A MIDTERM EVALUATION REPORT

OF THE

RURAL HEALTH SYSTEM PROJECT

OF THE MINISTRY OF HEALTH

GUYANA

A Report Prepared by:
Dennis Carlson, M.D.
Michael Hamilton, M.D.

During The Period:
March 13 to April 19, 1983

Supported By The:
U.S. Agency for International Development
(ADSS) AID/DSPE-C-0053

Authorization:
Ltr.: AID/DS/HEA: 4-10-84
Assign. No. 583135

Contents

ABBREVIATIONS

AID	-	Agency for International Development
CHW	-	Community Health Worker
DPU	-	Data Processing Unit
FMIS	-	Financial Management Information System
GOG	-	Government of Guyana
HMDS	-	Health Manpower Development Staff
IDB	-	Inter-American Development Bank
IDRC	-	International Development Research Center
MEDEX	-	MEDEX
MOH	-	Ministry of Health
MTU	-	Medex Training Unit
PAHO	-	Pan American Health Organization
PP	-	Project Paper
RHSP	-	Rural Health System Project
TWRCS	-	Two-Way Radio Communication System
U of H	-	University of Hawaii

PREFACE

The attached report is the result of an evaluation of the Rural Health Systems Project carried out over the course of four weeks, March 13 to April 9, 1983. It is based on a review of project documents, Ministry of Health documents, consultant reports, and other relevant materials, and on interviews with Ministry of Health personnel, other government of Guyana personnel, AID staff, Health Manpower Development Staff personnel in Guyana, and others. We are very grateful for the generous sharing of time and information by those we interviewed, and for the many courtesies extended to us in the course of our stay in Guyana. We hope the evaluation report will be useful to all those concerned.

EXECUTIVE SUMMARY

This is an evaluation of the Rural Health Systems Project funded in 1979 through a contract between AID, the Rural Health Development Staff of the University of Hawaii and the government of Guyana. The goal of the project is to improve and expand primary care services to rural areas of Guyana through training community health workers and medexes, and utilizing them in an interlocking, tiered, supervisory, and referral structure.

According to its scope of work, the evaluation team was to assess the adequacy and relevancy of medex training; the performance of graduates and their job satisfactory; the adequacy of support and management systems for medexes, including transportation, communications, supplies, housing, referral system, and continuing education; and the ability and commitment to continue the training of medexes by the government of Guyana.

The evaluation team visited a large number of health facilities staffed by medexes. The team also interviewed key persons in the Ministry of Health, including those involved in the education and management support systems for medexes. Key personnel of AID and the Health Manpower Development Staff of the University of Hawaii were also interviewed.

The major findings were as follows:

1. The Medex Training Program is of a high quality.

2. By the end of the present project 70 additional medex will have been graduated for a total of 134.

3. Medex are deployed in medically underserved areas and are working effectively.

4. Despite severe economic difficulties, progress is being made in financial information, two-way radio, and supply systems.

5. Development of transport systems has been extremely slow and difficult.

6. Contracts for building housing have not been completed and no contruction has taken place.

Major recommendations can be summarized as follows:

1. The Medex Training Program should be continued for the forseeable future in order to maintain a steady supply of trained personnel.

2. A comprehensive career structure and professional incentive program is urgently needed and should be developed.

3. The expanded two-way radio system should be regionalized and further developed as a continuing education medium.

4. The new financial management information system should be implemented immediately and carefully monitored.

5. The supply system should be modified to ensure a steady supply of 20 essential drugs at level I and 40 essential drugs at level II.

6. Further action is necessary to improve the transport system including intensive in-service training in preventive maintenance for drivers and health workers who depend on vehicles for official functions.

7. AID should expedite its approval of Bills of Quantities and other documents necessary for housing contracts to be negotiated.

8. The responsibility for supervisory medexes in rural health centers should be transferred gradually to the regional health teams.

9. Medex headquarters and training staff should be more closely integrated. One possible method is for headquarter's staff to work at the Training Unit part of the time. Telephone connection to the radio system should be extended to the headquarters of the Ministry of Health and the Georgetown Hospital.

INTRODUCTION

Guyana has a population of over 800,000. Approximately two-thirds of this population lives in rural areas, some of which are totally inaccessible during the rainy season. In spite of continued efforts by the government of Guyana (GOG) to provide primary health care services to every person, many areas are still without access to these services. The GOG has worked closely with several agencies to strengthen the health care services available to its citizens. These agencies include the International Development Research Center of Ottawa (IDRC), the Inter-American Development Bank (IDB) and the Pan American Health Organization (PAHO). In 1979 AID signed a contract with the Guyanese Ministry of Health (MOH) and the Health Manpower Development Staff (HMDS) of the University of Hawaii (U of H) to train medexes, within the context of a larger project to develop a training program for community health workers (CHWs) and a relevant management structure appropriate to the deployment and effective utilization of these health workers.

The evaluation team consisted of two persons, one a competency-based training specialist, the other a health care management specialist.

The scope of work for this evaluation team is described below.

The competency-based training specialist will examine the training component as defined in the project paper (PP), the project Loan and Grant Agreement and contract between AID/Washington and the U of H and provide an assessement of:

1. Accomplishments to date.

2. The training program, curriculum and staff, in order to determine whether the medexes are being trained as initially planned to meet Guyana's particular needs. Meetings and interviews with the medexes trained under this project and the (IDRC) project will be essential to this documentation. <u>This section of the report should specify any improvements for the training</u> program or staff training.

3. The extent to which the medexes are appropriate additions to the health care delivery system in Guyana and whether changes in training and function of workers would be more appropriate given the needs of the national health care system.

4. Whether the absence of a U of H advisor for the first medex class under the project adversely affected the quality of the medex trained.

5. Whether capability is being developed in the MOH to continue training of medex after AID assistance terminates. What kind of assistance may still be required?

In addition the competency-based training specialist should meet and interview the medexes trained under the IDRC funded project and the medexes trained so far under this project in order to assess adequacy of training, adequacy of logistical and other support, level of job satisfaction, and current training needs. Appropriate recommendations for AID action should be made.

The health care management specialist will primarily examine the management support component of the project and the technical assistance provided therein by:

1. Reviewing all pertinent documents, i.e., the contract, the PP, and available technical reports.

2. Reviewing the work plans and achievements of the management specialist provided by the U of H.

3. Holding discussions with appropriate personnel in the MOH on planned assistance, implementation problems, and possbile resolutions.

Utilizing the above information the health care management specialist will:

1. Analyze the procedures necessary for the MOH to implement recommendations made by consultants. How effective are they? Are improvements needed? If so, what?

2. Review the present areas of concentration in the management of the project. Are these the more critical for improvement of the overall system? Where would greater benefit be gained?

3. Answer the following specific questions:

   (a) Is the assistance being given appropriate (vis-a-vis project objectives) and effective?

(b) Can better direction and implementation be achieved by modifying the way in which technical assistance is provided? Should it be given by "technician" rather than "advisor" types?

(c) What have been major causes of delays? How could this component be implemented faster?

(d) Are the present areas of concentration the most critical for management improvement? Where would greater benefit be gained?

(e) Does the MOH provide adequate quality counterparts to assure continuity of the work started by technical consultants?

(f) How effective has the provision of transportation to the medex been in improving their functioning and efficiency?

(g) Is housing critical to the effectiveness of the medexes? Has the lack of housing significantly affected the performance of the medexs in the field?

The health care management specialist should make appropriate recommendations for AID and MOH action.

The team report should also assess:

1. The level of awareness and commitment of key personnel to the objectives of the project. Do they have a sense of working together towards project accomplishment?

2. The effect on project implementation of the current financial difficulties faced by the GOG.

3. How the inputs to this project by the GOG on the one hand and AID on the other contribute to the rate of project implementation.

