and Supervision	Public Health Inspectors
Nutrition Education	Community Health Aides
Plotting of Weights on Gomez Chart	Community Health Aides
Postnatal Care	Health Center and Clinic Nurses
Principles of Dental Health	Dental Assistants
Recording	Whole Health Team
Sputum Testing	P.H. Nurses, P.H. Inspectors
Sterilization	Ward Assistants
Testing for Visual Defects	Staff Nurses

APPENDIX G

MOHSS Training Plan Format

Personnel Division

Training Branch

Training Plan Proposal

1. Individual submitting plan _____
Title _____ Telephone _____
2. Date submitted _____
3. Tentative title of course _____
4. Job title of proposed trainees _____
5. Length of course in hours _____
6. Estimated number of trainees _____
7. Has a needs assesment been completed? ___ Yes ___ No
8. If "No" is one scheduled ___ Yes ___ No
9. If "No" item 8, explain _____

10. If "Yes" to item 7, briefly describe:
 - a) The process _____

 - b) Major findings _____

11. List the major specific objectives of the course
 - 1) _____
 - 2) _____
 - 3) _____
 - 4) _____
 - 5) _____
12. Is a curriculum available? ___ Yes ___ No
13. If "Yes" is the curriculum based on competency based techniques?
 ___ Yes ___ No

14. If "No" to item 12, what plans do you have for developing the curriculum?
15. Briefly describe follow-up procedures to insure skills and knowledge taught in training are utilized on the job.
16. Starting date of course _____
17. Where will course be conducted? _____
18. Estimated cost of training.

	<u>Support Available from</u> <u>Requesting Unit</u>	<u>Support from</u> <u>Training Branch</u>
Teaching staff		
Curriculum development		
Materials		
Equipment		
Transportation		
Other (specify)		
TOTAL		

APPENDIX H

Participants in MOHSS-Boston University
Systematic Curriculum Development Workshops

Participants

Workshop 1: November 5-16, 1979

NAME	TITLE	ADDRESS
Blake, Dorothy	Medical Officer Health	Port Antonio, Portland Parish
Bowen-Gordon, Ruth	Nurse Practitioner Faculty	Flamingo Complex Kingston 5
Carroll, Cecile	Nurse Practitioner Faculty	Flamingo Complex Kingston 5
Cayemittes, Michel P. A.	Medical Officer Health	Spanish Town St. Catherine Parish
Davis, Myrna	School Dental Nurse	Dental Health Education Unit, 5a Old Hope Road Kingston 5
Dockery-Brown, Cheryl A.	Public Health Nurse	Hanover Health Department Lucea, Hanover Parish
Goodison, Audrey	Nutrition Assistant	Kingston-St. Andrew Cor- poration, 2 Winchester Road, Kingston 10
Lawrence, Grace	Nutrition Assistant	Savanna-la-Mar Westmoreland
Lewis, Mayol L.	Public Health Inspector	St. Ann Health Department St. Ann Parish
McPherson, Christine	Nurse Practitioner Faculty	Flamingo Complex Kingston 5
Moore, Harold	Health Educator	Portland Parish
Morgan, Kingsley B.	Acting Deputy Chief Public Health Inspector	Spanish Town St. Catherine Parish
Ngwe, Pearline	Nurse Practitioner Faculty	Flamingo Complex Kingston 5
Patterson, Meryln	Public Health Nurse	Health Department Port Antonio Portland Parish
Pinnock Barrett, Claudette	Public Health Nurse	Villa Nova H/C, Spanish Town, St. Catherine Parish

NAME	TITLE	ADDRESS
Pratt, Kathleen	Nutrition Assistant	Spanish Town H/O St. Catherine Parish
Rickets, Leroy	Acting Chief Public Health Inspector	Hanover Health Department Lucea, Hanover Parish
Small, Medlyn	Nutrition Assistant	Kingston-St. Andrew Corporation 2 Winchester Road Kingston 10
Stennett, Thelma	Public Health Nurse	Kingston-St. Andrew Corporation Health Office Marescaux Road Kingston 5
Swaby, Herlin	School Dental Nurse	Health Department St. James
Swaby, Jean	Nurse Practitioner	Flamingo Complex Kingston 5
Watson, Laurie	Public Health Inspector	Manchioneal P. O. Portland
Williams, Brenda	Nutrition Assistant	St. Ann Health Department
Williams, Norma	Health Educator	Kingston-St. Andrew Corporation

Participants

Workshop II: November 19-30, 1979

NAME	TITLE	ADDRESS
Austin, Gladys R.	Public Health Nurse	Health Department Hanover Parish
Ayr, Mabel D.	Radiographer	19 Buena Vista Terrace Kingston 6
Beckford, M. Glendon	Senior Public Health Inspector	Health Department Falmouth, Trelawny Parish
Beckford, Donaldson, L.	Public Health Nurse	Health Department Cornwall Regional Hospital
Blake, Hilma	Public Health Nurse	St. Elizabeth Health Department

NAME	TITLE	ADDRESS
Brown-Mighty, Mizvelt	Public Health Nurse	Health Department Westmoreland
Carr, S. Guy	Senior Public Health Inspector	Seaforth, St. Thomas Parish
Coke, Lorna D.	Public Health Nurse	Health Office, Browns Town, St. Ann Parish
Collins, Lee	Nutrition Assistant	Black River St. Elizabeth Parish
Creary, Norma G.	Health Educator	54 Warner Street Port Maria St. Mary Parish
Elson, Winnifred	Public Health Nurse	Health Department Westmoreland
Francis, Cynthia	Public Health Nurse	Port Morant St. Thomas Parish
Francis, Valrie J.	Nutrition Assistant	Health Department Lucea, Hanover Parish
Fraser, Ralph A.	Chief Public Health Inspector	Health Department Falmouth, Trelawny Parish
Gradison, Darrel	Nutrition Assistant	Health Office, Port Maria St. Mary Parish
Gutzmore-Lowe, Laura	Senior Public Health Nurse	Health Department Cornwall Regional Hospital
Henry, Bereta	Public Health Nurse	Health Department Falmouth, Trelawny Parish
Holding, Marjorie	Medical Officer Health	Kingston-St. Andrew Corporation Health Depart- ment, Kingston
Lake, Cleveland F.	Public Health Inspector	Kingston-St. Andrew Corporation Health Depart- ment, 5 Brettford Avenue Kingston 10
McGibbon, Chester	Public Health Inspector	1 Michele Crescent Edge Water, Bridge Port
McKoy, Edna M.	Health Educator	Health Office, St. Ann Bay, Port Antonio Portland Parish

NAME	TITLE	ADDRESS
Miller-Brown, Olivia	Public Health Nurse	Health Department Falmouth, Trelawny Parish
Mills, Lachlan A.	Public Health Inspector	Health Office, Morant Bay St. Thomas Parish
Morales, Milton R.	Public Health Inspector	Health Office, May Pen St. Elizabeth Parish
Morgan, Enid	Senior Public Health Nurse	Health Office, Port Maria St. Mary Parish
Reid, Daphne	Public Health Nurse	Oracabessa, St. Mary Parish
Richmond, Una L.	Public Health Nurse Schools	Health Office Marescaux Road Kingston 5
Robins, Anthony	Public Health Inspector	Health Office, Port Maria St. Mary Parish
Rowe, Cherrie M.	Health Educator	Health Office, St. Ann Bay, St. Ann Parish
Salmon, Nina L.	Sister	68 Augusta Vale Avenue W.D.P.O.
Samuels, Wesley	Public Health Inspector	Health Department Westmoreland
Sangoe, Babatunde	Medical Officer Health	Health Department Falmouth, Trelawny Parish
Service, Marie M.	Health Educator	Health Department Spanish Town St. Catherine Parish
Simpson, L. Diane	Health Educator	Health Department Cornwall Regional Hospital
Smith, Adrian T.	Senior Public Health Inspector	St. Elizabeth Health Department St. Elizabeth Parish
Smith, Dudley G.	Senior Public Health Inspector	Black River St. Elizabeth Parish
Whetter-King, Mavis M.	Senior Public Health Inspector	Health Department, Lucea Hanover Parish

**Participants By Profession
Workshops On Systematic Course Design
November 5-16 and November 19-30, 1979
Kingston, Jamaica**

<u>TITLE</u>	<u>WORKSHOP I</u>	<u>WORKSHOP II</u>	<u>TOTAL</u>
Public Health Nurse	4	14	18
Public Health Inspector	4	11	15
Nutrition Assistant	5	3	8
Health Educator	2	5	7
Nurse Practitioner	5		5
Medical Officer of Health	2	2	4
Dental Nurse	2		2
Ward Sister		1	1
Radiographer	—	<u>1</u>	<u>1</u>
	24	37	61

MOHEC UNITS

Parishes Represented

Clarendon
 Hanover
 Portland
 St. Ann
 St. Catherine
 St. Elizabeth
 St. James
 Kingston and St. Andrew
 St. Mary
 St. Thomas
 Trelawny
 Westmoreland

Other Units

Flamingo Complex, MOHEC
 Dental Health Education, MOHEC
 Radiography, MOHEC

APPENDIX I

MOHSS-Boston University
Systematic Course Design
Curriculum Development Workshop Outline

WORKSHOP

**PLANNING AND COMPETENCY BASED
CURRICULUM DEVELOPMENT**

NOVEMBER 19, 1979 - NOVEMBER 30, 1979

SPONSORED BY

MINISTRY OF HEALTH AND ENVIRONMENTAL CONTROL

AND

THE CENTER FOR EDUCATIONAL DEVELOPMENT IN HEALTH

BOSTON UNIVERSITY

BOSTON, MASSACHUSETTS

AT THE

INTERCONTINENTAL HOTEL

KINGSTON, JAMAICA

STAFF

Hyacinth Stewart-Bulgin
Chief, Training Branch
Personnel Division
Ministry of Health and Environmental Control
Kingston, Jamaica

Jose Carnerio
Director, Latin American Programs
Center for Educational Development in Health
Boston University
Boston, Massachusetts, U.S.A.

Lori Vanderschmidt, Ph.D.
Associate Director
Center for Educational Development in Health
Boston University
Boston, Massachusetts, U.S.A.

John W. McCollum, Ph.D.
Consultant
U.S.A.I.D.
Washington, D.C., U.S.A.

WORKSHOP PURPOSES

1. Produce specific plans for In-Service Training Programs at the course level.
2. To acquire skills in Systematic Course Design Approach.
3. To develop specific In-Service Training Programs.
4. To practice teaching programs developed in the Workshop.

TRAINING COORDINATORS FOLLOW-UP WORKSHOP

NOVEMBER 19-30, 1979

WEEK ONE

Time	Monday 19	Tuesday 20	Wednesday 21	Thursday 22	Friday 23
8:30	Welcome Introduction Purposes Parish level Training Problems	Developing Program Descriptions	Job Perfor- mance Verification of Job Description	Continued	Complete Evaluation Plan
10:30	C O F F E E				
10:45	Developing Parish Train- ing Plans and Program Priorities	Developing Job Descrip- tions	Continued	Task Analysis	Continued
1:00	L U N C H				
2:00	Continued	Developing Job Descrip- tions	Continued	Continued	Sequencing and Ordering Tasks
4:00	C O F F E E				
4:15	The System- atic Course Design Approach	Verification of Job Descriptions	Describing Student Performance	Continued	Presenta- tions

WEEK TWO

Time	Monday 26	Tuesday 27	Wednesday 28	Thursday 29	Friday 30
8:30	Summary Activities Plans	Continued	Developing Tests and Program Evaluation	Practice Teaching	Continued
10:30	C O F F E E				
10:45	Continued	Session Plans	Continued	Continued	Presenta- tions
1:00	L U N C H				
2:00	Syllabus	Continued	Continued	Continued	Closing Exercises
4:00	C O F F E E				
4:15	Continued	Continued	Continued	Continued	

APPENDIX J

Workshop Evaluation Results

Systematic Course Design Workshop: November 19-30, 1979

(Workshop II, N = 35)

Training Branch

•

MOHSS and CEDH Boston University

Dear Participant:

Please complete this confidential questionnaire. Your cooperation will assist us in improving future workshops. DO NOT SIGN YOUR NAME.

Thank you.

- 1) I found the Systematic Course Design booklet...Check one:
 1. 23 very useful
 2. 11 somewhat useful
 3. not very useful
 4. not useful

- 2) I found the presentations of the participants-instructors...Check one:
 1. 25 very useful
 2. 7 somewhat useful
 3. 2 not very useful
 4. not useful

- 3) Regarding the course content, the instructors (3) were...Check one:
 1. 27 very knowledgeable
 2. 7 somewhat knowledgeable
 3. not very knowledgeable
 4. totally ignorant

- 4) As a result of your participation in the workshop, do you feel you are now able to conduct on your own or with a fellow participant Systematic Course Design Workshops? ...Check one:
 1. 31 yes
 2. 2 no - please explain Need more work in evaluation and performance testing.

 3. don't know - please explain _____

- 5) As a result of your participation in the workshop, do you feel capable of developing additional courses following the Systematic Course Design Model? ...Check one:
 1. 33 yes
 2. 2 no - please explain some assistance needed

 3. 1 don't know

6) Please describe how you might be able to use the Systematic Course Design Model in your work. BE SPECIFIC.

16 - SCD book makes it easy to do things systematically

20 - Will use method in own parish

7) Other than release time (which is obvious) what kind of support, technical assistance, materials, etc., do you think will improve your effectiveness as a trainer? BE SPECIFIC.

15 - Financial support

4 - Technical assistance

9 - Resource material

- Guidelines for evaluation

13 - Equipment and audio
visual aids

2 - Resource center needed

3 - Support from MOH and
other senior officers

- Revised Systematic
Course Design book

8) Were the hotel accommodations satisfactory? ...Check one:

1. 20 yes

2. 14 no - please explain 6 - catering poor; 7 - food unsatisfactory;
4 - noise from kitchen in classroom; 4 - breakfast late and
other meals; 4 - rooms not properly tidied; towels needed

9) Do you have any suggestions for improving future workshops?

19 - Send objectives of workshop and readings in advance

2 - Increase length of workshop

- Do not allow phone calls

- Repaint blackboards

10) Do you have other suggestions or comments?

2 - All participants should be involved; perhaps use small groups

3 - Consider using other hotel

2 - All participants should attend all sessions

- Individual projects better than group projects

9 - Course good, have sense of achievement

3 - Follow-up of course needed every 6 months

- Training abroad desirable

- More secretarial support

Evaluation

Systematic Course Design Workshop: November 5-16, 1979

(Workshop 1, N = 25)

Training Branch

MOHSS and CEDH Boston University

Dear Participant:

Please complete this confidential questionnaire. Your cooperation will assist us in improving future workshops. DO NOT SIGN YOUR NAME.