Prior to arrival in Guyana, the team received materials concerning the project. On arrival, the team met first with the AID Mission Director, Mr. Harry Johnson, the Program Officer, Mr. Gussie Daniels, Chief Health and Human Resources Officer, Ms. Leticia Diaz, and other key AID officials. Over the next three weeks the team met with a wide variety of persons. These included officials in the MOH, members of the

Medex Training Unit, AID staff, technical specialists with the HMDS as well as the coordinator for the project, and physicians working at Georgetown Hospital and in rural clinics. Most important, many medexes were visited and interviewed. Appendix A lists persons interviewed and the team's daily schedule.

II. FINDINGS, DISCUSSION, RECOMMENDATIONS

FINDINGS, DISCUSSION, RECOMMENDATIONS

Training

Accomplishments and Background. The accomplishments of this project are evident and easily stated. Medex are being trained, and, to date, 105 medexes have graduated and are providing essential health care services to underserved areas of Guyana. Many of these areas are inaccessible during the rainy season and difficult to reach the rest of the year. For those living in these areas, the medex is the only person who can suture a cut, cast a broken bone, treat a life threatening pneumonia, or provide other modern primary health care services. (Appendix B contains a map indicating the areas of the country where medex are stationed).

In order to be effective, health services must be accepted and utilized. Interviews with MOH officials, medexes, physicians, and patients confirmed our early impression that the rural health services developed under this project are for the most part well utilized and that the quality of services provided is respected. We believe this is a reflection of the care with which medex students are selected, trained and, to a lesser extent, the supervision and support they receive after graduation and deployment.

In order to understand this project as it now exists, it is helpful to know about its origin and evolution.

The GOG launched a major effort to reorganize and upgrade its health care system in 1975-76, and initiated a major study in collaboration with the IDB and PAHO. The results of this report were published in 1977. In projected a two-phase development plan in which facilities (Health Post, Health Center, District Hospital and Regional Hospitals) would be built or expanded in the first phase. In the second phase an improved central referral hospital would be constructed in Georgetown. The first phase was projected to run from 1978-1982, was extended for one year, and is now approaching completion.

A part of the national development plan, the first phase included the training and development of CHWs who would work in underserved communities, particularly in the Hinterlands. With the assistance of the Dutch government, 30 CHWs were trained in 1979 under the first phase of the GOG-IDB plan.

THE MOH had for some time considered the use of mid-level practitioners, such as medexes, in delivering health care to the underserved areas of this country. Dr. Richard Smith, Director of the HMDS of the U of H was contacted regarding the medex concept. Ensuing discussions led to the establishment of a Medex Training Unit within the MOH with educational assistance provided by the HMDS and funding by the IDRC of Ottawa. Training began in 1977, and, when funding ended in early 1980, three classes of medexes, comprising a total of 65 students, had completed training.

In 1979 a four-year contract was signed between the GOG, the HMDs, and AID to continue medex training within the context of a broader agreement to establish a rural health system project involving medex, CHWs and the development of a management structure within the MOH to support these health workers. AID-sponsored training of medexes began in early 1980. Training of CHWs, under the provisions of the contract did not take place because of difficulties involving their source of funding following graduation and deployment. To date, two classes of 43 medexes have been trained and a sixth class of 27 students is now in training and scheduled to graduate April 1984.

In the initial year of the AID project a Guyanese educational team was quickly brought together. Several had worked with the Medex Training Unit since its inception under IDRC funding and several new members were recruited. The team consisted of a Project Director, Dr. Frank Williams, a Deputy Director, Dr. Hugh Holder, an Administrator, Ms. Melissa Humphry and six graduate medexes or medex-tutors, Mr. S. Singh, Mr. Essau Khan, Ms. W. Hammer, Mr. J. Singh, Ms. Y. Thomas-Moore, and Mr. Ken Davis. The latter two are part-time with the Medex Project. This team remains basically intact except that Dr. Holder plans to leave in the near future. The project Director, Dr. Williams, now functions primarily in an administrative capacity and the Deputy Director, now half-time, functions totally in a clinical teaching capacity. The six medex function as tutors to students and supervisors of graduates in the field.

Under the terms of the contract, the HMDS was to provide two technical specialists, one a management specialist, the other a physician with education skills. The management specialist position was filled almost immediately by a Mr. George Jaimeson who subsequently resigned in May 1981. In August 1981, Mr. Richard Blankney took that position. The physician-educator position was filled by Dr. Edwards Margulies, but not until August 1981. The figure on the following page summarizes in graphic form the core

administrative and teaching staff in the Medex Training Unit over time. Appendix C contains a list of major orientation and educational activities that some of these staff members have participated in since the initiation of medex training in 1977.

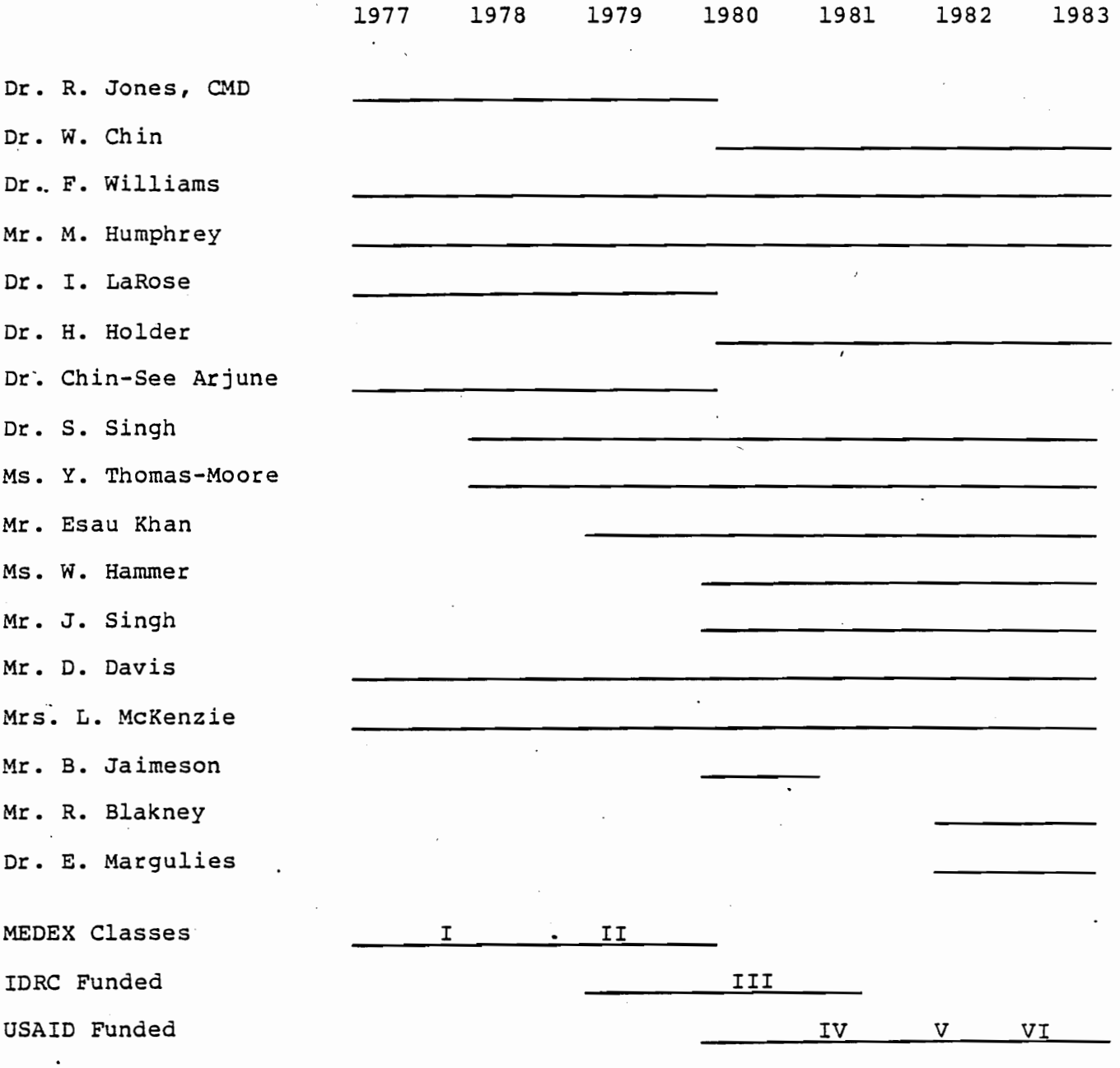
The Selection of Trainees. Consistent with the original Medex/Physician Assistant training concept, only students with prior health-care experience have been recruited and selected. Most students have been working in health professions already funded within the MOH. A significant number of students were recruited from the ranks of dispensers, a health profession which is gradually being phased out. No more are being trained. Former visiting nurses (or public health nurses), clinical nurses, and various levels of midwives as well as medical rangers are also accepted. While earlier classes tended to be predominately male, subsequent classes have had increasing numbers of women. The present class (Class VI) is two-thirds female. However, since women medexes cannot easily be assigned to remote locations, perhaps future classes will have a lower percentage of women. Appendix D contains information about the ages and health backgrounds of the medex classes.

The selection process requires that an application form be completed. Those applications who are qualified are then invited to interview with the Selection Committee which includes Dr. Godette, Dean of the Faculty of Health Sciences at the University of Guyana; Dr. F. Williams, Medex Project Director; Dr. H. Holder, Medex Project Deputy Director; Ms. M. Humphrey, Medex Project Administrator; Dr. D. Harry, Project Director, IDB; Ms. E. Hall, Principal Nursing Officer, MOH; Mr. M. Baird, Principal Personnel Officer at the MOH and; a medex-tutor. Motivation to help people and a willingness to serve in remote areas are qualities the committee looks for in the interview process.

The selection process seems to be thoughtfully carried out. The result is a group of graduates who have performed competently and with dedication. We are pleased that the selection committee includes a medex. In the selection of students for any profession, it is important that members of that profession be involved in the process. Not only is the validity of the process enhanced, but most important, professionals can develop a sense of self determination and responsibility for those who eneter the profession.

Figure 1

Tenure of Core Administrative and Teaching Staff of the Medex Training Unit



Recommendations

1. The selection committee should always include one and preferably two medexes. It seems reasonable that one medex from the training unit and one in practice should serve on the committee

2. Factors related to the willingness of graduates to accept locations in remote areas should be examined. These may include sex, size and age of family, birthplace and residence of extended family members.

The Curriculum. The curriculum is 15 months in length and is logically sequenced to teach students major areas of knowledge and skills relevant to their future role. Classroom and clinical learning experiences follow one another so that classroom knowledge is reinforced and applied through work in the community or with patients. Listed below are the general topices covered for the current class and the amount of time developed to each.

CLASS VI SCHEDULE

Orientation	-	February 7, 1983
Pre Test	-	February 8
Community-Related Information	-	February 9-21
Health Education	-	February 22-25
Community Field Work	-	February 28-March 12
Review of Field Work	-	March 14-19
History Taking	-	March 21-26
Physical Examination	-	March 28-April 2
Clinical Practice	-	April 5-9
Respiratory & Heart Problems	-	April 11-23
Genito-Urinary	-	April 25-30
Gastro-Intestinal	-	May 2-7
Clinical Practice	-	May 9-14
Miscellaneous Problems	-	May 16-21
Chronic Problems	-	May 23-28
Management	-	May 30-June 11
Statistics	-	June 13-18
Nutrition	-	June 20-25
E.E.N.T.	-	June 27-July 2
Clinical Practice	-	July 5-9
Common Skin Problems	-	July 11-16
Common Dental Problems	-	July 18-23
Problems of Women	-	July 25-30
Labor and Delivery	-	August 2-6

Problems of Infants & Children	-	August 8-20
Clinical Practice	-	August 22-27
Emergency	-	August 29-September 3
Trauma	-	September 5-10
Environmental Health	-	September 12-17
Epidemiology	-	September 19-24
Principles of Drug Management and Basic Compounding Techniques	-	Saturday's Starting October 1
Medicine Rotation	-	Sept. 26-October 22
Surgery Rotation	-	October 24-November 19
OBS and GYN Rotation	-	November 21-December 17
Pediatrics Rotation	-	January 3-28, 1984
Special Clinic Rotation	-	Jan. 30-Feb. 25
Maternal Child Health Rotation	-	Feb. 27-March 24
Examination (Written)	-	March 30-31
Examination (Practical)	-	April 2-5
Preceptorship Phase	-	April 16-May 26

Course content in the form of core modules covering each area of knowledge has been provided by the HMDS and modified to fit the special needs of medex in Guyana. These were later simplified and condensed by the first Deputy Director, Dr. LaRose, who placed greater emphasis on providing information through lectures. He gave most lectures himself, and, because he was an excellent lecturer, the students did not object to the shortened modules. However, upon graduation and after assignment often to isolated health posts, students found the information contained in the modules to be incomplete and sketchy, certainly insufficient to help them when they had no one to turn to for information. Therefore, when the next Deputy Director, Dr. Holder, was recruited, the modules were again revised, this time to include a greater amount of information. This has allowed the Training Unit to decrease the amount of time devoted to lectures, and increase that devoted to small group discussions.

Emphasis on review and revision of the modules is now an ongoing process shared by all the teachers in the Training Unit. Following graduation, the medexes use the modules as a reference source in practice. Although textbooks are available at the training unit and at Georgetown Hospital, students are not encouraged to become familiar with any one text. The rationale for this is that the modules contain all the essential information the medex should know. If he or she encounters a problem not covered in the modules, the patient with that problem probably needs to be referred. Nevertheless, students do read textbooks, and frequently these are inappropriate to their needs or level of knowledge. Several graduate medexes stated they wished they had access to reasonably detailed texts relevant to the patients they are seeing. It is worth noting that some of the modules, especially when reduced in size, are poorly reproduced and often difficult to read.

Recommendations

1. A core library of several relevant textbooks should be provided to each student. Hopefully, the graduate medex will be a life-long learner. He or she needs to learn how to select and use relevant textbooks. The place to start this is in the training phase. The possession of a basic library will enhance the medex's sense of professionalism, decrease his or her feeling of isolation from knowledge, and probably increase the quality of care.

2. A word-processor should be used to revise and type the modules. This would greatly facilitate and speek the process of text revision.

In general, over the course of the project, the teaching strategy has evolved from a lecture-dominated format to one which is more participatory and experimental. Significant time is devoted to small group discussions. During the initial phase of the project, a major share of the teaching was done by Dr. LaRose and other guest lecturers. Medex-tutors played a relatively minor role in curriculum planning and teaching. More recently, Dr. Holder and Dr. Margulies have assigned significant responsibilities to the medex-tutors. Several are giving selected clinical lectures, and all are involved in the ongoing revision of the modules. Also, each tutor is assigned four to eight students whom he or she teaches in small group discussions of module and lecture content. The medex-tutor also supervises this group of students during the clinical phases of the program and during the community-based learning experiences scheduled early in the curriculum. An attempt is made to balance the student group so that a variety of health backgrounds are represented, i.e., dispensers, nurses, midwives, etc. This promotes a sense of team spirit and also enables the students to serve as resources for each other.

It should be noted that a major portion of Dr. Margulies's effort is devoted to teacher training of the medex-tutors. He helps them develop learning objectives, lesson plans and teaching and evaluation strategies. As a result, medex-tutors have successfully assumed increasing teaching responsibilities.

The basic teaching strategy can be summarized in the following example.

	Topic	Learning Activity	Persons involved.
1.	Diabetes	Read diabetes module.	Student alone.
2.	Diabetes	Lecture.	MD or medex lecturer to whole class.
3.	Diabetes	Small group discussions of four to eight students.	Medex leads group.
4.	Diabetes	History and physical examination of patients with diabetes and its complications at Georgetown Hospital.	Patient and student observed directly by medex-tutor followed by case presentations in small groups.

5.	Diabetes	Final six-week clinical rotation in a health center staffed by a medex during which time patients with diabetes will be seen.	Patient, student, and practicing medex, with episodic supervision by the medex-tutor.