Thank you.

1) I found the Systematic Course Design booklet...Check one:

1. 7 very useful
2. 15 somewhat useful
3. 2 not very useful
4. 0 not useful

2) I found the presentations of the participants-instructors...Check one:

1. 16 very useful
2. 8 somewhat useful
3. 0 not very useful
4. 0 not useful

3) Regarding the course content, the instructors (3) were...Check one:

1. 7 very knowledgeable
2. 17 somewhat knowledgeable
3. not very knowledgeable
4. totally ignorant

4) As a result of your participation in the workshop, do you feel you are now able to conduct on your own or with a fellow participant Systematic Course Design Workshops? ...Check one:

1. 21 yes
2. 3 no - please explain _____

3. don't know - please explain _____

5) As a result of your participation in the workshop, do you feel capable of developing additional courses following the Systematic Course Design Model? ...Check one:

1. 23 yes
2. 1 no - please explain _____

3. don't know

6) Please describe how you might be able to use the Systematic Course Design Model in your work. BE SPECIFIC.

- 9 - In-Service training 1 - Training trainers
- 6 - Development of teaching 2 - Planning course
- 2 - Development of education 3 - Developing course
- 2 - Developing curriculum 3 - Community health education

7) Other than release time (which is obvious) what kind of support, technical assistance, materials, etc., do you think will improve your effectiveness as a trainer? BE SPECIFIC.

- 1 - Formal assistance 2 - Practice
- 4 - Assistance from team 9 - More materials
- 9 - Training branches 1 - Training in parish
- 1 - Transportation 7 - Financial support
- 1 - More workshops 4 - Resident person

8) Were the hotel accommodations satisfactory? ...Check one:

- 1. yes
- 2. no - please explain _____

9) Do you have any suggestions for improving future workshops?

- 15 - Objectives of workshop
- 7 - Instructor's lecture prior to subject

10) Do you have other suggestions or comments?

APPENDIX K

S P U T U M T E S T I N G T E C H N I Q U E S

F O R

P A R I S H H E A L T H W O R K E R S

Developed by

Doctor Dorothy Blake, Medical Officer (Health) (MOH)
Portland Parish, Jamaica

During A Workshop

Conducted By

The Training Branch
Ministry of Health and Social Security (MOHSS)
Kingston, Jamaica, West Indies

and

Center for Educational Development in Health (CEDH)
Boston University
Boston, Massachusetts 02215
USA

November 3 - November 16, 1979

INSTRUCTIONAL SITUATION

- COURSE TITLE: Sputum testing techniques for Parish Level Health Workers.
- COURSE PURPOSES: To equip health workers with skills in sputum testing techniques in order to increase case finding of tuberculosis cases.
- EXPECTED STUDENTS: Full Course: Public Health Nurses, Public Health Inspectors.
Half Course: District Midwives and Community Health Aides.
- SETTING: Methodist Church Hall, Port Antonio, Portland Parish, Jamaica, Type III, Health Centres.
- EQUIPMENT: Disposal bins, incinerators, desks, chairs, lamps, educational materials, paper, flip charts, felt pins, an overhead projector.
- PERSONNEL:
1. Medical Officer, Chest Clinic, Kingston, Jamaica.
 2. Technician from Central Laboratory, Kingston, Jamaica.
 3. Medical Officer of Health (MOH), Portland Parish, Family Health Practitioner (FHP), Public Health Inspector (PHI).
- FUNDS: Funding/Health: (a) Staff from Kingston (traveling and subsistence), and (b) Support, Microscopes, Reagent, other available equipment at stores.
- COMMUNITY: Port Antonio Tuberculosis League and Rotary of Port Antonio: Microscopes and Equipment will be provided by Ministry.
-

CONSTRAINTS:

January 1980: (a) 2 funding sessions beginning the second week for full course; (b) (b) 2 x 3 days sessions (i.e., first 3 days of (a) for the half course).

Port Antonio Homes

Full course - 30 hours

Half course - 18 hours

Number of Students

41 students -- 21 of which will have the full course.

RESOURCES:

Laboratory Facilities

3 microscopes -- slides

Reagents for planning and decorating sputum containers

spatulas

slide racks -- slide boxes

3 Benzene Burners

3 Safety Cabinets

Marking crayons, table s

COURSE AREA:

Half Course: Community motivation, sputum collection, fixation, recording.

Full Course: The above and staining techniques and microscope reading of slides. Recording of results.

JOB DESCRIPTION
(Portland Parish)

JOB TITLE: Communicable disease case funding (tuberculosis) for Public Health Nurses, Public Health Inspectors, District Midwives, Community Health Aides, and Assistant Entomologist in Portland Parish and eventually in the entire country.

TASKS:

- A.
1. Identifies persons with a persistent cough (lasting three weeks or more) or other symptoms suggestive of tuberculosis.
 2. Refers the above persons to Health Centres for sputum testing.
 3. Prepares area for sputum collection and smearing.
 4. Collects sputum.
 5. Prepares labels and smear slides.
 6. Fixes slides.
 7. Records slide number, name, address, sex and other data.
 8. Prepares slide for transport.
 9. Stores slides.
 10. Cleans work area including disposal of contamination of materials.
 11. Observes safety precautions.
- B. For Public Health Inspectors and Public Health Nurses (only):
1. Organizes work area.
 2. Stain slides by Ziehl-Neilson technique and cold staining technique (Kiniouns method).
 3. Decolorizes and dries slide.
 4. Examines slides under microscope.
 5. Records findings.
 6. Interpret findings.
 7. Referral  treatment (patient)
culture (slide).
 8. Store slides.
-

EVALUATION WORKSHEET

Describe Desired Job and Student Performance

TASK A1. To identify persons with a persistent cough (lasting more than three weeks) or other symptoms suggestive of tuberculosis.

WHERE TASKS ARE PERFORMED	CONDITIONS	PERFORMANCE
On the job	When given... individual patients in the community or Health Centres who are exhibiting signs and symptoms suggestive of tuberculosis.	The trained worker will... - Recognize the signs and symptoms, interpret them and take appropriate action.
In the classroom	verbal description with aid of flip charts lectures. Role playing situations and film showing individual patients who are exhibiting signs and symptoms of tuberculosis.	- The student will recognize and lists the signs and symptoms (interpret and record) and demonstrate appropriate actions using fellow students. Conduct interviews to elicit symptoms on persons for sputum testing.

TASK A2. Refers the above persons for sputum testing to the Health Centre.

On the job	When given... individuals needing referral for further examinations.	The trained worker will... - Counsel clients as to ease fear and gain confidence. - Instruct clients to go to appropriate clinic for test. - Fill out referral card or write letter for clients to take to the clinic indicated.
------------	---	---

End of Course	When given... role playing situations individuals needing referral for further examination.	The student will... - Demonstrate the fore-mentioned procedure.
---------------	--	--

TASK A3. Prepare area for sputum collection and smearing.

On the job	When given... patients presenting sputum for smearing.	The trained worker will... - At the clinic organize the area for collecting sputum and smearing slides.
Classroom	When given... an overhead projection with work area and labeled apparatus.	The student will... - Recognize, assemble and organize similar instruments in a similar area.

TASK A4. Collect sputum.

On the job	When given... individuals needing to have sputum tested.	The trained worker will... - Give client specific instructions on how to cough up sputum: • obtain sputum jar with sputum from client • exercise safety procedures • label sputum jar.
Classroom	When given... role playing situations of individuals needing sputum testing.	The student will... - Demonstrate the ability to explain the process successfully and effectively.

TASK A5. Prepare, label and smear slides.

On the job	When given... a sputum jar with sputum.	The trained worker will... - Produce a labeled, smeared slide.
Classroom	When given... a jar with actual sputum, a slide and a pencil.	The student will... - Label and smear slide in the appropriate manner.

TASK A6. Fix slides.

On the job	When given... slides which has to be labeled and smeared with sputum.	The trained worker will... - Fix slides using standard fixing procedure.
Classroom	When given... the above equipment.	The student will... - Perform the above procedure.

TASK A7. Record data relevant to each slide.

On the job	When given... a fixed slide or slides.	The trained worker will... - Note in a systematic manner, in a record book, slide number, patients' names, address, age, sex, date of labeling.
Classroom	When given... a fixed slide or slides.	The student will... - Note in his notebook the above data.

TASK A8. Prepares slides for transport.

On the job	When given... slides for transport.	The trained worker will... - Verify that: • Slides are smeared, fixed, labeled and recorded. • Insert slides in space provided in box. • Exercise safety precautions as instructed. • Fill out transport sheet.
Classroom	When given... above equipment.	The student will... - Demonstrate the above for class.

TASK A9. Store slides.

On the job	When given... one or more slides at the end of early clinic session.	The trained worker will... - Store slides in appropriate boxes (serially numbered) in a cupboard.
Classroom	When given... several slides representing the days intake.	The student will... - Store slides serially (according to number) in a box.

TASK A10. Clean work area including disposal of contaminated materials.

<p>On the job</p>	<p>When given... work area and satisfaction that work area is ready for cleaning.</p>	<p>The trained worker will...</p> <ul style="list-style-type: none"> - Clear work area: <ul style="list-style-type: none"> • replacing instruments in correct place. • arranging all equipment which should be washed or sterilized. • arrange materials to be incinerated. • throughout the procedures exercise safety measures.
<p>Classroom</p>	<p>When given... criterion clarification for completed slides.</p>	<p>The student will...</p> <ul style="list-style-type: none"> - Demonstrate the above procedure.

TASKS A11. Observes safety precautions.

<p>On the job</p>	<p>When given... an assignment to collect and fix slides in a multi-health centre.</p>	<p>The trained worker will...</p> <ul style="list-style-type: none"> - Observe maximum precaution for personal protection. - Use checklists to insure noncontamination of the work area.
<p>Classroom</p>	<p>When given... a checklist of safety procedures to check at start or finish of certain procedure levels.</p>	<p>The student will...</p> <ul style="list-style-type: none"> - Be given procedure levels to list appropriate precautions for that level or levels.

TASK B1. Organizes work area.

On the job	When given... the worker is given a fixed slide for microscope testing.	The trained worker will... - At the clinic will organize the work area.
Classroom	When the student is given... a work area for organization.	The student will... - Carry out the above.

TASK B2. Stains slides by Ziehl-Neilson technique and cold staining techniques (Kiniouns method)

on the job	When given... correctly fixed slides and stain.	The trained worker will... - Carry out standard staining procedures.
Classroom	When slides have been correctly fixed and staining procedure explained (overhead, handout).	The student will... - Carry out staining techniques.

TASK B3. Decolorizes and dries slides.

On the job	When given... a fixed slide.	The trained worker will... - Decolorize and dry slides using standard procedures.
Classroom	When given... a fixed slide and instruction on the standard decolorizing and drying procedure.	The student will... - Demonstrate the above.

TASK B4. Examine under microscope sputum samples of persons with persistent cough or other symptoms suggestive of tuberculosis.

On the job	When given... a correctly stained decolorized retained slide.	The trained worker will... - Examine it under a microscope.
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Classroom	When shown... theoretically (handout) explained practically a slide is filtered and examined.	The student will... - Follow technique and take turns at microscope.
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TASK B5. Records findings.

On the job	When given... thorough examination of slide is completed.	The trained worker will... - Record his findings (whether or not any tubercle bacilli are found).
Classroom	When given... above is complete with aid of instructor.	The student will... - Record his findings.

TASK B6. Interprets findings.

On the job	When given... results from a slide.	The trained worker will... - Interpret the slide as smear positive, smear negative or doubtful.
Classroom	When given... a series of results and criteria.	The student will... - Learn how to interpret results according to criteria given.

**TASK B7. Refers: treatment (patients)
 culture (slide)**

On the job	When given... interpretation (analysis) of slide.	The trained worker will... - Take appropriate actions.
Classroom	When given... analysis of slide.	The student will... - Make recommendations as to action which should be taken.

TASK B8. Stores slides.

On the job	When given... fully processed slides.	The trained worker will... - Store slides as serially labeled in boxes.
Classroom	Same as above.	Same as above.

TASK ANALYSIS

TASK A1. Identifies persons with a persistent cough or other symptoms suggestive of tuberculosis.

SKILLS

KNOWLEDGE

Thinking:

- | | |
|--|---|
| - Reflexively think of tuberculosis before a prolonged cough/symptom in any member of the community. | - Tuberculosis cases finding programme. |
| - Specifically seeking for symptoms in patients presenting at a clinic. | - Tubercle bacilli transmission symptoms. |

Doing:

- | | |
|---|-------------|
| - Observe members of household they are visiting. | - As above. |
| - Questions patient. | |
| - Examines patient. | |

Communicating:

- | | |
|---|---|
| - Explains program to members or groups within the society. | - Questions to ask and <u>not</u> to ask. |
| - Express oneself's verbally in history taking or interviewing. | |
| - Explain what tuberculosis is and is not. | - Chain of transmission of tuberculosis. |
| | - Signs and symptoms. |

TASK A2. Refer the above persons to Health Centres for sputum testing.

Thinking:

- | | |
|---|-------------------------------|
| - Plans whether or not to complete referral slip. | Tuberculosis referral system. |
|---|-------------------------------|

Doing:

- Classifies patients.
- Send patient with referral card.
- Check on referral feedback.
- Explanation of referral forms.
- Nearest health centre identified.
- Recall to check patient referral.
- Follow up (outcome)

Communicating:

- Advise, counseling, persuade patient to cooperate.
- Express oneself in writing.
- Communication skills.
- Psychological and interpersonal techniques regarding tuberculosis.

TASK A3. Prepares area for sputum smearing and collection.

Thinking:

- Plan method of preparation for streamlined operations, for prevention of contamination.
- Systematic steps--checklist efficacy speed.
- Danger of personal contamination.

Doing:

- Arrange instruments and sputum jars in work area.
- The procedures and instruments and equipment needed for each procedure of smearing fixing labeling.

Communicating:

- Able to question students.

Checkpoint:

- Arrangement of work area.

TASK A4. Collects sputum.

Thinking:

- Safety precautions.
- Instructions on safety precaution procedures.
- Instructions for patients.
- How sputum is produced.

Doing:

- Collect sputum in jar and label.
- Distinguish sputum from saliva.
- Labeling instructions.

Communicating:

- Instructions to patient.
- Communication skills with patients.

TASK A5. Prepares label and smears slide.