Appendix E contains the module on diabetes, as well as forms listing the essential elements of the history and physical examination. The latter are used as a checklist in evaluating student performance. Before the lecture on a given topic, students are expected to read the related module. After the lecture, the class divides into its assigned groups with the medex-tutors to clarify and discuss the material presented.

A significant number of the clinical lectures are given by Dr. Holder. Lectures in pediatrics and some other areas are given by Dr. Margulies. Physicians working for the MOH also give some of the lectures in selected areas. Outside lecturers are provided copies of the modules related to their field for review and revision if necessary.

All the lecturers interviewed felt that the material presented in the modules was appropriate to the level of the students and relevant to their future roles. Interestingly, several lecturers mentioned that the students were quite heterogeneous with respect to knowledge and background and that this required the lecturer to be sensitive to those students with less background and knowledge, as well as those who might feel the lecture content was too basic. The same situation exists in physician assistant training in the United States.

Clinical teaching is well organized and intergrated with the classroom portions of the curriculum. For instance, following lectures on the problems of the cardiac, respiratory, genito-urinary and gastro-intestinal systems, students spend a week at Georgetown Hospital examining patients with problems related to these systems. The medex-tutor selects one patient each morning for each of the students in his or her group. Students are given two hours to examine their assigned patients. While they are examining their patients the medex-tutor goes from student to student observing their performance and correcting any deficiencies. Later, the same day, each group meets with its medex-tutor to present and discuss patient findings. Dr. Holder and Dr. Margulies also participate in this phase of the program, serving as resource persons and impromptu lecturers on clincial findings found among the patients examined by the students. Following the classroom phase of the curriculum, students are assigned for periods of four weeks to services at Georgetown Hospital in medicine, surgery, pediatrics, and special clinics (skin, dental, ear/nose/throat, and eyes). Here they function as part of the hospital ward team, working up patients and making ward rounds with hospital physicians.

At the end of the six-month clinical rotation phase, hospital physicians from the medicine, pediatrics, and surgical services assess the students by oral examination and observation of the student performing a history and physical examination. Physicians involved generally feel that the medex are well prepared for their clinical rotations and perform well. They also concur that the modules are well prepared. However, several physicians fell that they are not sufficiently involved in curriculum content or informed about the specific competencies the students are supposed to attain. The physicians stated they would like more communications with physicians from the training unit.

Recommendation

The Training Unit should review its communication process with Georgetown Hospital physicians and consider inviting them to provide greater input into the curriculum. Because medex in the field refer their patients to these physicians, it is important they feel involved in the training and content of the curriculum.

The final six weeks of the curriculum are devoted to a practicum during which the student is assigned to a health clinic staffed by a medex. Here, the student functions essentially as a new graduate. Supervision comes primarily from the graduate working in that center, and if accessible, the general or district medical officer. Again, the medex-tutor periodically monitors his or her students.

In support of the curriculum, audio-visual equipment is available to the training unit: a slide projector; overhead projector; two cameras; three film projectors and two cassette tape recorders. The unit has several anatomical charts and modules. The administrator-medex indicated that several of these need replacement in the near future. As far as we could determine, lectures are not being recorded for future review by students.

Recommendation

1. The Training Unit should tape record selected lectures for future review by students.

2. The condition of charts, anatomical models, etc. should be reviewed and new ones ordered if necessary.

Following graduation students are assigned to health centers. They are asked to submit a list of five or six preferred locations. The final assignment is made by the Dispenser's Secretariat Office. A number of factors influence student preferences: distance from home and family; availability of schools if the medex has children; and very important, how isolated the health post is (some are totally inaccessible during the rainy season). The final assignment is made by the Dispensers-Secretariat Office who must weigh all these factors and balance them with the needs of the MOH and the communities it serves.

Continuing Education. The training unit assumes responsibility for continuing education of its graduates. Each medex-tutor is assigned a district comprised of several health centers which he/she visits periodically. In the past, the medex-tutor-supervisor ("supervisor" was added to describe this post-graduate function of the medex-tutor) reviewed the health center records for deficiencies, taught, and provided administrative and emotional support. The medexes interviewed felt that the record review was not helpful but that teaching was, if relevant to their practice. All felt that providing emotional support and maintaining a link to the training unit were helpful, especially for those medexes in isolated locations.

For those ten centers equipped with two-way radio communication, an additional important source of continuing education is available. The Medex Training Unit, with Dr. S. Holder as the leader, conducts a weekly teaching conference on Saturday mornings with all the medex in the Hinterland who can get "on the air." One member of the evaluating team (Dr. Carlson) was able to sit in on a session where the case of a 24 year old Ameridian woman with a three day history of upper abdominal pain and vomiting was described by a medex (analogous to the clinical-pathological conference). Other medexes were invited to ask questions and then to explain why they asked these particular questions. (E.g., was alcoholism a problem? No. Had she been treated before? Yes, three years before with antacid and valium. What was the nature of her water supply? Could her illness be a gastroenteritis or other infection?) When the fact that the woman had a tender and enlarged liver was revealed, a new set of possibilities including amoebic hepatitis and/or an absess become significant possibilities. In fact, the woman had already been referred to the Georgetown Hospital, and Dr. Holder was following her progress there. The actual outcome was not known at the time.

The radio system provides means of communication in case of family emergencies and allows the medex to stay in isolated places with less anxiety and insecurity. Other government and private agencies also are able to use the system in time difficulty and during an emergency, this fosters a closer collaborative spirit among different agencies.

The positive effects of this two-way communication system are striking. It is regrettable that all medexes are not tied into this supportive, reassuring, and educational network. Medexes on the coast who have advange of the telephone system probably receive significantly less benefit than those in the radio system.

The training unit also publishes a periodic newsletter containing administrative and clinical information, along with self assessment quizzes which are mailed back to the training unit for scoring. (A sample newsletter is included here as Appendix F).

Generally the district and general medical officers or those physicians designated as the medex's supervisory physicians did not really provide much in-service support to the Medex. In most cases, distance and logistics made it impossible for meaningful supervision and teaching to occur. In others, the physician was insufficiently motivated to teach or did not fully appreciate the concept of the physician-medex team. Orientation and education of supervisory physicians regarding the medex system was originally planned but has not yet taken place. It would be useful even at this late date. We appreciate the logistical difficulties in bringing a number of physicians together in one place. Perhaps it could be done on a regional basis. Also possible on a regional basis are short conferences for medexes. We attended one devoted to the teaching of management skills, particularly as they relate to the supervision of CHWs. The conference was well organized and provided a valuable opportunity for medex to share information and new approaches in solving common problems.

Recommendations

1. The two-way radio communication system should be expanded to as many clinics as possible. This is the only reliable means of communication to the medical world for many medex.

2. The newsletter should be published on a regular basis. It is an important source of updated medical information and of news about other medexes and the primary health care system of which they are a part.

3. Short seminars or conferences for supervising physicians (general medical officers and district medical officers) should be held in order to orient them to the training, role, and supervision of the medex.

4. Learning about supervision should be reintroduced into the basic Medex Training Program.

Training the Training Unit. From the beginning of this project attention has been paid to the orientation and training of the staff members in the Training Unit. Appendix C contains a listing of the various training activities staff members have attended. On an ongoing basis, Dr. Margulies provides teacher training to clinical teachers in the Training Unit. All those we interviewed felt this role was important and should continue, at least until the present class (Class IV) had graduated.

Recommendations

1. On a periodic basis, members of the Training Unit should attend short-term conferences and seminars on topics relevant to the role and function of the medex, either in Guyana or abroad. We believe it is especially important for medex-tutor-supervisors to attend these because they are assuming an ever increasing responsibility for teaching.

2. Medex-tutor-supervisors should devote part of their time to clinical practice under the supervision of a physician who has demonstrated an interest and ability to teach. This will achieve several purposes.

    - o The medexes will maintain and expand their clinical skills.
    - o The medexes will have more credibility with students and graduates and will therefore be more effective.
    - o Through contact with physicians with good teaching skills the medexes will improve theirs.
    - o Physicians will be educated first-hand regarding the ability and role of the medexes.
    - o This contact may help project personnel idnetify qualified physician/teachers to work in the training unit in the future.

The Medex at Work. As stated earlier, the accomplishments of this project are evident--105 medexes are deployed in medically underserved areas and are functioning well. The services they provide are appropriate and of high quality. (Several physicians at Georgetown Hospital commented on the high quality of referral notes they receive on patients referred by Medexes.) Medexes are working under conditions which are difficult at best. Too many patients, too few drugs inadequate transportation, isolation, lack of housing, responsibility on a 24-hour basis, and often no one to turn to for advice and support -- these are just some of the difficulties these new health professionals face. In addition, most medexes are not receiving the salary they expected or were told to expect upon graduation. Many are receiving less money now than when they worked as nurses, midwives, or dispensers. Thus, most medexes feel their efforts have not been apprecaited or recognized by the MOH. Many are discouraged and are considering other job alternatives.

Although salary and the lack of incentives assume great importance, the other difficulties mentioned contribute to the disappointment of many medexes. These deficiencies in the medex support system will be addressed in the remainder of this report.

Management

Continuing Need for Medexes. There has been consistent, firm, and almost unanimous agreement by those we interviewed that medexes are essential to the delivery of rural health services for the forseeable future. This view seems to be shared by the public and health care professionals. The need and demand for primary health care by mid-level health practitioners such as the medex is becoming stronger and more wide-spread according to some observers. However, resistance by some private practitioners to the presence of medexes may still remain. Though there are some role conflicts between medex and established health practitioners such as public health nurses, these seem to be minimally disruptive and have been resolved for the most part.

A few commentators speculated that there might be fewer medexes needed because of the return of Guyanese students trained in medical schools abroad, particularly in Cuba. The possibility of these new medical graduates replacing medex was discounted by other persons we interviewed. Every year a certain number of expatriate physicians complete their contracts and return home. They have to be replace by the returning Guyanese physicians. Moreover it is usually more difficult for Guyanese physicians to accept assignments in rural areas.

It is difficult to predict how many medexes will leave government service after their obligatory five year term. A significant number of those completing their service this year are apparently considering leaving health work to do jobs such as agriculture or mining. Every year retirement, illness and death will cause some attrition, and some medexes will be promoted to more responsible roles. Since many medexes have diplomas of international validity (e.g. RNs), outmigration is also likely to cause further depletion of the medex resource.

It seems clear that Guyana will continue to need medexes to staff its rural health services for the forseeable future. It is also likely that there will be an effective drain of at least 10 to 15 medexes per year. As the regional and district health system develops there will be a further demand for additional medexes. Therefore, a continuous training process needs to be permanently institutionalized for public well being.

Recommendations

1. The MOH should make a policy decision to continue medex training as an established part of its human resource development activities.

2. Serious consideration should be given to beginning a new class in the 15-month formal training course every two years. This would permit the training staff to do some field visits for supervision of new graduates, to learn where curriculum weaknesses exist, to revise teaching materials, and to process new students.

3. AID should continue its assistance in basic training and continuing education for an additional five years.

Career Structure and Professional Incentives. Government officials at various levels and graduate medexes from all five graduated classes felt that efforts can and should be made to improve the career structure and professional incentives for the MOH staff medexes. At present there are very few graduates who have received promotions, salary increases, or other recognition for effective service in a wide range of difficult circumstances.

Only a small number have been given more responsibility, new functions, and/or advanced learning. Six medexes are gaining significant competence in teaching and supervision as members of the Training Unit. Two medexes who had been dispensers received medex training and were posted to the

Medex/Dispenser Secretariat (Administrative Office) in the cental headquarters of the MOH. Apparently, a member of the Training Unit may be assigned to the Secretariat when the present chief retires next year. Two medexes have been appointed as regional health team leaders in two of the regions where decentralization is currently being implemented.

A career structure is beginning to emerge informally. It appears urgent than an explicit, coherent formal system be designed and articulated into the larger personnel system of the government.

Recommendations

1. The MOH in collaboration with other necessary ministries should establish a clearly defined career structure for medexes which should include:

    - o increase responsibility and authority in recognized positions,
    - o appropriate titles, e.g., "Senior," "Chief," "district medex," or "regional medex;"
    - o commensurate salary increases;
    - o continuing inservice education and ;
    - o advanced training either in Guyana or abroad.

2. AID and ther HMDS should assist the GOG/MOH to provide inservice and training abroad. Excellent efforts which have already been established need to be strengthened: the professional newsletter and study guide, the weekly teaching conference on the two-way radio, and the regional workshops and conferences.

3. AID and the HMDS in collaboration with the MOH should arrange for courses abroad for medexes who have shown strong commitment, competence, and interest in specific aspects of medex function. These might be 2, 9, or 21 months and lead to a certificate, a diploma, or degree recognition.

4. A plan should be formulated to give medexes the option to transfer to a more desired location after an interval of two to three years.

Financial Management Information System. The improved Financial Management Information System (FMIS) has significant potential for improving administration at the cental and regional levels. Data collected will be sent on a montly basis from district and regional health offices to the headquarters of the MOH which will input employment costs, check accuracy of coding, etc. According to plans, an IBM data input until will be placed at the MOH for putting data onto magnetic disks. Keeping data at the MOH rather than at the Data Processing Unit (DPU) of the Public Service Unit is critical as delays would otherwise likely occur in processing the data. The magnetic disks will be forwarded to the DPU on a monthly basis, and quarterly reports will be generated and submitted to the MOH. The MOH will turn relay reports back to the regional offices.

The FMIS is based on five "formats" which were constructed on the basis of previous financial reporting systems. The first deals with health posts and health centers (level I and II) on an aggregate basis (not individually) and includes both cost and utilization data; the second format focuses on hospital expenditures and utilization; the third gathers data on regional program expenditures; the fourth reports on each MOH "vertical" program, and the fifth collects figures on the MOH as a whole. The EMIS is almost complete. Some minor revisions (perhaps a revised nomenclature of expenditure codes) may be made after the national budget is released. Regional and district personnel have already been given initial training in the use of the new reporting methods. The first quarter of operation is to take place in April, May, and June 1983 and will be launched on a country-wide basis. These first quarterly reports will probably have some immediate application in planning the 1984 budget on both the national and regional levels. Almost certainly there will be procedural diffculties in the early stages which will necessitate revisions and some retraining of personnel.

A significant amount of time will very likely be required at the district, regional, and central level to collect and record the data. Clerical and statistical staff levels have been reduced. Thus some staff may need to work overtime without compensation, at least until the processes become familiar. Apparently there is a general willingness to make this extra effort. Other concerns focus on how useful the quarterly report will actually be to MOH staff members. Will reports be useful enough to warrant the cost and effort? The DPU staff also wonder whether the large number of items (over 6,000) in the five formats is necessary. By comparison, the national budget includes only about 2,000 items.

The program to date in this complex system is highly commendable and reflects well on the close cooperation of colleagues in the MOH at the central, regional, and district levels. The effort is worthy of careful observation and futher development. It should be possible to determine fairly soon which information is most useful.

Recommendations

1. All concerned parties should support the FMIS effort as a high priority activity.

2. Possible planned reductions of the different kinds of data to be collected should be carefully reviewed.

3. Particular care should be given to relaying back the reports to those who collect and handle the data at the regional level.

4. The way the quarterly reports are used should be carefully observed.

Supply System. The supply system (which includes drugs) has many serious problems, some of which could be remedied within the present severe constraints. Though some of the district hospitals are faily well stocked with the most used supplies, the health centers and health posts are short of many essential drugs such as aspirin. Usually health centers receive many fewer kinds and much smaller amounts of drugs than they request. In turn, the medexes supervising CHWs in the area are likely to give them little or nothing from the very limited stock when the Health Centers are supplying Health Posts.

The project staff has worked very effectively within the MOH to develop a supply system information process. When this process is implemented (and it will be very soon) regional authorities will be able to redistribute some supplies where current overstocks are present. Standard supply lists with items and quantities have been developed for each level or type of facility; these lists must be adopted to each facility's circumstances to determine the stock levels. Level I, where CHWs work, are supposed to have about 35 pharmacuetical agents. Level II, where medexes function, the minimum list indicates 95 drugs. In addition, a supplementary drug list for medexes contains another 35 drugs. However, when we visited health centers we were frequently shown requisition forms

indicating that 0, 1, 2, or 3 out of 13 drugs requested had been sent. Medexes often focussed a lot of frustration, anger, and disappointment on this problem.