Thinking:

- Important steps: correct data, legible writing, correct smear.
- Detection of tuberculosis patient depends on smear test.
- Labeling of slide important to ensure right person is treated (not treated)

Doing:

- Procedure of labeling, smearing.
- How to select part of sputum where bacilli likely to be if present.
- Where to label.

Communicating:

- Legible writing.
- Records.
- Communicate to all other workers.

Checkpoint:

- Smear a slide.
- Check each student's technique and finished slide.

TASK A6. Fixes slide.

Thinking:

- Plan steps of protection.
- Slide fixing technique.
- List of reagents, if any need.

Doing:

- Fix slide.
- Demonstration of the technique.

Checkpoint:

- Check that each student has produced a correctly fixed slide.

TASK A7. Records slide number, name, address, sex.

Thinking:

- Accurate correspondence of data on slide to data recorded.
- Importance of record keeping for feedback, for recall.
- The recording system explained.

Doing:

- Note all required appropriate information in the appropriate record book.
- Demonstration of data recording.

Communicating:

- Be able to write in acceptable.
- Basic requirement for categories of staff trained.

Checkpoint:

- Record data for 5 sample slides in student's own notebook.

TASK A8. Prepare slide for transport.

Thinking:

- Verify that preparation process has been correctly completed.
- Transport procedure explained. What happens to slide when it leaves health centres.
- Safety precautions.
- Safety precautions (checklist).

Doing:

- Reassemble slides in an appropriate box.
- Procedures explained above now demonstrated.
- Fill out transport sheet.

Communicating:

TASK A9. Storage of slides.

Thinking:

- Develops checklist.
- Serial numbering.
- Recall (as above).
- Storage system used.

Doing:

- Store slides in cupboard.
- Storage system (as above).

Communicating:

Checkpoint:

- Store slides prepared by students.
- Oral check of procedures.

TASK A10. Cleans work area; disposal of contaminated materials.

Thinking:

- Safety precautions.
- Safety precautions as related to contamination.
- Principles of the individual, the Centre, the slides themselves, contamination/decontamination.

Doing:

- The cleaning of work area disposal of contaminated material.
- Cleaning process.
- Storage.
- Disposal of contaminated material.

Communicating:

TASK A11. Observes safety precautions.

Thinking:

- Develops mental checklist of safety procedures.
- Contamination mechanisms and possibilities:

- slides
- areas
- operator

Doing:

- Carry out safety procedures (as listed)
- understands checklist provided with procedure steps.

Communicating:

- Able to read instructions.
- Supervise area staff.
- Internalize instructions by practice.
- Supervision of skills.
- Necessity for responsibilities.

Checkpoint:

- Written
- Safety procedures.
- multiple choice
- circle correct procedure

TASK B1. Preparation of work area for staining and direct microscopic examination.

Thinking:

- Plan method of preparation for streamlined operations, for prevention of contamination and of poorly prepared slides.
- The reagents and equipment necessary.
- Systematic checklist.
- Importance of the staining operation.

Doing:

- Arrange equipment and slides on work area.
- The order of procedure and instruments/reagents needed for each phase of staining.

Communicating:

Checkpoint:

- See Task No. 3.

TASK B2. Stain slides by Ziehl Neilsen and/or Kinyoun Method.

Thinking:

- Plans procedure.
- Recalls problem of overstaining.
- Instructions given concerning sequence of steps--pitfalls stressed.
- Chemicals in reagents used in both methods.

Doing:

- Stain slide using Ziehl-Neilsen or Kinyoun Method.
- Technique given (demonstrated).

Communicating:

Checkpoint:

- Stain slide by both methods.
- Correctly staining 4 to 5 slides.

TASK B3. Decolorize and dry slides and restain.

Thinking:

- Procedure - potency - quantity of decolorizing agent.
- Chemicals and proportions.

Doing:

- Decolorize and dry.
- Technique given.

Communicating:

Checkpoint:

- Follows Task 7.
- 4 to 5 slides correctly decolorized restained slides.

TASK B4. Examines stained slide under a microscope.

Thinking:

- Automaticity of microscope manipulation.
- Concept of bacilli counted by fields.
- The microscope.
- The morphology of the tubercle bacilli.
- Notion of fields.

Doing:

-- Detect tubercle bacilli of present.

- Manipulation of microscope.
- Shape of bacilli (number of artifacts).

Checkpoint:

- Slide prepared by student.
- Adequate number of fields/slide.
- Detect tubercle bacilli.

TASK B5. Records findings--Slides read by direct microscopy.

Thinking:

- Perfect correspondence of data recorded to findings under microscope for a given slide number.
- Importance of record keeping
 - Feedback
 - Recall.
- The recording system used.

Doing:

- Note all required information in appropriate record book.
- Demonstration of data recording of slides read by direct microscopy.

Communicating:

- Know how to record serially and alphabetically.
- Basic requirement for category of staff included.

Checkpoint:

- Record data for 5 sample slides. Students use notebook.

TASK B6. Interprets findings.

Thinking:

- Concentration of bacilli and criteria for positive/negative sputum smears.
- The pathology of tuberculosis recalled/explained in significance of bacilli concentration, diaphanous of the presence or absence of the disease.

Doing:

- Make a final written report of results.
- Criteria of ^{positive} doubtful to be applied.

Communicating:

- Referral cards.

- The lines of referral to be used depending on findings.

Checkpoint:

- Definition of negative - positive - doubtful (oral and written).

TASK B7. Referral for treatment and/or culture (slide).

Thinking:

- Responsibility of referral for treatment to stop disease/ contagious process.
- Chemotherapy breaks chain of transmission; cures patient.

Doing:

- Referral cards filled out - appointment.
- Referral procedure explained
 - o treatment
 - o culture.
- Patient transport arranged, if necessary.

Communicating:

- Writing skills.
- Communications for health purposes.
- Counseling - persuasion techniques.
- Patient cooperation necessity for this.

TASK B8. Store slides - transport.

Thinking:

- Reference material needed for feedback.
- Evaluation, feedback, recall possibilities of stored material.

Doing:

- Slides stored.
- Cards stored.
- Card system for each positive slide and corresponding serial storage of slides.
- Positions separated from negatives doubtful sent to Central Laboratory for independent culture.

Communicating:

- Systematic recording ability.

- Record keeping basic requirement.

COURSE EVALUATION PLAN

CONDITION	PERFORMANCE
When given...	The students will...
1. Paper and pencil tests	<ul style="list-style-type: none"> - correctly list signs and symptoms relating to tuberculosis - list conditions which contribute to its spread - explain procedure of referring patients for sputum testing and treatment.
2. a. Directions in class	Recall <ul style="list-style-type: none"> ◦ main symptoms of tuberculosis ◦ chain of transmission ◦ importance of sputum examination.
b. Fellow students	<ul style="list-style-type: none"> - Conduct interviews with patients presenting or suspected of having above symptoms. - Perform referral procedure.
3. A work area	Request/research necessary equipment and <ul style="list-style-type: none"> - prepare work area, i.e., collection - fixing - staining - microscope examination
4. Instructions	<ul style="list-style-type: none"> - list labeling and safety routines
Fellow students	<ul style="list-style-type: none"> - give instructions to patients for collect sputum
5. A slide and sputum	<ul style="list-style-type: none"> - describe the steps in making, fixing and storing sputum smear
6. A work area at end of fixing/staining operations.	<ul style="list-style-type: none"> - clean and store away equipment - dispose of and list disposal routine of contaminated materials.
7. A multiple choice checklist.	<ul style="list-style-type: none"> - Choose the correct safety procedures (some of the above including).

<p>8. A fixed sputum smear.</p> <p>9. Two prepared smears (known to be + or -).</p>	<ul style="list-style-type: none">- Stain the sputum by Kinyoun's (or Ziehl-Neelsen) method under supervision of instructor.- Examine the sputum under the microscope and detect tubercle bacilli if present. - Recognize tubercle bacilli or say none present.- Interpret findings.- Decide on referral.
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ACTIVITIES PLAN

<p><u>EVALUATION EVENTS</u> (from Evaluation Plan)</p> <p>Progress Test</p>	<p><u>ACTIVITIES</u></p>
<p>1. When given a pencil and paper test, the student will</p> <ul style="list-style-type: none"> • correctly list the main signs and symptoms of tuberculosis • describe chain of transmission and referral procedure (pre-test) 	<p>A. Pre-test.</p>
<p>2. When given directions in class, the student will recall the main symptoms of tuberculosis.</p>	<p>A. Lecture/discussion</p> <ul style="list-style-type: none"> • Tuberculosis in the island and parish • Pilot area <p>B. Epidemiology of tuberculosis - definition</p> <ul style="list-style-type: none"> • chain of transmission • symptoms (film, flip chart) <p>C. Handouts (tuberculosis 20 questions)</p>
<p>3. When given fellow students, the student will carry out interviewing or discussion demonstrating communication skills in identifying patients at risk, motivate, refer them to health centre for sputum test or treatment (program).</p>	<p>A. Role play patient interviewing</p> <p>B. Demonstrate referral procedure</p>

<p>4. When given a classroom area, e.g., desk for sputum collection, smearing, staining, the student will be able to get a patient to produce sputum</p> <ul style="list-style-type: none"> • request necessary equipment and arrange them • list reagents needed to fix and stain slides (Program). 	<ul style="list-style-type: none"> A. Lecture on collection, fixing and staining B. Demonstration of work area preparation C. Handouts listing instruments, reagents
<p>5. When given slide and sputum, the student will demonstrate ability to fix and stain slides, then store and/or arrange for transport (Program).</p>	<ul style="list-style-type: none"> A. Demonstration of fixing and staining technique B. Group practice
<p>6. When given a work area at the end of a fix--staining operation, the student will</p> <ul style="list-style-type: none"> • clean and store away equipment • dispose of contaminated materials (Program). 	<ul style="list-style-type: none"> A. Lecture on safety precautions, i.e., contaminated materials (personal safety) B. Discussion C. Handout (checklist)
<p>7. When given multiple choice checklist on sputum testing, the student will choose correctly safety procedures (Program).</p>	<ul style="list-style-type: none"> A. Lecture B. Demonstration
<p>8. When given a smeared sputum stained slide, the student will examine it under a microscope and interpret it correctly by defining positive, negative or doubtful slide (Program).</p>	<ul style="list-style-type: none"> A. Talk/demonstration (explain microscope) B. Handout on microscope C. Explain morphology of tubercle bacilli and how it presents under the microscope D. Demonstrate counting bacilli by fields E. Demonstrate how to interpret

9. When given a patient with symptoms of tuberculosis, the student will take a smear, fix, stain, examine under microscope interpret correctly and recommend course of action.

A. Post test

COURSE SYLLABUS

Course: Sputum Testing Techniques for Parish Health Workers

SESSION	IN-CLASS ACTIVITIES (To be completed this session)	OUTSIDE ACTIVITIES (To be completed before next session)
<p>Day I</p> <p>Session 1</p> <p>Time: 1 1/2 hrs.</p>	<ol style="list-style-type: none"> 1. Lecture/discussion <ul style="list-style-type: none"> - Incidence of the tuberculosis in Island and Parish in particular (overhead project) - Development of pilot sputum testing programme in parish. 2. Brief overview of course, outline objectives. 3. Pre-test--multiple choice questionnaire. 	
<p>Session 2</p> <p>Time: 1 1/2 hrs.</p>	<ol style="list-style-type: none"> 1. Lecture/discussion: Epidemiology of tuberculosis (flip chart) <ul style="list-style-type: none"> - definition - transmission - signs/symptoms (importance of cough). 2. Film: Tuberculosis. 3. Question and answer period. 	<p>Handout (1) Tuberculosis 20 questions answered.</p>

<p>Session 3 Time: 1 1/2 hrs.</p>	<ol style="list-style-type: none"> 1. Instructor's briefing on role playing expectations. 2. Role playing. 3. Critique, discussions and summary. 	
<p>Session 4 Time: 1 1/2 hrs.</p>	<ol style="list-style-type: none"> 1. Sputum collection <ul style="list-style-type: none"> - how to instruct patient to produce sputum from lungs. 2. Basic notions of safety precautions. 3. Evaluation. 	
<p>Day II Session 1 Time: 1 1/2 hrs.</p>	<ol style="list-style-type: none"> 1. Talk: preparation of work table for collection, fixing and staining. 2. Knowing - equipment <ul style="list-style-type: none"> - reagents. 3. Handout (1) listing equipments and reagents (see manual). 4. Demonstration by one group of students in organizing work area. 5. Critique. 6. Practice: students in groups of two prepare their work area for next session. 7. Safety precaution exercise (test). 	

<p>Session 2 Time: 1 1/2 hrs.</p>	<ol style="list-style-type: none"> 1. Talk/demonstration <ul style="list-style-type: none"> - smear slide - fix slide. 2. Student practice <ul style="list-style-type: none"> - smearing and fixing slides under instructors supervision. 3. Demonstration by best team. 4. Clean-up and decontamination procedures (checklist) 	
<p>Session 3 Time: 1 1/2 hrs.</p>	<ol style="list-style-type: none"> 1. Evaluation <ol style="list-style-type: none"> a. list reagents, instruments used in fixing and staining slides b. individual ability to correctly smear, fix, stain slides c. record and clean-up. 	
<p>Day III Sessions 1 and 2 Time: 3 hrs.</p>		<ol style="list-style-type: none"> 1. Visit to Health Centre <ul style="list-style-type: none"> - collect sputum and prepare slides.
<p>Session 3 Time: 1 hr.</p>	<ol style="list-style-type: none"> 1. Field visit report <ul style="list-style-type: none"> - discussion of strength and weaknesses of students. 	<p>See modifications to the course, page D-39.</p>

<p>DAY IV</p> <p>Session 1</p> <p>Time: 1 1/2 hrs.</p>	<ol style="list-style-type: none"> 1. Review preparation of work area <ul style="list-style-type: none"> - staining procedure - reagents used for staining. 2. Demonstration <ul style="list-style-type: none"> - staining and de-colorizing procedures. 	
<p>Session 2</p> <p>Time: 3/4 hr.</p>	<ol style="list-style-type: none"> 1. Student practice. 	
<p>Session 3</p> <p>Time: 1 hr.</p>	<ol style="list-style-type: none"> 1. Introduction to microscope (overhead projector). 2. Demonstration on use. 	
<p>Session 4</p> <p>Time:</p> <p>(See modifications, Appendix N</p>	<ol style="list-style-type: none"> 1. Explain morphology of tubercle bacilli. 2. Demonstration - counting of bacilli by fields. 3. Explain how to interpret. 4. Evaluation <ul style="list-style-type: none"> - complete labeling drawing of microscope - list reagents in Kinyoun's method. 	
<p>Day V</p> <p>Sessions 1 and 2</p> <p>Time:</p>	<ol style="list-style-type: none"> 1. Review. 2. Student practice <ul style="list-style-type: none"> - prepared slides are given to students to distinguish negative and positive slides (post test). 	<p>Visit to Health Centre to collect sputum (full course only).</p>

<p>Session 3</p> <p>Time:</p> <p>(See modifications, Appendix N)</p>	<p>Final Evaluation Session, Discussion and planning.</p>	
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DAY 1, SESSION 1

SESSION PLAN

ACTIVITIES

1. Brief overview; outline objectives. At the end of the course the students will be able to fix, stain and examine sputum smears by direct microscope and so diagnose bacillary cases of tuberculosis at the parish level.

APPROACH/CONTENT

15 minutes

Welcome and introduction.

Stress objectives of course and give clear sense of direction.

30 minutes

State problem of tuberculosis in parish and island.

Inform on recent findings and developments in tuberculosis control.

--Mention first Caribbean Workshop on tuberculosis--October 1979.

2. Lecture-discussion on the incidence of tuberculosis in the island and Portland Parish in particular, the development of a sputum testing programme in the parish.

Identification for need of tuberculosis control programme in Jamaica with decentralized sputum testing as major component.

Portland designated as pilot. Explain:

--what is meant by pilot area

--the responsibility of participants as pilot workers.

5 minutes

Entertain questions and comments.

3. Pretest.

20 minutes

Administer multiple choice questionnaire.

DAY 1, SESSION 2

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
<p>1. At the end of the session the students will recall facts on:</p> <p>--what is tuberculosis</p> <p>--cause and transmission</p> <p>--signs and symptoms and prevention therapy.</p>	<p><u>5 minutes</u></p> <p>Introduction</p> <p>--State objectives</p> <p><u>40 minutes</u></p> <p>Using flip chart, describe tubercle bacilli.</p> <p>Chain of transmission - infected human or animal to man.</p> <p>Predisposing conditions.</p> <p>Symptoms - Productive cough for more than 3 weeks (cardinal symptom).</p>
<p>2. Lecture on epidemiology of tuberculosis:</p> <p>--basic notions of tuberculosis</p> <p>--coughers suffering from tuberculosis: key link in transmission chain.</p>	<p>Diagnosis</p> <p>--manteaux</p> <p>--X-ray</p> <p>--clinic</p> <p>--laboratory</p> <p>Prevention</p> <p>Thereapy</p> <p>Contact tracing</p> <p>Follow-up patients at parish level.</p>
<p>3. Film on tuberculosis.</p>	<p><u>15 minutes</u></p> <p>Introduce and project film.</p> <p><u>10 minutes</u></p> <p>Question and answer period.</p> <p>Distribute handouts.</p>

DAY 1, SESSION 3

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
<p>1. Role play - identification and referral of persons with symptoms suggestive of tuberculosis.</p>	<p><u>10 minutes</u></p> <p>State objectives of session.</p> <p>Briefings on expectations of role play</p> <p>--Explain characters.</p> <p><u>20 minutes</u></p> <p>Class Activity.</p> <p>Arrange class into groups of four and have each group role play an interview-counseling-referral situation in a clinic. At the same time, nonparticipating members observe and record behaviour-skills, etc., displayed (noting strong-weak desirable or undesirable as the case may be).</p> <p>Nonparticipating members critique - discussion.</p> <p><u>45 minutes</u></p> <p>Regroup class, each group role play for benefit of entire class.</p> <p>Reporters give critique.</p> <p>Discussion.</p>
<p>2. Objectives: At the end of the session, participants will display skills in interviewing counseling and referring patients for sputum testing or treatment.</p>	<p><u>15 minutes</u></p> <p>Session leader gives summary and conclusions.</p>

DAY 1, SESSION 4

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
<p>1. Objective - At the end of session, the student will be equipped with techniques for selecting a valid sample for sputum examination.</p>	<p><u>15 minutes</u></p> <p>State objectives of session.</p> <p>Briefing on role play expectations.</p> <p>Patient to produce sputum at Health Centre.</p> <p>Another sputum first thing in the morning at home; therefore, instructions on how to produce from lungs as distinct from saliva.</p> <p>Patient to be instructed to cough.</p> <p>How to induce cough if necessary.</p> <p>Techniques - spatual - chemical.</p>
<p>2. Role play - sputum testing.</p>	<p><u>35 minutes</u></p> <p>Role play.</p> <p>Critique and discussions.</p> <p><u>40 minutes</u></p> <p>Point out safety precautions related to above operations.</p> <p>Basic notions of safety precaution techniques:</p> <ul style="list-style-type: none">--recall chain of transmission containing bacilli--exposure of worker. <p>Handout safety precautions:</p> <ul style="list-style-type: none">--read section relating to sputum collection.

DAY 2, SESSION 1

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
<p>1. Objective: Students with information and techniques susceptible of leading to development of correct work habits (preparation)</p> <p>--material for sputum smearing</p> <p>--prepare a work area.</p> <p>2. Lecture-demonstration.</p> <p>Prepare work area</p> <p>--sputum collection</p> <p>--sputum fixing - staining.</p> <p>Leading idea: Table prepared in given order allows for rapid accurate processing.</p>	<p><u>5 minutes</u></p> <p>1. Introduction of session and objectives. Students to prepare work area at end of session.</p> <p>2. Lecture - demonstration.</p> <p>Introduction of main equipment.</p> <p>Jars (already seen) - slides - grease pencil - loop - bunsen burner, etc. - chemicals for staining.</p> <p>3. Order of layout (overhead projector).</p> <p>Work from left to right - jars - slides, spatula/loop, burner, slide, rack, etc.</p> <p>4. Safety precautions.</p> <p>Separate smearing area from staining area.</p> <p>Disposed/washing - sterilization of materials.</p> <p>Cleaning work surfaces.</p> <p>Washing hands.</p> <p>5. Students in work training (distribute handouts).</p> <p>Label unlabeled handouts (diagram).</p> <p>Prepare work area.</p>

DAY 2, SESSION 2

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
<p>Lecture/Demonstration/Practical:</p> <p>Smearing) slides</p> <p>Fixing)</p> <ul style="list-style-type: none">- Clean up work area- Safety precautions. <p>Objectives:</p> <p>At end of session student</p> <ol style="list-style-type: none">1. will - produce at least 2 smeared slides<ul style="list-style-type: none">- fixed- clean work areas2. skill has been equipped with basic notions on safety precautions.	<p><u>One hour</u></p> <p>Setting:</p> <p>Immediate follow on to the preceding session.</p> <p>Lecture/Demonstration:</p> <ul style="list-style-type: none">- Equipment and chemicals to be used.- Technique of smearing and fixing demonstrated by the instructor.- Smearing and fixing demonstrated by 3 students <u>the all students</u>.- Cleaning up operations explained this as an introduction to safety precautions to be dealt with. <p><u>30 minutes</u></p>
<p>Leading idea: Poorly prepared slide diagnostic failure and ineffective case finding.</p> <p>Safety Capital Notion:</p> <ul style="list-style-type: none">- Equipment needed for instructor- Handout safety precautions- Advise the 3 students demonstrating before hand.	<p>Safety Precautions:</p> <p>In any laboratory setting <u>SAFETY</u> is a key feature and should be central to one's mind.</p> <ul style="list-style-type: none">- Instructor to go through check list (hand out) point by point. Insist that it will be evaluated at all steps of the course.

DAY 2, SESSION 3

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
Lecture in classroom	A. Introduction:
Recording	--to recording storage--transport principles used (see sample forms)
Storage	--State objective
Transport of slides	--State leading idea.
Referral	B. Recording -- storage -- transport -- after fixing slides (Type I setting): Demonstration.
Patient	
Leading idea	Recording:
Important stage for:	1. Number placed on left side of slide with grease pencil.
--feedback	2. Inquire book record number, name, age, sex, address.
--recall of data	*3. Slide placed in slide box arranged by numbers sequentially, e.g., #1-200.
--rapid liaison.	4. Storage in cupboard.
Patient with tuberculosis not lost from sight or mistaken for well person.	**5. If to be transported, careful packing to avoid contamination--fill out transportation sheet. Insist-- slides must be sent off in 48 hours.
Objective:	
By the end of session the student should understand and can simulate recording - storage - transport of slides - procedures.	C. Recording - storage - transport - referral (Type II and III Setting) 1. Inquire book listing as above if different clinic from the one where slide was fixed.

*Storage.

**Transport.

DAY 2, SESSION 3 (continued)

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
Lecture in classroom	2. Cards for all positive slides (overhead + sample cards sent around).
Recording	3. Referral - Treatment
Storage	--Explain to patient tuberculosis no disgrace, treatment short--cure total.
Transport	4. ? ? ?
Referral	D. Practice
	--Three students asked to demonstrate the procedures just demonstrated by instructor.
	--After each student demonstration--class criticism and questions.
	E. Discussion--the course so far:
	--Question and answer period
	--Remind objectives of course--sum up tasks accomplished so far--to capitulate all leading ideas.

DAY 2, SESSION 4

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
Evaluation:	<u>10 minutes</u>
--written and practical.	1. Multiple choice items testing knowledge of:
Post Test--in the class for half-course participants.	--Symptoms --Chain of transmission
Objective:	--Counseling and referral.
--Test that the student	<u>5 minutes</u>
a. can do the tasks taught	2. Complete labeling of equipment (fixing) diagram.
b. has grasped the main concepts.	<u>45 minutes</u>
	3. Arrange reagents and chemicals used for smearing--fixing--prepare work area. 4. Smear and fix 4 slides, clean work area--record--store.
	<u>10 minutes</u>
	5. In 10 lines describe recycling --storage --transfer --referral procedure.
	<u>15 minutes</u>
	6. Safety precautions and cleaning.

DAY 3, SESSIONS 1 and 2 (half course only)

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
<p>Objective:</p>	<p>Handout given the preceding outlining post test activity.</p>
<p>Post test to evaluate the trained worker's ability to perform task on job.</p>	<p><u>3 hours</u></p> <p>Setting: Type III Health Centre - Nurse Practitioners, Clinic or Doctor's Referral Clinic.</p>
<p>Practical on the field:</p>	<p>Application of techniques taught the previous days.</p>
<p>--Symptomatic patients sputum testing (fixing procedures).</p>	
<p>Leading idea:</p>	
<p>A timed streamlined operational function.</p>	
<p>Objective:</p>	
<p>Test students who have grasped technique both in classroom and in field.</p>	

DAY 3, SESSION 3

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
Discussion/Classroom	<u>10 minutes</u>
Evaluation of first half course.	Discussion on morning's activities.
Leading idea: Evaluate for feedback as to student's performance and course evaluation.	Summing up (a) leading ideas (b) objectives.
	Summing up of activities and students expected learning acquisitions and performance.
	<u>20 minutes</u>
	Administration of course evaluation forms.
	<u>30 minutes</u>
	Discussion-Questions
	--Operation, feasibility of new programme
	--Handout manuals.
	<u>15 minutes</u>
	Congratulate participants and tell them they have a great responsibility and role in tuberculosis eradication.

DAY 5, SESSION 3

<u>ACTIVITIES</u>	<u>APPROACH/CONTENT</u>
<p>Round Table Discussion:</p> <ul style="list-style-type: none">- Evaluation of the full course on Sputum Testing- Discuss Parish plans for Sputum Testing	<p><u>10 minutes</u></p> <p>Guest:</p> <p>Medical Officer of Chest Clinic:</p> <ul style="list-style-type: none">- to emphasize leading idea of session- to recapitulate leading ideas of previous sessions- importance of pilot area.
<p>Leading idea: Workers now functional members of a pilot programme.</p>	
<p>Objective:</p> <ul style="list-style-type: none">- Give course its context and future projection.- Evaluate course.- Motivate students to participate in planning - to be operational.	<p><u>40 minutes</u></p> <p>Evaluation:</p> <ul style="list-style-type: none">- Course evaluation (hand out evaluation forms) by students.- Discuss previous days/morning's evaluation - students performance in light of organizers expectations - students expectations.- Outline future on the job evaluation: slides counter check every 3 months.
	<p><u>35 minutes</u></p> <p>Discuss (with guest):</p> <p>Future parish sputum testing programme in light of constraints:</p> <ul style="list-style-type: none">- National and Regional recommendations- Time for personnel to attend to new duties- Facilities - manpower- Motivation (of staff and public)- Role of the community.

DAY 5, SESSION 3 (continued)

ACTIVITIES

APPROACH/CONTENT

5 minutes

Congratulate participants - emphasize role and responsibility and confidence in ability to live up to expectations.

- Evaluation Forms.

- Contact Medical Officer - brief him on leading ideas previous session. Message this session expected of him.

COURSE TESTS

(Also used as post test Group I-Progress Test Group II)

Pre-Test

State which of the following items are true or false:

	<u>True</u>	<u>False</u>
1. All persons suffering from tuberculosis have a cough.	_____	_____
2. Most Jamaicans regard TB as a minor disease.	_____	_____
3. TB patients are mainly from poor, undernourished, overcrowded, situations.	_____	_____
4. The incidence of TB is rising steeply in Jamaica.	_____	_____
5. A patient can have TB from undernourishment even though he is not infected by the tubercle bacilli.	_____	_____
6. Sputum tests can detect tubercle bacilli in the lung.	_____	_____
7. But an X-ray is a better method of detecting the pulmonary disease in a person.	_____	_____
8. Nurses in TB hospitals show a higher incidence of TB than other nurses.	_____	_____
9. All patients with a prolonged cough should be <u>forced</u> to take a sputum test.	_____	_____
10. Ordered storage and recording of data is good but not necessary in a sputum testing programme.	_____	_____

IN THE FOLLOWING QUESTIONS CIRCLE THE CORRECT ONE AMONG THE MULTIPLE ITEMS. ONLY ONE ITEM IS CORRECT.

1. Tuberculosis is caused by:
 - A. Human beings and animals
 - B. Smoking and drinking excessively
 - C. A germ called a tubercle bacilli
 - D. Living in overcrowded and poor conditions.
2. If you had to advise someone to seek medical attention for suspected tuberculosis because of a cough, would you send him for:
 - A. An X-ray and a BCG
 - B. A BCG only
 - C. A general medical examination and a sputum test
 - D. A mantoux test and an X-ray.

3. Tuberculosis is:
 - A. Incurable
 - B. Curable but rarely so.
 - C. Is almost always curable but it takes at least two (2) years to effect cure.
 - D. Is almost always curable and it can be as short as eight (8) months to effect a cure.