Part of the problem stems from the current foreign exchange shortage. The Guyana Pharmaceutical Corporation which manufactures some common drugs, cannot buy essential component ingredients at present. In response, the MOH has managed to obtain limited drug supplies from the International Dispensary Association in Holland which procures pharmaceuticals at reasonably low prices from worldwide sources.

Though severe external constraints are now operating, most of the components of an improved supply system have been developed and are being implemented. Considerable savings can be made by preventing wastage through leakage, redistributing some excess supplies from one location to another and careful monitoring of expiration dates. It is possible that, over time, the seasonal frequency of disease patterns, can be more accurately analyzed and projected. Then the particular supply needs of each area can be adjusted and met more adequately.

Another useful possibility would be to review the most urgently and frequently needed drugs at levels I and II and compile much smaller lists the kinds pharmaceuticals which are essential for effective therapy. If fewer essential drugs were consistently available, health workers would have less reason for frustration and discouragement, and their public credibility would be enhanced. Studies in affluent societies have shown repeatedly that primary care physicians usually limit their daily prescribing practices to an actual member of 30 or 40 drugs which they know well. Probably the level I essential list could be safety reduced to 20 items and level II to a total of 40 essential agents. These essential drugs could be given absolute priority in procurement and distribution. Perhaps the other drugs could be supplied if available, or if a special need occurs, but it would be the 20 to 40 drugs which were always available.

Another problem lies in the priority by which level I and II receive their supplies. At present it seems that the health centers of health posts are supplied only if the central pharmacy is adequately stocked. The results are that often levels I and II are left without any of the drugs which they need the most. A possible solution has been developed in some similar settings whereby each health facility receives a prepackaged or securely encased supply which no higher level facility can remove. (The Kenya government in collaboration with the World Health Organization (WHO) is using this system efficiently.)

Another low cost resource are indigenous herbal substances. These are not easy to identify, isolate, and standardize, but they are often safe and effective. We only need to remind ourselves that quinine has been imported from South America into Europe since the 17th Century. Often pain relief and soothing salves and "teas" are well known in the traditional culture. In 1976 WHO established a research unit for such purposes which has collaborated in countries in all regions of the world in developing appropriate methodologies. While there are a number of inherent difficulties, such efforts are probably worthwhile as a long-term strategy.

Finally, some cost could be reduced if the medexes were able to mix certain solutions at the health facility rather than transporting water and bottles from central supplies.

Recommendations

1. The new supply, procurement, and inventory system should be implemented as rapidly and comprehensively as possible.

2. Efforts should be made to develop lists of 20 kinds of essential drugs for level I and 40 kinds for level II.

3. Renewed emphasis should be placed on reducing "leakage" and wastage due to expiration and on improving storage practices, and distribution (especially overstocking in some locations).

4. Medexes should receive basic and in-service training in specific pharmacy techniques which will reduce some costs.

5. A stragegy should be developed for use of safe traditional herbal remedies.

Two-Way Radio Communication System. One of the most sparkling achievements of the Project has been the successful implementation of the Two-Way Radio Communication System (TWRCS) in its first phase. The first eleven stations are functioning very well with the home base at the Medex Training Unit (MTU). Most of the equipment is already on hand and awaiting installation of an additional 23 two-way units. The Guyana Telecommunications Corporation has done a consistently effective job of installation and maintenance of the equipment. Two photovoltaic solar generating units, installed in remote locations, have proven to be functional (though one is currently not in operation). The TWRCS can be connected into the telephone system by the use of an apparatus called a

telephone "patch." If the TWRCS had this apparatus, remote health centers could have direct and immediate linkage with the Medex/Dispenser Secretariat of the headquarters of the MOH. Though ordered earlier, this the telephone "patch" was inexplicably deleted from the equipment orders.

The TWRCS is on the air from 10:00 AM until 4:00 PM five days a week and from 8:00 AM until 12:00 noon on Saturdays. The system is being used for a wide range of purposes. Primarily, messages are concerned with administrative and management problems. Technical, professional (medical) questions are also significant but fewer in number. Medical emergencies often require combinations of "medical" and amdinistrative answers to such questions as whether or not to evacuate a critically ill person to a regional hospital. The value of feeling in "touch" with the larger world of colleagues, friends, and family is highly significant and of inestimable worth. In fact, the system is not really only "two-way," it is in effect an 11-way process and will soon be a 34-way connection. It provides an extraordinary vehicle for growth of a professional community among the medexes. Actually, it will probably be necessary to form sub-groupings according to regions in order to allow participation in the continuing education conferences described elsewhere in the report. Continuing education, formally and informally, is one of the most valuable attributes of this highly successful radio communication system. Other government agencies also use it on an emergency basis.

The cost in time, energy, and equipment and equipment is significant but justifiable in the maintenance of this system if health services in remote areas are going to be effectively delivered. The system contributes greatly to staff morale and is enormously beneficial. In fact, in some ways those medexes who have telephone service but are not able to use the radio system are at a disadvantage.

The lack of linkage to the central MOH offices is a serious defect and should be remedied soon. Apparently, radio interference is too great at the MOH headquarters to have a base unit located there. In the near future the decentralization process will mean that radio units will be located at the regional team headquarters.

Recommendations

1. The TWRCS should be maintained and strengthened and particular priority should be given to the formal and informal aspects of continuing education provided by the TWRCS.

2. Urgent priority should be given to linkage with the telephone system so that the MOH and Georgetown Hospital can have direct connections.

3. Preparations should be made for two-way radio communication as part of the current regionalization program.

4. The MOH, AID, and HMDS should consider a third stage of expansion of the TWRCS to some areas where telephone service exists, but where the health center staff are isolated and have little supervisory contact and very little access to continuing education.

Housing. Housing continues to be an acute and long-term problem for mid-level health personnel living in rural areas, particularly in the Hinterlands. To date no housing has been built under the project; in fact, there have been no contracts completed for construction. A great deal of time and energy has been consumed; the supervisory architectural firm has been working and paid and materials necessary from external sources have arrived and have been in storage on the docks for over a year. Meanwhile escalation in building costs increases at about 3% per month, or 50% per year. Consequently the number of houses that can be built at the present time has been reduced from 41 to 23 simply because of the inflationary spiral.

In April 1983, the architectural firm (Klautky and Rodriques) were negotiating with local contractors on the coastal plain, not very far from Georgetown, to build the first "package" of five houses. However, they are also awaiting for AID to approve the "Bills of Quantities" which estimate the present prices of materials, transport, and labor. They will then submit the overall contracts to the MOH for final approval. The basic house design has been reduced to 850 square feet which includes 3 small bedrooms. Previous plans for fencing and demonstration water and sanitation facilities have been eliminated by previous policy decisions based on costs. The architects gave an informal estimate that the completed houses will cost about G$100,000 (US$33,000) on the coastal plain.

At present there seems to be a virtual impasse in getting started. The architects stated that if the contracts are completed soon, the houses could still be contructed by June to August 1984. A new bidding procedure (F.A.R.) is being used which establishes a fixed price for completion of the building and prevents any cost overrun. Whether or how this will work remains to be seen.

A great deal of time, money, and energy has been spent without any tangible results. Every month that passes further erodes prospects of even partial achievement of this important aspect of the project. While some of the delay is understandable, and, in some sense tolerable, it is quite surprising that the Inter-American Development Bank project should be proceeding in a much more complex and costly program to construct housing.

Recommendations

1. AID should expedite the approval of the Bills of Quantities to hasten the current contract negotiations.

2. The Housing effort of the project should be given high priority for the remainder of the present period, e.g., until June 1984.