4. If you had to prepare a work area for laboratory work, it would be more efficient and time saving to:
 - A. Begin the procedure and get what instruments or equipments as the need for them arises.
 - B. Put all the equipment in one box so they won't get lost or contaminated and look for them when you need them.
 - C. Make a list of everything you will need in that task and arrange them beforehand on the table in the order in which they will be used.
 - D. Make a list of everything you will use in that test and check off at the beginning of the procedure that they are all in the box.

5. In making a sputum smear what is important is to:
 - A. Spread sputum as thinly as possible and as evenly as possible.
 - B. Spread sputum as thickly and evenly as possible.
 - C. Place sputum in one spot without spreading it to prevent contamination.
 - D. Place sputum in one spot to leave space for labeling of the slide.

6. The correct way to counsel a patient about going for a sputum test is to:
 - A. Make him afraid
 - B. Coerce him by using the law or community opinion
 - C. Allay fear, explain the importance and let him change
 - D. Promise some material rewards

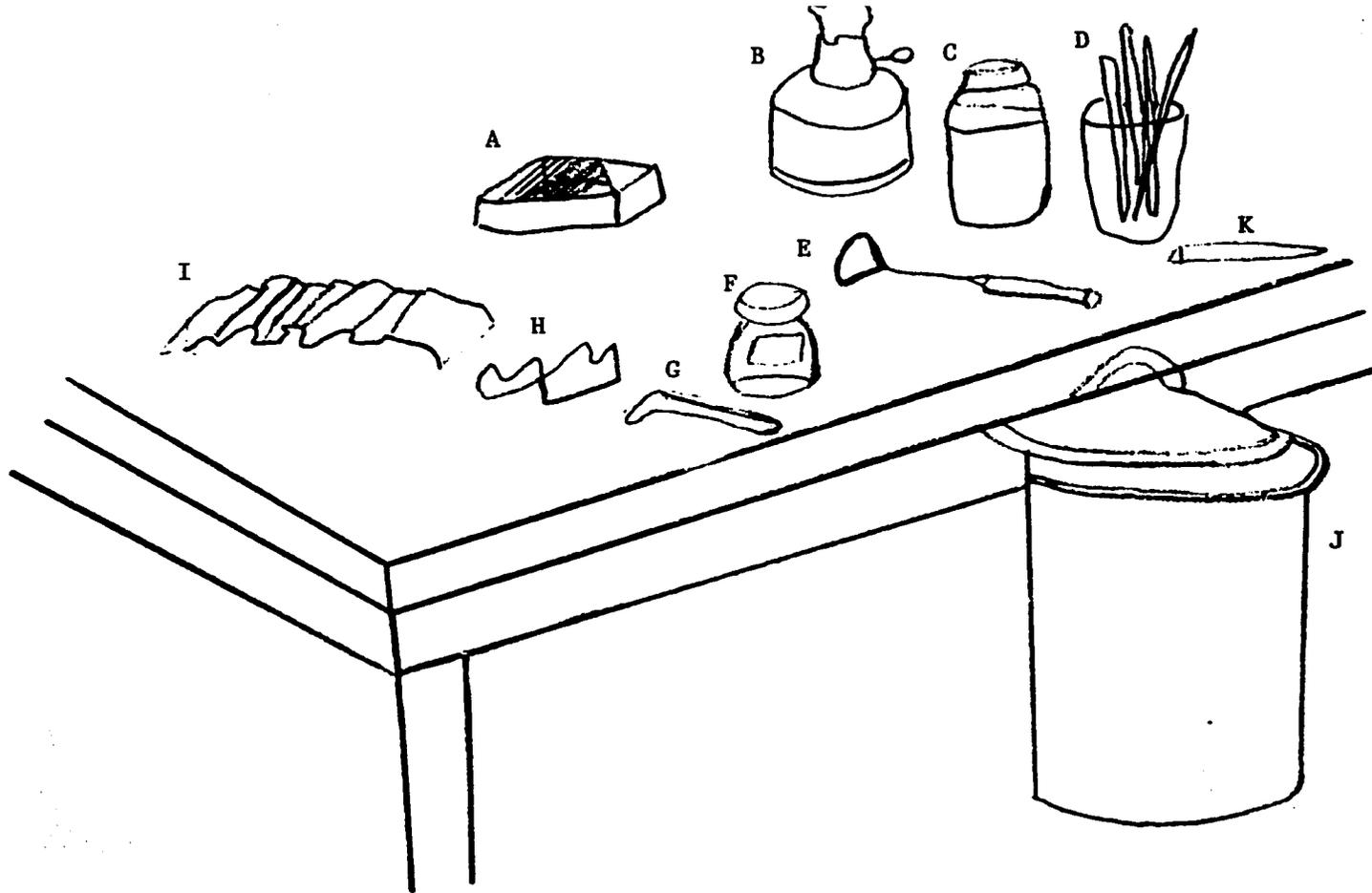
7. Sputum of a tuberculous patient is most contagious if:
 - A. Left in an open jar
 - B. Mixed on an unprotected slide
 - C. Inhaled
 - D. Touched with fingers

8. Which chemical is used in the staining procedures?
 - A. Alcohol
 - B. Sodium chloride
 - C. Gentian blue
 - D. Haematoxylin red.

STATE WHICH OF THE FOLLOWING ARE TRUE OR FALSE.

	<u>True</u>	<u>False</u>
1. Once a slide is fixed it is no longer infectious.	_____	_____
2. A fixed slide can be cleaned with soap and water and used again.	_____	_____
3. If infected material is spilled, disinfectant must be poured over it and left for 5 minutes.	_____	_____
4. Disinfectant in the pails may be used for four to five days without changing.	_____	_____
5. Washing hands before leaving the work area is necessary only if material has been spilled.	_____	_____

In the Class Post Test Group I
In the class Progress Test Group II



GROUP I

SPUTUM TESTING PROGRAMME FOR PARISH HEALTH WORKERS

On-the-job POST TEST (Half Course)

Each participant will be given 2 sputum jars and will collect 1 sputum specimen from each patient, smear and fix 4 (four) slides (i.e., 2 per specimen) using the correct safety precautions and record and transfer slides.

SPUTUM TESTING PROGRAMME FOR PARISH HEALTH WORKERS

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MULTIPLE CHOICE--ONLY ONE ANSWER IS CORRECT.

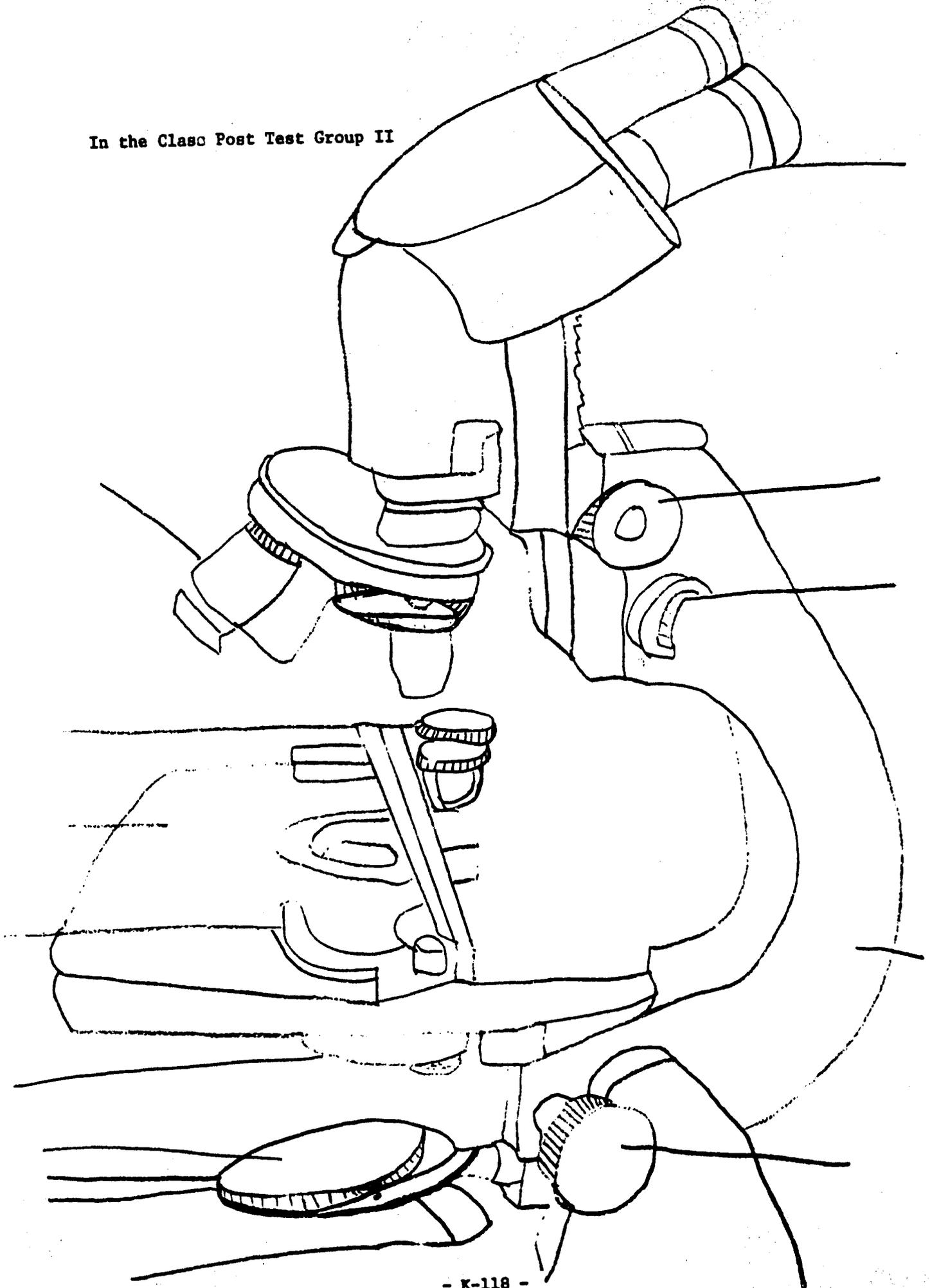
1. The right order of stains is as follows:
 - A. Methylene Blue -- Carbol-fuschin -- Acid Alcohol
 - B. Carbol-fuschin -- acid alcohol -- Methylene Blue
 - C. Acid Alcohol -- Carbol-fuschin -- Methylene Blue.

2. Tuberculosis should be suspected in an individual:
 - A. If there is persistent cough
 - B. If found in his family history as it can be hereditary
 - C. If he requests a general medical examination and sputum test
 - D. If there is no B.C.G. scar.

WRITE TEN (10) LINES.

1. What is the purpose of acid alcohol in the staining process:
And what results do you obtain at the end of the staining process.

In the Class Post Test Group II



GROUP II

SPUTUM TESTING PROGRAMME FOR HEALTH WORKERS
POST TEST--IN THE CLASSROOM

A. THE FOLLOWING RESPONSES ARE ALL RIGHT EXCEPT ONE, CIRCLE THE ONE REPLY WHICH IS FALSE:

1. False positive readings can be caused by:
 - A. Wrongly labeling the slide
 - B. Using the same slide twice
 - C. A poorly disinfected loop
 - D. Spillage of sputum on work area.

2. If nothing or little is seen through the oil immersion objective this might be because:
 - A. The slide has been put on the stage the wrong way up
 - B. The lens of the objective is dirty
 - C. The mirror has been adjusted with the slide on the stage
 - D. The condenser is not close up enough to the slide.

3. The following stains can be used in staining procedure for M. Tuberculosis:
 - A. Methylene Blue
 - B. Brilliant Cresyl Blue
 - C. Carbol-fuschin
 - D. Malachite Green.

4. When preparing your work area the following are necessary:
 - A. Water
 - B. Means of disposal of contaminated material
 - C. Microscope slides
 - D. A positive sputum specimen.

5. Tuberculosis germ is not so infectious if it is:
 - A. Fixed on a slide
 - B. Is left exposed to bright sunlight
 - C. Inhaled
 - D. Placed on a loop and heated.

SPUTUM TESTING TECHNIQUES FOR PARISH HEALTH WORKERS

On-the-job POST TEST

Each trained worker will in a clinic be assigned a symptomatic patient to motivate and counsel to produce sputum in a jar, smear and fix slide using correct safety precautions and preparations. The worker will then stain slide, examine it under a microscope, record and take appropriate action.

SPUTUM TESTING TECHNIQUES FOR PARISH HEALTH WORKERS

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END OF TRAINING COURSE EVALUATION

	Not at All	A little	A good deal	A great deal
1. To what extent were the goals of the training session achieved?				
2. To what extent was the teaching material relevant to your work situation?				
3. To what extent were the training sessions adequate?				
4. To what extent were the practical sessions adequate?				
5. To what extent did the demonstration exercises contribute to your learning?				
6. To what extent were the visual aid supports helpful?				
7. To what extent will the techniques you have learned be immediately applicable in your work?				
8. To what extent will this course improve your <u>ability</u> at TB case finding?				
9. To what extent will this course improve your <u>in-terest</u> in TB case finding?				

10. How would you describe the length of the training course?

Too short

Too long

Just right

APPENDIX L

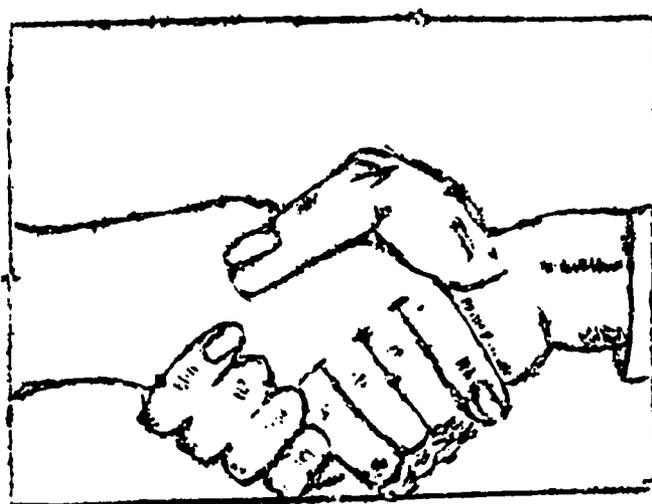
Basic Characteristics of Participants
Enrolled in Sputum Testing Techniques for
Parish Level Health Officers

Job Category	Number	Sex	Age Ranges	Approximate Educational Background
Nurse Practitioner	1	F	20-30 years	University equivalent
Public Health Nurse	7	F	20-30 years-4 30-40 years-2 50-60 years-1	High School plus 2 years basic nurse training Public Health School plus 4 years nurse training and one year Post Public Health School
District Midwife	10	F	20-30 years-7 30-40 years-2 40-50 years-1	Secondary (incomplete) plus two year training in midwifery
Enrolled Nurses	2	F	20-30 years-2	Primary/Secondary plus 10-month training
Community Health Aides	8	F	20-30 years-5 30-40 years-2 40-50 years-1	Primary/Secondary plus 6-week training
Public Health Inspectors	7	M	20-30 years-3 30-40 years-3 40-50 years-1	Secondary plus 2 year public health course Post-graduate training plus 2 years training in addition
Entomological Assistant	1	M	50-60 years	Primary plus basic entomology (Mosquito Control)
Anti-tuberculosis League	2	M-1 F-1	20-30 years-1 30-40 years-1	Both secondary schoolteachers

APPENDIX M

Materials Distributed to Workshop Participants

TUBERCULOSIS



20 QUESTIONS ANSWERED

Issued by: Portland Anti-Tuberculosis League Committee.

20 QUESTIONS ON TB ANSWERED

1) WHAT IS TB?

Tuberculosis is an infectious disease. Any organ of the body can be affected, but it is usually found in the lung - respiratory TB.

2) WHAT CAUSES TB?

Tuberculosis is caused by a germ called the tubercle bacillus (or Koch's Bacillus). They are small rod-shaped germs invisible except by microscope. They are protected by wax-like envelope which makes them some of the most resistant germs but dies in a few minutes in dry sunny places.

The germs are to be found in the untreated tuberculosis patient who by coughing, spitting and sneezing spreads large quantities of virulent living tubercle bacilli.

The bacilli can also be found in the milk of a cow suffering from tuberculosis. There is at present no cases of bovine Tuberculosis in Portland.

3) HOW CAN ONE CONTRACT TB?

a) Young Infants

Are particularly vulnerable to the bacilli for they have not yet acquired a resistance to the disease and will develop a primary infection (of the lung usually). They are almost always affected by a close family member i.e. someone living in the same house, especially if the diseased person is sleeping in the same room.

b) Older Child

Contamination can take place not only in the family but in the neighborhood and school. Prolonged close contact with the disease person is required for contamination

c) The Adult

The Adult is more resistant because most adults have been in contact with the germs as children now have natural resistance. But this resistance can be broken down by

poor nutrition
poor housing conditions, damp, dark over-crowded quarters
alcoholism
chronic debilitating diseases e.g. diabetes, digestive tract diseases

4) HOW CAN TB BE DISCOVERED?

Tuberculosis should be detected as early as possible. But a person can have TB without knowing it.

Early Symptoms

Listlessness, loss of weight, loss of appetite, low grade fever. Persistent coughing.

Later on shortness of breath, coughing with white, yellow, or even blood specked sputum.

Any of these signs in particular a cough of more than 3 weeks, should lead to a visit to the doctor or health centre.

A skin test (Mantoux test) is often used to help diagnosis. Redness and swelling indicate that the patient is resistant to the TB germ. On the other hand, if the diameter is too small it means the patient is not resistant to the germ and he may be given the BCG Vaccination.

5) WHAT IS BCG?

BCG (Bacille Calmette - Guerin) is a vaccine which protects against contamination by the tubercle bacilli. Protection generally starts from the 3rd month after vaccination up to 10 years after the vaccination. It is particularly recommended for young children. In some countries it is compulsory for each child entering day care centres, creches and school.

6) IS TB HEREDITARY?

In Jamaica some people still think TB is inherited (born in you) from parents. This is not true. However, it is easy for members of one family to infect each other especially if living quarters are overcrowded and this makes it appear that the disease is hereditary.

CAN TB BE CURED?

Tuberculosis is perfectly curable. It can now be cured by powerful modern drug treatment such as Rifampicin, Isoniazid, Streptomycin, Ethambutol. These drugs must be given carefully over a period of time.

It is important to begin treatment early and to continue for as long as the doctor thinks necessary - usually 9 months. A treated TB patient is no longer contagious and usually is able to resume a full normal and active life.

8) IS REST IMPORTANT?

Sometimes if the disease is discovered early, a tuberculosis patient can continue at work while he is having drug treatment. It is generally better, however, to start a period of rest in hospital. Tuberculosis is always a potentially dangerous disease and should never be treated lightly by the patient. The important thing however is that the drugs are taken every day, whether the patient is resting or not.

9) WHAT WORK CAN A TUBERCULOSIS PERSON DO?

A person who has been treated for Tuberculosis can resume his previous occupation and this is certainly the best and most satisfactory development possible. Many patients have returned to full time heavy manual employment with no ill effects on their condition. There is no particular benefit in sedentary work, in doors etc. unless the patient has a preference.

10) IS TB WIDESPREAD?

Tuberculosis is widespread throughout the world but mainly in developing countries where sanitation is poor and economic status low.

In 1968 W.H.O. estimated that there were 18 positive cases in the world. This would mean there were about 27 million positive cases. Other writers have estimated that about 50 million people are affected with Tuberculosis.

MORTALITY

In 1968 in Scandinavian countries -
This was 2 - 3 per 100000 inhabitants
In Jamaica this was 3.85.

Evidence (new cases per year)

This is an average of 340 new cases in Jamaica a year; 6 in Portland. However, in 1977 in Portland 11 new cases were notified and by September, 1978, 22 other cases found.

11) CAN TB BE ERADICATED?

Tuberculosis can be eradicated -

- a) By early detection and treatment of infected and contagious patients;
- b) By strong preventive measures based on government, community and individual support;
- c) By treatment of all cases with drugs.

12) HOW CAN TB BE PREVENTED?

a) By B.C.G. Vaccination -

- 1) of all children between birth and entering school for the first time;
- 2) of all adults in exposed trades and professions (health workers, teachers, barbers, food handlers, taxi drivers etc.)
- 3) vaccination of adults with negative skin test reaction. Also adults with chronic debilitating diseases or long term steroid treatment.

b) By prompt visit to a doctor or nurse if respiratory symptoms begin.

c) 1) Correct eating habits (a balanced protein, starchy food and vegetable diet). Avoid excess intake of alcohol.

2) Good housing conditions with well ventilated sunny rooms. Avoid over-crowding.

3) Proper personal hygiene, good sanitation.

4) Regular exercise.

d) Coughers should be advised to cover their mouths while coughing not to spit on the streets and check with the doctor or health centre if cough lasts more than 3 weeks.

13) HOW IS THE HEALTH DEPARTMENT HELPING?

Regular Mother and Child Welfare clinics are held, where every child who is brought at 6 weeks old is vaccinated. Children entering schools and leaving schools are routinely tested and vaccinated.

For the adults

Be health conscious. Visit clinic if ill and don't trust to home remedies alone.

Routine skin testing is done at the Mother and Child Health Health centre two days before every 1st Friday.

Detected patients are presently begun on treatment usually in hospital. When no longer infectious treatment is continued at home.

Close relatives, friends, colleagues are tested, X-rayed, immunized or treated as the case may be.

An anti-Tuberculosis education programme is now underway with an aim -

- Inform and educate the general public on TB and its control
- Carry the message that TB CAN BE CURED
TB CAN BE ERADICATED
- Tuberculosis is not a scornful disease: detected and treated TB patient is safer for the community than an undetected and untreated patient.

Regular inspections are carried out by the Public Health Inspectors to assure general sanitation (food places, hotels, houses), checks on food handlers, milk testing solid and liquid waste disposal.

14) WHAT KIND OF DIET DOES ONE NEED TO RESIST TB GERMS?

A good mixed diet: Milk, eggs, fish, meat, lots of vegetables and fruit, some but not much staples (green bananas, breadfruit, yams). Variety of foods in one meal is more important than individual items.

15) HOW CAN THE COUNTRY HELP IN THE FIGHT AGAINST TB?

Fight against poverty:
improve the standard of living
improve housing and demolish slums
continue the fight against malnutrition

improve environmental sanitation
fight against alcoholism

These are the major weapons against TB.

16) HOW CAN THE PATIENT HELP HIMSELF?

- 1) At the slightest symptom seek medical advice
- 2) Follow treatment
- 3) Eat right

17) WHAT ARE SOME OF THE PROBLEMS FACING TB PATIENTS?

- 1) Lack of ENCOURAGEMENT AND ACCEPTANCE BY SOCIETY
- 2) Refusal by Employers to re-employ them once no longer contagious
- 3) Lack of sufficient funds - often not working, unable to buy the right type of foods though needing a better diet than the average person to re-build resistance.

18) IS THERE FINANCIAL ASSISTANCE?

Poor Relief is available but the allocations are insufficient.

The Anti-TB League helps but this is limited as it depends on voluntary donations.

19) HOW CAN THE MEMBERS OF THE COMMUNITY HELP?

All members of the public should individually change their attitudes to Tuberculosis and make a special effort to banish the stigma which is attached to TB. This means that employers should keep jobs open for patients until they are fit to return, or should promise to take them back when requested. It also means that the family of a tuberculosis patient should not be avoided or treated as infectious. Everybody should know that once a tuberculosis patient has been treated he can resume a full and perfectly normal place in society. The hand that is held out in sympathy when a man is ill must be held out in greeting and assistance when he returns to work.

The members of the community can also help by contributing to the Anti-TB League of Portland.

20) WHAT IS THE ANTI-TB LEAGUE?

It is a voluntary organization (the main Branch is in Kingston). It is entirely dependent for support on its friends and subscribers. Anyone may be a member of the League. It is comprised of Health Workers and other members of the community.

The aims are:

- 1) Help control of TB by diffusing literature, providing health specialists to address community groups with a view to informing and updating old ideas and attitudes of the public as regards TB.
- 2) Providing financial material and moral help to needy TB patients and families. Money is procured from donations, the sale of Christmas seals and other fund raising enterprises.
- 3) In the long run, contribute to the final eradication of TB in the parish and in the island.

SUPPORT
PORTLAND
ANTI-TBLEAGUE

SUPPORT
PORTLAND
ANTI-TBLEAGUE

SUPPORT
PORTLAND
ANTI-TBLEAGUE

A M A N U A L

I N

T U B E R C U L O S I S C O N T R O L

F O R

P A R I S H H E A L T H W O R K E R S

C O N T E N T S

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P R E F A C E

This Manual has been prepared primarily as a practical guide for workers in the field, who have to deal with suspected cases of tuberculosis during the performance of their clinic/health visiting duties. Training sessions for such workers were conducted in Portland Jamaica during March 10-21st, 1980, in the initial phase of an improved tuberculosis control programme.

This phase was initiated as a result of recommendations arising from the 1st Caribbean Workshop on Tuberculosis, run by the Caribbean Epidemiological Centre (CAREC) in Trinidad October, 1979, which recognised the need for expanded horizontally integrated control programmes in all Caribbean territories and recommended sputum smear examination services at the peripheral level in order to facilitate Tuberculosis case finding. The parish of Portland was identified by us as a pilot area in order to test this peripheral sputum testing facility in the Jamaican situation. It is hoped that this facility will become a routine, standard procedure in the diagnosis of Tuberculosis in Jamaica.

The protocol and techniques in the Manual are those taught in the training sessions.

In preparing the Manual the ideas, format and layout have been influenced by the technical guide prepared by the IUAT and a similar Brazilian Practical Manual for Tuberculosis Workers. Modifications have been incorporated to suit our particular Jamaican situation.

D.J. Blake
M.S.A. Richardson
Portland, 1980.

TUBERCULOUS DISEASE

THE GERM

Tuberculosis is caused by the tubercle bacillus (also called *Mycobacterium tuberculosis hominis*) which is a small rod-shaped organism with a waxy covering that renders it resistant to most drugs and chemical agents. It is killed within a few minutes of exposure to bright sunlight and also by specific antituberculous drugs. The germ cannot live for long outside a suitable animal host.

TRANSMISSION

The disease is usually transmitted from one human being to another. It can also be transmitted from cows to man via infected unpasteurised milk. Scalding of milk does not by itself ensure sterility.

Under usual circumstances, transmission occurs when a person with pulmonary tuberculosis coughs into the air and emits the bacilli in aerosol droplets. These aerosols are inhaled by an uninfected person and so causes infection.

Close prolonged contact is required for such transmission of tuberculosis because the body's defences can usually effectively neutralise a small single infecting dose. People most at risk of infection therefore are close house contacts. Contacts that are casual, or infrequent, or only for a few minutes or are always in an open-air well lit situation, will not favour transmission of infection.

PREDISPOSING CIRCUMSTANCES

The following conditions further render persons in close contact to the germ more susceptible to contracting the infection/disease

- poor nutrition
- insanitary overcrowded housing conditions
- debilitating diseases e.g. diabetes
- certain drugs e.g. corticosteroids

SYMPTOMS

CASE FINDING IS TO BE CARRIED OUT ON THE SYMPTOMATIC PATIENT.

The symptomatic patient is defined as anyone presenting with a PRODUC-TIVE COUGH FOR MORE THAN THREE (3) WEEKS; particularly if the cough has been treated and still persists.

Tuberculosis should also be suspected in a person who presents, in addition, with haemoptysis, fever, malaise, loss of appetite and loss of weight.

DIAGNOSIS

A sputum test must be performed on the symptomatic person.

The sputum test is the best method of diagnosis as sputum containing acid fast bacilli (AFB) means the presence of disease.

Testing on two (2) sputum samples should be done. The first sample is taken as soon as the patient presents. The second sample is an early morning specimen (refer to collection of sputum page 8). If both samples are smear negative then the second sample should be sent into the Central Laboratory for culture examination.

An Xray examination should be performed either in addition to show extent of damage to the lungs, or, to further investigate a case of a continued symptomatic patient with a negative sputum smear and culture test.

A Mantoux test is used to determine whether the patient has previously met the tubercle bacilli (either by contact with a diseased person or by vaccination). In Jamaica it is used in contact examination to determine the presence of infection among contacts. A positive test is of little significance in the presence of BCG vaccination.

TREATMENT

Effective modern drugs such as Rifampicin have shortened significantly the length of treatment. Cure can be effected with as little as nine (9) months of continual drug treatment especially if the disease is detected early.

Measures such as bed rest, enhanced nutrition, cod liver oil and hospitalization may all help in improving the patient's general condition and outlook, but will not cure him without regular taking of drugs.

PREVENTION

BCG Vaccination is still recommended in Jamaica for babies and all school entrants not yet vaccinated. Vaccination probably protects the individual for 5-10 years but this protection is not 100% effective. Vaccination does not break the transmission chain of the disease. It is therefore of limited epidemiological value in controlling disease especially in places such as Jamaica where the risk of infection is low.

Good Nutrition, housing and hygiene help in minimising transmission of the disease.

Routine yearly Xray is costly and proven ineffective as a means of prevention.