Transportation. Thirteen Landrovers have been delivered to the project, as well as three inboard motors and six fiber glass hulls. Four wooden boats have also been built. Because of the extreme shortage of operating vehicles in the country as a whole, there is a strong tendency for official from other ministries to use MOH vehicles. In recent months, the Minister of Health has been able to alleviate the pressure on the local health personnel to use vehicles for non-health purposes. Emergency use and jointly planned endeavors are permitted when necessary. A small number of motor cycles were obtained, but they soon were out of commission due to mechanical failures, and a decision was made to curtail their use.

Development and maintenance of the transportation system has been extremely difficult and only partially successful. Lack of foreign exchange has cut off supplies of spare parts. When vehicles are functioning, fuel supplies are so low that very minimal mileage is permitted. During the past year seven out of eleven mechanics were "retrenched" (dismissed) due to necessary cuts in government staffing. At the central maintenance shop at the MOH only three mechanics and one painter remain.

Morale is rather low among the transport division employees. Apparently drivers do not follow preventive maintenance routines and there is little opportunity to supervise them by the chief of the unit who also works as Senior Personnel Officer for MOH.

There are few indications that present conditions will improve in the foressable future. Nevertheless, some significantly smaller changes could be made which might prolong and enchance the life of the vehicles. Intensification of preventive maintenance by drivers could make a difference since drivers are very lax in this vital function at present. It might be possible to shift primary responsibility for maintenance to the health practitioner (usually a medex), who is critically affected by the loss of transportation than are the drivers. Both drivers and health workers would then need in-service training in this subject. With regionalization, maintenance of vehicles in the regions is a regional responsibility.

An incentive system was designed for the MOH transport division last year but was not implemented due to drastic personnel cutbacks. Another incentive system could possibly be considered in a fashion similar to that used by the public health inspectors. Public health inspectors receive a government loan to purchase their own motor cycle. Their travel allowance apparently helps them to repay the loan and provides them with inexpensive transportation. In some areas such a system would be adequate if the district or regional hospital had a standby vehicle for carrying critically ill patients to the hopsital. Some observers and participating personnel suggested that horse transportation be considered in areas where four wheel drive vehicles cannot be used.

Recommendations

1. AID and the HMDS should consider possibilities of obtaining additional spare parts for use by the MOH at the MOH maintenance unit.

2. Intensive in-service training courses in preventive maintenance should be organized for drivers, mechanics, and health workers who are directly dependent on vehicle use.

3. Consideration should be given to shifting maintenance responsibility from the driver to the medex (or equivalent health worker).

4. AID should maintain its insistence that vehicles be used only for health activities, except under exceptional circumstances and in jointly shared travel.

5. Further study should be given to a loan/purchase plan of motorcycles for some locations similar to the Public Health Inspection Program.

6. The possibility of putting special markings on MOH vehicles or painting them specific colors should be considered to discourage usage for non-health purposes.

7. Transportation by horse should be considered in some areas where no vehicles can be used.

III. GENERAL OBSERVATIONS

General Observations

This project is in reality in its eighth year since planning first began. Actual implementation has been in progress for over six years, under different funding sources. Thus, while the contract with the University of Hawaii is at mid-term, the overall endeavor is much longer in duration. This longer range time perspective is valuable most institutional processes take 10, 15, or 20 years to achieve stability and strength. It could be said that the program is really in "early adolescence" and needs several more years of active nuturing before maturation is achieved.

The achievements of the project have been substantial. Personnel crucial to Guyana have been trained, and various support elements have been improved significantly. However, the severe economic crisis of the country as a whole is felt in almost every sector. The loss of trained personnel in outmigration is also a serious handicap felt particularly keenly in the management aspects of the project.

As the project has proceeded, new issues emerge as resources and objectives change. Now that five classes totalling 107 medexes have been trained and deployed, the question of supervision of medexes in the field becomes much more important. The medex-tutor-supervisors cannot do sufficient supervision along with teaching responsibilities. The medex-dispenser secretariat has only two staff members and both are overburdened. Reorganization of the MOH by decentralization poses further changes: should supervision and support rest primarily at the regional level? Could medex-tutor-supervisors assist the regional teams? Could there be a rotation system developed whereby some tutor-supervisors would exchange roles with regional medex staff who would take part in training activities.

The physical separation of the MTU from MOH Central Headquarters also prodcues some dislocation and lack of communication, especially because the two-way radio base is located at the MTU. Could closer linkage be maintained between the administrative staff and the training staff? Serious efforts in that direction seem warranted.

Recommendations

1. Different strategies of support supervision should be devised so that the training staff can concentrate on training and educational activities. Regional Health teams apparently are the most likely ones to carry out supervision.

2. Consideration should be given to a closer functional linkage between the central headquarters of the MOH and the MTU. Perhaps the central staff could be allocated office space at the MOH according to some prearranged scheduled.

3. Every effort should be made to connect the radio system to central headquarters. This possibly could be done by the telephone connection "patch" on a radio unit based at MOH headquarters interferences is not too severe.

APPENDICES

List of Persons interviewed by Team

APPENDIX A

Dr. Walter Chin	-	Chief Medical Officer, MOH
Dr. Frank Williams	-	Medex Program Training Director - Medex
Mr. Wyatt	-	Operations Manger, MOH
Ms. Humphrey	-	Medex Administrator, MOH
Dr. Holder	-	Deputy (Part time) Medex Training Director
Mrs. Y. Thomas Moore	-	Medex Tutor Supervisors
Mrs. W. Hammer	-	" " "
Mrs. Jadgeo-Singh	-	" " "
Mr. S. Singh	-	" " "
Mr. E. Khan	-	" " "
Mr. K. Davis	-	" " "