CONTACT TRACING

A contact is a person in close association with a sputum positive case.

Contact tracing is an integral part of the control programme. Action on a sputum positive case has not been adequate until all close contacts have been identified and investigated by the health worker. Persons living in the home and/or sleeping in the same room with AFB patient are most at risk. Work contact and casual contacts need not be routinely tested unless exposure is long, frequent and intimate.

PROTOCOL

Symptomatic Contacts

- All symptomatic contact should be investigated by a doctor or nurse practitioner. If treated and their symptoms subside, they should be re-assessed in eight weeks.

COLLECTION OF SPUTUM

Collection of sputum will be made at any health centre where there is a person trained to perform the smearing and fixing procedure. The fixed slide may then have to be sent to another health centre where there is a microscopist, for examination.

If the smearing and reading are to be performed at the same centre then the sputum can be collected in a clean paper cup: this will be discarded and burnt after the smear is performed.

If the smear has to be transported to another centre then the smear will be collected in a glass, screw-capped jar that can be re-used after disinfection by boiling for 10 minutes and thorough cleaning.

NUMBER OF SPECIMENS REQUESTED

Two (2) specimens should be collected from each suspected case: One spot specimen (at the time that the patient presents to the health worker) and an early morning specimen - i.e. all the sputum coughed up within two (2) hours after getting up in the morning.

TECHNIQUE FOR COLLECTION

Materials Needed

sputum container
pen
label

Place

Specimens should be collected in a well-ventilated room or in the open air, and as far away from other people as possible as there is a risk when the patient coughs.

Explanation

It is important to explain to the patient the reason for sputum collection as well as the method of coughing so that sputum will come from as deep down in the chest as possible.

He must be reassured that the examination is to seek out the cause of his cough in order that the proper treatment can be given. If necessary explain how the sputum smear will show the germ that is causing the cough. **THERE IS RARELY ANY NEED TO MENTION THAT THE GERM MAY BE TUBERCULOSIS.**

Method

- Write the name, age, sex and address of the patient on the label, and paste it on the container
- Open the container and give the bottom part to the patient. Stand behind him and ask him to hold the jar close to his mouth and cough into it

Asymptomatic Contacts

- Identify all those with previous BCG vaccination. These should be X-rayed and treated accordingly.
- Contacts without BCG vaccination should be Mantoux tested. If negative then give BCG vaccination and reassess in eight (8) weeks. If positive then X-ray and treat according to X-ray and age group.

<u>Mantoux test</u>		<u>X-ray</u>
0-15	+ve (15mm)	+ve - treat -ve - give INH chemoprophylaxis
15	+ve	-ve-no treatment. Told to return if symptomatic +ve treat

LISTEN CAREFULLY TO MAKE SURE THAT HE IS COUGHING UP SPUTUM FROM THE LUNGS AND NOT JUST SPITTING SALIVA INTO THE JAR.

- Check the sputum in the jar to make sure that it is not just saliva. If it is not of good quality or quantity then ask him to try and cough again. (Remember that many people may not be able to produce suitable sputum within the first few minutes of trying).
- Close sputum container tightly.
- Wash hands with soap and water.
- Give the patient a clean sputum container. Make sure that he knows how to collect an early morning specimen, how to close the jar tightly, and when to bring it back to the health centre.

RECORDING PROCEDURE

FROM INITIAL SPUTUM COLLECTION

- 1) When sputum is collected label the jar immediately with patient's name, age, address and date of collection.
- 2) On arriving at Health Centre or area where sputum is to be recorded
 - Enter the name, address etc. on sputum jar into the Health Centre sputum register book. (See Appendix III).
 - Put Health Centre letter code and consecutive number beside the entry and write this same letter and number onto the sputum jar.
 - Take the sputum jar into the work area and write the same letter and number onto the end of the slide with a diamond pencil or a grease pencil.

Perform this procedure for each sputum specimen obtained.

WRONG LABELLING CAN CAUSE A VERY SERIOUS TO BE TAKEN FOR GRANTED

WRONG LABELLING CAN CAUSE A SICK PERSON TO ESCAPE PROPER TREATMENT.

- 3) If fixed slide is to be sent to another Health Centre for staining and reading fill out a dispatch form in duplicate (see appendix V).
 - fill in the name of the health centre, the smear technician and the date sent.
 - List by number all the slides sent along with the patient's name, age, address and date of collection corresponding to each slide.
 - Put high portion of the dispatch list in the box with the prepared slides.

THE LABORATORY AREA

The laboratory should be kept as a specially designated area in the health centre. It should have good ventilation, get natural sunlight and always be kept clean. Only persons who are able to perform the smearing, fixing and staining should be allowed inside the work area so designated.

Each person allowed to work in the laboratory area is responsible for ensuring that the safety procedures (see appendix 7) are always adhered to. Remember: -Tuberculosis is spread by inhalation of aerosol droplets and so all efforts must be made to minimise the production of such aerosols. Common operations in the laboratory which can produce such aerosols are:-

- i) Shaking the sputum container just before opening. This is especially dangerous if sputum is caught between the jar and the cover.
- ii) Flaming of the wire loop. Always follow the safety procedure before flaming the loop.

PREPARATION OF A SMEAR

EQUIPMENT NEEDED

Labelled sputum container

Health Centre sputum register

Pen

Wire loop or bamboo applicators

Spirit lamp

Grease pencil

Alcohol/sand flask

Clean slides

Slide holder

Slide box for finished slide

Cotton or gauze

Drying rack for finished slides

5% phenol

70% alcohol

Waste bin

METHOD OF PREPARATION (for one specimen)

INITIAL TASKS

- Record patient's name, age, address in the health centre register.
- Write the identification letter and number on sputum jar (refer to recording procedure page 15).
- Engrave the identification letter and number at one end of the slide (fig.1)
- Clean the slide by soaking in alcohol and drying off with cotton or gauze

SECOND TASK

- Arrange equipment in work area as shown in fig.2.
- Light the spirit lamp.
- Put the sputum container at the front of the work area fig.3.

THIRD TASK

- Open the container and put the lid face upwards on the table on the right of the work area.
- Take the cleaned slide already engraved and place beside the sputum container with labelled end pointing to the left.

Note: Make sure that the identification letter and number on the container and the slide are the same.

FOURTH TASK WHEN USING BAMBOO APPLICATOR

- Take bamboo applicator and break in two (2) pieces.
- Select a particle of purulent sputum and use the two bamboo pieces to place it on the slide (fig.4).
- Use the stick to spread the particle evenly over the slide. Cover $\frac{3}{4}$ of the slide with sputum.
- Discard bamboo applicator in waste bin.
- Put the smeared slide on the drying rack and leave for 15 minutes.

DO NOT DRY SLIDE OVER OPEN FLAME

Note: If the particle selected is large, then use the bamboo pieces to break it up into smaller pieces while still in the sputum container (fig.5).

PREPARATION OF SMEARS



figure 1

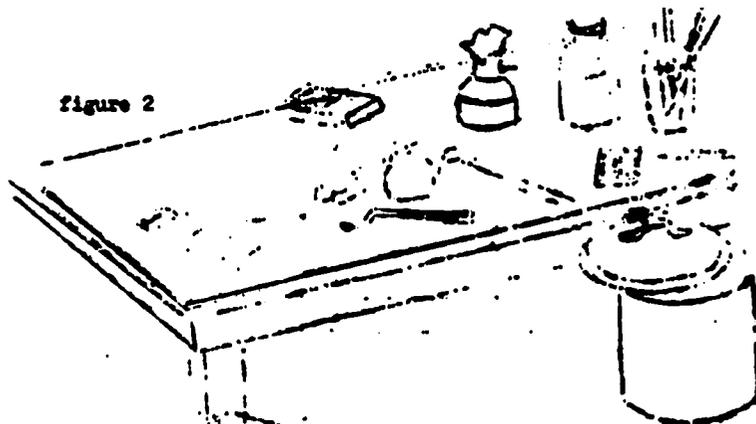


figure 2



figure 3

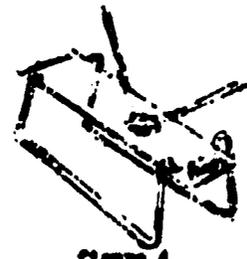


figure 4



figure 5



figure 6

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FOURTH TASK WHEN USING WIRE LOOP

- Flame loop and allow to cool.
- Select a portion of purulent sputum and spread thinly and evenly over 3/4 of the slide.
- Dip loop in wand/alcohol flask then put into flame until wire red hot.
- Put the smeared slide on the drying rack and leave for 15 minutes.

Note: Take care to select a purulent particle rather than saliva or else the smear will be thin, unsuitable for examination and negative.

FIFTH TASK

- Cover the sputum container tightly and put it on the right of the work area.

SIXTH TASK

- When the slide is dry, pass it through the flame a few times to fix the sputum onto the slide (fig. 6)
- Put the fixed slide into slide box.

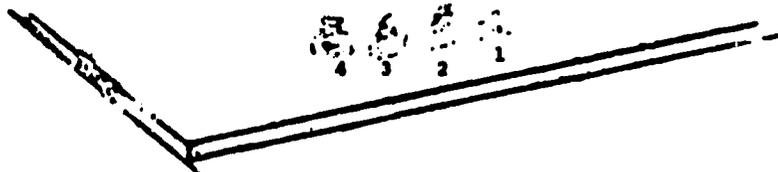
SEVENTH TASK

- Put all contaminated materials into the waste bin.
- Put all cleaned equipment in the storage area.
- Clean the work area with 5% phenol.
- Wash hands with soap and water.

EIGHTH TASK

- Take the waste bin outside.
- Pour alcohol or kerosene over the contents and burn.

Note: If glass jars are being used then they should be put into a separate container so that they can be boiled and washed for re-use.



If smears for more than one sputum specimen is being prepared at the same time then arrange the sputum containers according to their consecutive numbers from right to left at the front of the work area (fig.7).

Perform tasks four and five with each sputum container successively making sure each time that the identification letter and number on each container match identification letter and number on slide.

When the smeared slides have been on the drying rack for fifteen (15) minutes then proceed to tasks six, seven and eight.

STAINING TECHNIQUE

The Kinyoun Method is used.

EQUIPMENT

Slide rack (can be used for 12 or more slides)

Filter paper cut into smear-sized strips

Small dish to hold used filter paper

Alarm clock

Bottle with Kinyoun's Carbol Fuchsin)

stock solutions (See Appendix I)

Bottle with 3% Acid Alcohol)

Drop bottle containing staining solutions

Note: -If possible perform staining procedure over wash sink with a tap for running water.

-If not possible set slide rack over deep basin, use water from a bottle and pour gently over slides.

METHOD

INITIAL TASK

- Place slides on slide rack with the smeared side uppermost. Keep edges separated and the numbered end towards you.
- Cover slide with filter paper strip.

SECOND TASK

- Pour Kinyoun's Carbol Fuchsin over the whole slide
- Leave for 2 minutes

Note: It is important to time these two (2) minutes precisely.

THIRD TASK

- Remove filter paper strip with forceps
- Put strip into small dish
- Rinse slide in stream of water washing away all the stain.

FOURTH TASK

- Pour 3c ACID ALCOHOL over the whole slide
- WASH OFF IMMEDIATELY

Note: Make sure that all the red colour is washed away. If any red is left, pour more ACID ALCOHOL then wash again with water.

FIFTH TASK

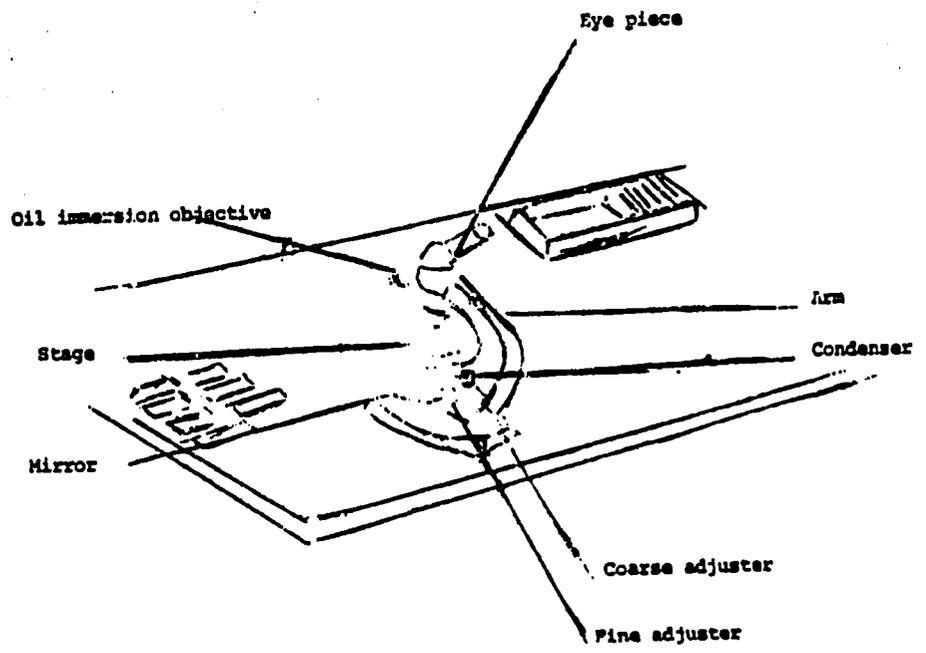
- Pour Methylene Blue solution over the whole slide
- Leave on for 30 seconds

SIXTH TASK

- Rinse slides with water
- Leave slides to dry

Note: Slides must be properly dry before attempting to examine them.

THE MICROSCOPE



The work table for reading slides should be separate from the smear preparation and staining area.

ON THE WORK TABLE there should be:

- The microscope
- Lens paper or soft cloth
- A bottle of immersion oil
- Note book and pencil for recording of results
- Stained slides to be examined
- The dispatch list for the sputum specimens
- A slide box for examined slides

USE OF THE MICROSCOPE

Before starting any actual examination of slides make sure that all elements of the microscope are set correctly.

Check the source of light. If daylight is being used then place the table with the microscope immediately before a window and set the mirror to catch the light. Place the condenser in the upper position with the diaphragm open, and check that the immersion objective and the eye piece lenses are clear.

Place a drop of immersion oil on one end of the stained smear, and put the slide on the microscope stage.

Note: To avoid possible contamination of immersion oil, do not touch slide with the oil applicator when dropping the oil on the smear.

Lower the immersion lens, using the coarse adjustment knob, keeping watch until it just touches the drop of oil.

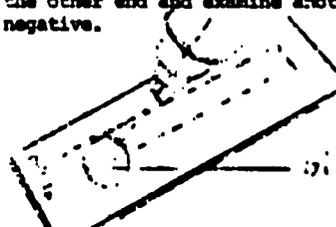
Looking through the eye pieces bring the immersion lens slowly upwards, using the same knob, until the image of the smear appears. Complete focusing by using the fine adjustment knob.

During reading only use the fine adjustment knob while you move the slide up or down and across.

EXAMINE AT LEAST 100 MICROSCOPIC FIELDS

This should take 5-10 minutes depending on your experience and skill.

Standardize your reading technique by always beginning from the left end of the smear, and systematically examine that field, then always moving the slide to the right to neighbouring fields. Continue until the whole length of the smear is examined. If no AFB are found in 100 fields on this area move up from the other end and examine another 100 fields before reporting the smear as negative.



Note: If the smear is thick, search at the edges where it is usually thinner. If necessary request another smear preparation.

FALSE READINGS

False positive readings:

- Make sure that you are seeing fine red rods as described above.
- Never wash and re-use a slide that had shown a positive result.
- Make sure that the slide is properly decolourised or else you will see red patches and red organisms that may be reported as AFB in error.
- Always filter stains before use so that undissolved particles cannot get onto the slide during the staining. This can crowd the smear, making reading and interpretation difficult.

False negative readings:

- Make a thorough search before reporting a slide negative. Too quick reading is dangerous.
- Make sure that the slide is not over-decolourised by leaving the acid alcohol on for too long. Never leave the solution on while doing something else.

RECORDING DATA

Correct data recording is important for the following reasons:-

- It permits easy retrieval of information
- It is essential for contacting of patient for treatment (in case of positive results) or for follow up of patient
- It avoids results being attributed to the wrong patient
- It is important for evaluation and facilitates future research

Data is recorded as follows:-

on taking sputum

- As soon as sputum is collected, label the jar with patient's name, age, sex, address and date of collection.

on arrival at health centre or area where sputum is to be recorded

- Enter information written on jar (name address etc.) into the Health Centre sputum register under the last entry made (see Appendix III)
- The number given to the new entry should be that following the number of the last entry made.
- Write health centre code and the number of the new entry on the sputum jar.
- In work area write the same code letter and number onto the end of the slide with a diamond pencil or grease pencil.

The above procedure is to be carried out for each slide received.

on dispatch of fixed slide to parish laboratory

- The dispatch form are to be filled out (see Appendix V) by the senior technician of the dispatching centre.
- In addition to the data in the sputum register, the Health Centre and technician's name is placed in top left hand corner.

at the parish laboratory

- After examination of slide the microscopist enters the results in the right hand column of both dispatch forms.
- One copy of the completed dispatch form is returned (with results, name of microscopist, dates examined and returned) to the originating centre.
- The other copy is kept at the laboratory.
- A work book (see Appendix V) which tallies all slides received from each centre over a period with the total number of positives found, is written up.

If the slide is negative

- But the patient is highly symptomatic. Another sputum test should be repeated.
- And the patient is not highly symptomatic - the patient should be followed for progress of cough.

If the slide is positive

- The patient is referred to DMO, Nurse Practitioner or National Chest Hospital for further investigation and treatment.
(see section page 14 on False positive slides)
- For the health centre records an individual card is filled out (see Appendix IV) and filed for follow up to see that appropriate action has been taken.

TRANSPORT

Slides are always transported with a dispatch form

- a) As above to the parish laboratory
- b) Using standard dispatch form for transfer to central laboratory

Conditions of transport from

Sputum

a) The Periphery to Health Centre

This is always transported in a tightly capped container and wrapped or put in a box to avoid exposure and contamination of surroundings by spillage.

b) Health Centre to Central Lab: same as above. In addition, if the sample is to be cultured the container must be sterile

Note: time lapse between collection of sputum and smearing should not exceed 48 hours

time lapse between fixing of slide and staining should not exceed 48 hours

- If there is spillage during transport 5% phenol is to be applied for 10 minutes to area of spillage.

Fixed Smear

a) From Periphery to Health Centre

These are to be placed in slide boxes or in carton transport jackets for transport within 48 hours of being fixed. This might mean grouping patients on given days for sputum examinations.

b) From Health Centre to Central Laboratory

- All smears are to be referred in first six months of parish programme.
- Every 3 months thereafter random sampling will be carried out for countercheck at Central Laboratory. This will serve as an evaluatory exercise of individual parish technician.

Transport procedure as above on standard Central Laboratory dispatch form.

APPENDICES

APPENDIX I

A) PREPARATION OF REAGENTS KINYOUN CARBOL FUCHSIN

Basic Fuchsin - 4 gms.
Alcohol 20 ml
Distilled water 100 ml
Phenol (crystals) 8 grams.

Dissolve the basic fuchsin in the Alcohol in the specified amounts. Add the distilled water and the Phenol. Shake thoroughly. You can make up multiples of those amounts, depending on the size of the bottle and your storage space. This will be your stock bottle. Leave overnight to give more time for the fuchsin to dissolve. Shake thoroughly and filter into another clean brown bottle. This will then be ready for use.

B) DECOLORIZATION REAGENT - 1% ACID - ALCOHOL

3 ml Hydrochloric Acid
97 ml Alcohol

Measure 97 ml Alcohol in measuring cylinder, then add 3 ml Hydrochloric Acid and pour into a bottle. You can make up multiples of these amounts and keep in stock.

C) COUNTER STAIN - METHYLENE BLUE

Dissolve 3 grams of Methylene blue powder in 1000 ml. of Distilled water. Shake thoroughly and filter into a brown bottle.

APPENDIX II

THE CARE OF THE MICROSCOPE

Remember the Microscope is an important instrument in your work and unless it is properly cared it will not function properly:-

- Keep the microscope covered when not in use.
- Use a soft cloth and wipe it clean before use. It should be free from dust.
- Using lens paper or gauze clean the eye piece lenses, the objectives, and the condenser before use. Clean the mirror.
- After using be careful to clean the oil from the immersion lens. Clean the other lenses again before putting the microscope away.
- Be careful not to drop oil on the eye piece, mirror or condenser. If you do then clean off carefully.
- Don't let oil drop on the stage, this will hamper the running of the mechanical stage that moves the slide horizontally and vertically.
- Be careful to watch when you are putting down the immersion lens on to the slide, otherwise you may break the slide, the lens or both.
- Never drop your microscope or bounce it about.

APPENDIX III

HEALTH CENTRE SPUTUM REGISTER

SLIDE NUMBER	NAME OF PATIENT	AGE	SEX	ADDRESS	DATE OF COLLECTION	DATE OF RESULTS	A.F... RESULTS	DOCTOR'S SIGNATURE

APPENDIX IV

NAME: _____ SEX: _____
AGE: _____ DATE READ: _____
ADDRESS: _____
DATE COLLECTED: _____
ACTION TAKEN: _____

APPENDIX V

DI. ... TEST

HEALTH CENTRE:		SENT ON:		LABORATORY:		RECEIVED ON:	
TECHNICIAN:		RESULTS NO:		MICROSCOPIST:		EXAMINED ON:	
						SENT BACK ON:	
SLIDE NUMBER	NAME OF PATIENT	AGE	SEX	ADDRESS	DATE OF COLLECTION	A.F.B. RESULTS	

APPENDIX VA

Date Received	Health Centre	First and last number	Total number	Total	
				Positive	Negative

APPENDIX VI

HEALTH CENTRE CODES

- | | |
|----------------------|----------------------|
| A. Windsor Castle | K. Port Antonio East |
| B. Duff Bay | L. Fellowship |
| C. Cascade | M. Moore Town |
| D. Silver Hill | N. Comfort Castle |
| E. Bangor Ridge | O. Monsuch |
| F. Hope Bay | P. Fairy Hill |
| G. Fruitful Vale | Q. Fair Prospect |
| H. Mount Pleasant | R. Manchioneal |
| I. St. Margarets Bay | S. Hectors River |
| J. Port Antonio West | |

For example Windsor Castle slides should be numbered as follows:

A/1, A/2, A/3, A/4, etc.

APPENDIX VII

SAFETY PROCEDURES

For collection and examination of sputum samples.

1. Do not smoke during working hours.
2. Do not eat or drink or handle any foodstuffs in the working area.
3. Do not lick labels or put fingers, pencils or other objects in your mouth.
4. Do not finger the eyes or the face.
5. Wash hands with soap and water thoroughly after any procedure in which they may have become contaminated.
6. Wash hands with soap, water & 70% alcohol before leaving the department for lunch or for home.
7. Have disinfectant (5% phenol) in disposal pails handy for discarding slides, specimen jars or other materials used in the work area.
8. Keep work area tidy. Dust harbours Bacilli. Do not overcrowd work bench because this leads to accident.
9. Take care to avoid spillage and do not allow infected material to come in contact with hands, face or clothes.
10. Quickly pour disinfectant (5% phenol) over any spillage of material and leave for 10 mins. before wiping dry.
11. Put out fresh disinfectants in pails for each day.
12. Specimens should be collected in a separate well-ventilated room, as there is risk of infection when the patient coughs. Stand behind the patient and let s/he hold the open jar close to mouth. Cover jar tightly making sure it won't leak.

APPENDIX N

Modification Made in Course:
Sputum Testing for Village Health Workers

DAY III

GROUP II

Sessions 1 and 2

Review preparation of work area

Lecture/Demonstration

- a. Reagents used for staining
- b. Staining and decolorization procedures
- c. Reading and analysis
 - morphology of tubercle bacilli under microscope

Sessions 3 and 4

Practical: Staining--Reading by direct microscope.

Interpretation

DAY IV

Session 1

Review previous days' activities

Recording referral

Session 2

Fix slides for afternoon

Sessions 3 and 4

In the classroom POST TEST

--Staining - Reading - Recording

--Labeling and testing

DAY V

Sessions 1 and 2

On-the-job POST TEST

Session 3

--Discussion - Review

--Evaluation

--Planning field programme

APPENDIX O

Participants' Evaluation of the Course
Sputum Testing for Techniques for
Parish Health Workers

1. To what extent were the goals of the course achieved?

WEEK I	1 ₀	2 ₀	3 _{3(27%)}	4 _{8(73%)}	Half-course
WEEK II	1 ₀	2 ₀	3 _{4(40%)}	4 _{6(60%)}	" "
WEEK I	1 ₀	2 ₀	3 ₀	4 ₅₍₁₀₀₎	Full-course
WEEK II	1 ₀	2 ₀	3 _{2(25%)}	4 _{6(75%)}	" "

2. To what extent was the teaching material relevant to your work situation?

WEEK I	1 ₀	2 ₀	3 _{9(82%)}	4 _{2(18%)}	Half-course
WEEK II	1 ₀	2 ₀	3 _{6(60%)}	4 _{4(40%)}	" "
WEEK I	1 ₀	2 _{1(20%)}	3 _{3(60%)}	4 _{1(20%)}	Full-course
WEEK II	1 ₀	2 ₀	3 _{5(62.5%)}	4 _{3(37.5%)}	" "

3. To what extent were the training sessions adequate?

WEEK I	1 ₀	2 _{1(9%)}	3 _{7(64%)}	4 _{3(27%)}	Half-course
WEEK II	1 ₀	2 _{1(10%)}	3 _{6(60%)}	4 _{3(30%)}	" "
WEEK I	1 ₀	2 _{1(20%)}	3 _{4(80%)}	4 ₀	Full-course
WEEK II	1 ₀₁	2 ₀	3 _{6(75%)}	4 _{2(25%)}	" "

4. To what extent were the practical sessions adequate?

WEEK I	1 ₀	2 ₀	3 _{6(54%)}	4 _{5(46%)}	Half-course
WEEK II	1 ₀	2 _{1(10%)}	3 _{2(20%)}	4 _{7(70%)}	" "

WEEK I	1 ₀	2 _{1(20%)}	3 _{2(40%)}	4 _{2(40%)}	Full-course
WEEK II	1 ₀	2 _{1(12.5%)}	3 _{4(50%)}	4 _{3(37.5%)}	" "
5. To what extent did the demonstration exercises contribute to your learning?					
WEEK I	1 ₀	2 _{1(9%)}	3 _{4(37%)}	4 _{6(54%)}	Half-course
WEEK II	1 ₀	2 ₀	3 _{1(10%)}	4 _{9(90%)}	" "
WEEK I	1 ₀	2 ₀	3 _{2(40%)}	4 _{3(60%)}	Full-course
WEEK II	1 ₀	2 ₀	3 _{2(37.5%)}	4 _{3(62.5%)}	" "
6. To what extent were the visual aids helpful?					
WEEK I	1 ₀	2 _{1(9%)}	3 _{7(64%)}	4 _{3(27%)}	Half-course
WEEK II	1 ₀	2 _{1(10%)}	3 _{8(80%)}	4 _{1(10%)}	" "
WEEK I	1 ₀	2 ₀	3 _{4(80%)}	4 _{1(20%)}	Full-course
WEEK II	1 ₀	2 _{4(50%)}	3 _{4(50%)}	4 ₀	" "
7. WEEK I	1 ₀	2 _{1(9%)}	3 _{7(64%)}	4 _{3(27%)}	Half-course
WEEK II	1 ₀	2 _{2(20%)}	3 _{5(50%)}	4 _{3(30%)}	" "
WEEK I	1 ₀	2 _{2(40%)}	3 _{1(20%)}	4 _{2(40%)}	Full-course
WEEK II	1 _{1(12.5%)}	2 ₀	3 _{5(62.5%)}	4 _{3(25%)}	" "
8. WEEK I	1 ₀	2 ₀	3 _{3(27%)}	4 _{8(73%)}	Half-course
WEEK II	1 ₀	2 ₀	3 _{3(30%)}	4 _{7(70%)}	" "

WEEK I	1 ₀	2 ₀	3 _{2(40%)}	4 _{3(60%)}	Full-course
WEEK II	1 ₀	2 ₀	3 _{3(37.5%)}	4 _{5(62.5%)}	" "

9. To what extent will this course improve your interest in TB case finding?

WEEK I	1 ₀	2 ₀	3 _{4(36%)}	4 _{7(67%)}	Half-course
WEEK II	1 ₀	3 ₀	3 _{3(30%)}	4 _{7(70%)}	" "

WEEK I	1 ₀	2 ₀	3 _{3(60%)}	4 _{2(40%)}	Full-course
WEEK II	1 ₀	2 ₀	3 _{3(37.5%)}	4 _{5(62.5%)}	" "

10. How would you describe the length of the training course?

	Too short	Too long	Just right	
WEEK I	8		1	Half-course
WEEK II	9			
WEEK I	1			Full-course
WEEK II	5		3	