DEPLOYED MEDEX:-

R. Karm

U. Williams

D. Tika

H. Howard

W. Deane

H. Ramu

D. Wall

O. Mc Lean

O. David

M. Blair-Baird

R. Seepersaud

R. Brijlall

J. Hope

M. Jeffrey

T. Raymond

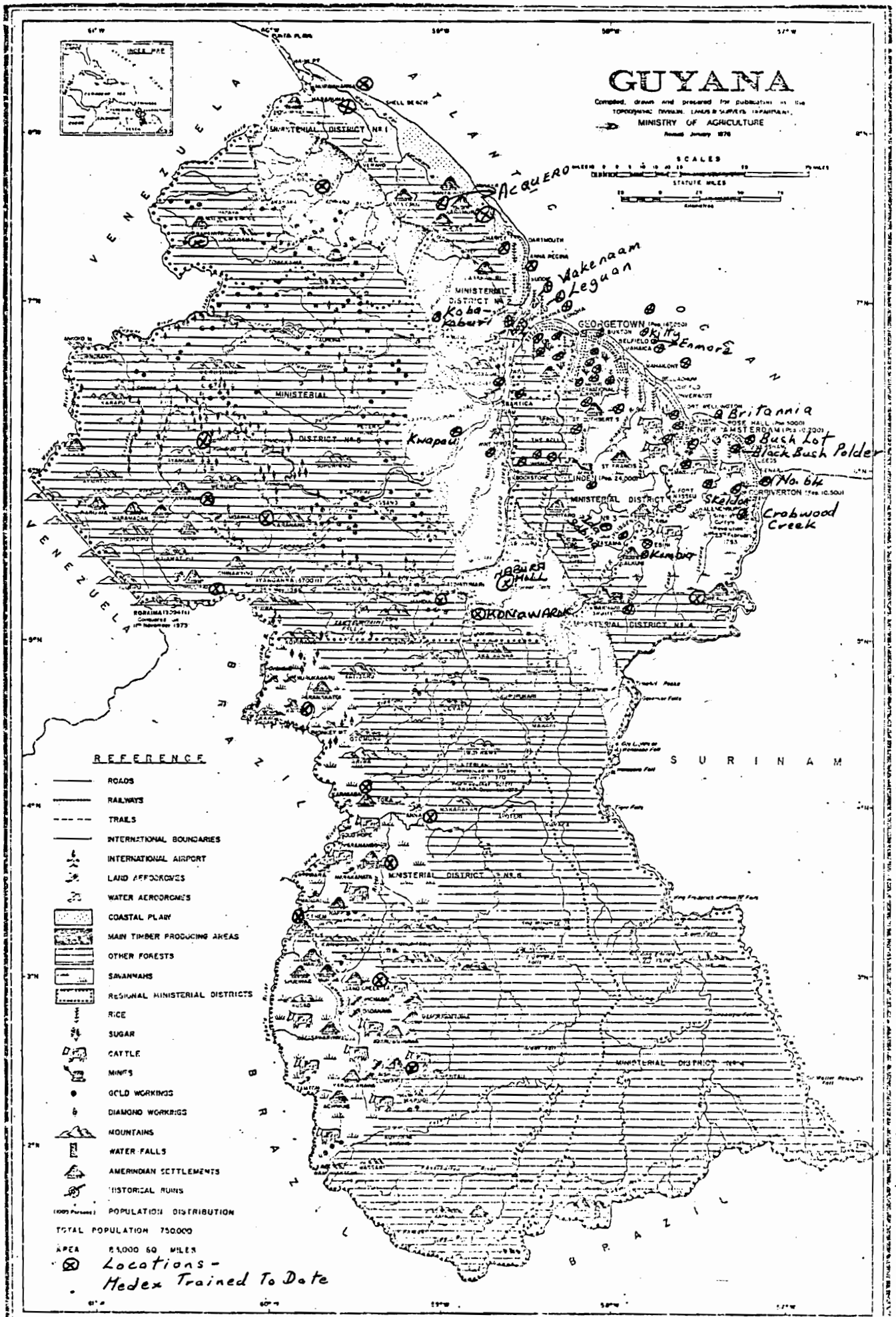
B. Humphrey

C. Spencer

Ms. Sarah Gordon,	-	Health Services Development Officer, IADB/GOG Health Project
Mr. Abu Hatim	-	Chief Dispenser/Medex, MOH
Mr. Jones	-	Assistant Chief Dispenser/Medex, MOH
Ms. Enid Hall	-	Principal Nursing Officer, MOH
Ms. Elaine Cummings,	-	Health Education, MOH
Dr. London	-	Epidemiology, MOH
Mr. Siddique	-	Chief Accountant, MOH
Mr. Sattaur	-	Chief Supplies Officer, MOH
Mr. Max Baird	-	Principal Personnel Officer, MOH
Mr. Keith David	-	Chief, Transport Unit, MOH
Mr. Malcolm Swain	-	Chief Pharmacist, MOH
Ms. Coleen Hing	-	Head, Data Processing Unit, Public Service Ministry
Dr. C. D. Harry	-	Cooordinator, IADB/GOG Health Project
Dr. E. Denbow	-	Medical Superintendent, Georgetown Hospital
Mr. Lee	-	Senior Surgeon, Georgetown Hospital
Drs. Austin & Datta	-	Pediatrics, Georgetown Hospital
Dr. Luncheon	-	Physician, Georgetown Hospital
Dr. Sookraj	-	Chief Ob-Gyn, Georgetown Hospital
Dr. Rose	-	Leprologist
Dr. Grootjans	-	Aishalton Hospital

Dr. Singh	-	Wismar Hospital
Dr. Gobin	-	Fort Wellington Hospital
Dr. S. Bacchus	-	Buxton Health Centre
Dr. Zeleke	-	PAHO Representative
Dr. Florendo	-	New Amsterdam Hospital
Dr. L. Goddette	-	Dean, Faculty of Health Services University of Guyana
Dr. D. Klautky	-	Consulting Engineer, MOH
Mr. A. Rodrigues	-	Consulting Architect
Mr. Harry Johnson	-	Mission Director, USAID/Guyana
Ms. Leticia Diaz	-	Project Director, USAID/Guyana
Mr. Sam Dowding	-	Program Specialist/Health, USAID/Guyana
Mr. Richard Blakney	-	Management Specialist, HMDS
Dr. Ed. Margulies	-	Training Specialist, HMDS
Ms. Marian Morgan	-	Project Coordinator, HMDS

APPENDIX B



APPENDIX C

Dr. Frank Williams - Project Training Director

Private Practitioner.

Orientation to Medex - University of Hawaii - 1 month.

Orientation to Medex - Washington University, Seattle, Washington State - 4 days.

Dr. J. La Rose - Deputy Director (No longer in this position)

Formerly Government Medical Officer and Lecturer of Nursing and Dispensing Students.

Orientation to Medex - University of Hawaii - 1 month.

Orientation to Medex - Washington University, Seattle, Washington State - 4 days.

Dr. I Chin-See/Arjune - Part-time Consultant (No longer in this position)

Private Practitioner.

Orientation to Medex - University of Hawaii - 1 month.

Orientation to Medex - Washington University, Seattle, Washington State - 4 days.

Dr. H. Holder - Deputy Director

Formerly Government Medical Officer.

Management in Support to Primary Health Care - Bulgaria - 3 weeks.

Orientation to Medex - University of Hawaii - 4 days.

M. Humphrey - Administrator

Assistant Secretary, Ministry of Health.
Seconded to Project.

Workshop - Planning Management Systems for Program Co-ordination and Control, Department of Health Policy & Administration, School of Public Health, University of North Carolina, Chapel Hill, U.S.A. - 3 weeks.

Management Development - Phase I, II A, II B - University of Guyana - 3 weeks.

Orientation to Medex - University of Hawaii - 3 months.

Orientation to Medex - Washington University, Seattle, Washington State - 4 days.

Y. Thomas-Moore - Medex Tutor/Supervisor

Trained Medex.
Orientation to Medex - University of Hawaii - 3 months.

Orientation to Medex - Washington University, Seattle, Washington State - 4 days.

Master Trainers' Certificate for Tutors - University of Connecticut, U.S.A. - 10 weeks.

Sasenarine Singh.- Medex Tutor/Supervisor

Trained Medex.
Orientation to Medex - University of Hawaii - 3 months.

Orientation to Medex - Washington University, Seattle, Washington State - 4 days.

Esau Khan - Medex Tutor/Supervisor

Trained Medex.
Workshop - Planning Management Systems for Program Co-ordination and Control, Department of Health Policy & Administration, School of Public Health, University of North Carolina, Chapel Hill, U.S.A. - 3 weeks.

Basic Education Course for Tutors of Health Sciences - Department of Extra Mural Studies, University of Guyana - 2 weeks.

Kenneth Davis - Medex Tutor/Supervisor

Trained Medex.

Training of the Trainers - University of Southern California, Los Angeles, U.S.A. - 12 weeks.

Basic Education Course for Tutors of Health Sciences - Department of Extra Mural Studies, University of Guyana - 2 weeks.

Waveney Hamer - Medex Tutor/Supervisor

Trained Medex.

Teaching and Management Courses sponsored by WHO, Guyana - 6 weeks.

Seminar/Workshop - Hansen's Disease - Carville Louisiana, U.S.A. - 2 weeks.

Basic Education Course for Tutors of Health Sciences - Department of Extra Mural Studies, University of Guyana - 2 weeks.

L. Jagdeo-Singh - Medex Tutor/Supervisor

Trained Medex.

Basic Education Course for Tutors of Health Sciences - Department of Extra Mural Studies, University of Guyana - 2 weeks.

Training Programme for Graduate Nurses.

APPENDIX D

MEDEX - GUYANA

CLASSES	TOTAL NO. OF STUDENTS	DROP-OUTS	FAILURES	DEATHS
I	23	1	-	1
II	23	1	-	-
III	20	1	1	-
IV	17	-	-	-
V	28	2	-	-
VI	26			

Average Age in Classes - 32.79 years; I through VI

% Females - 44.53 (Classes I through VI)

% Males - 55.47 (Classes I through VI)

Applications Received

Medex Training Program

Class II	137
Class III	93
Class IV	71
Class V	104
Class VI	74

% of Personnel Each Category

CATEGORY	% CLASS I	% CLASS II	% CLASS III	% CLASS IV	% CLASS V	% CLASS VI
Dispensers	8.70	30.43	10.00	5.88	3.57	3.85
Public Health Nurses	4.35	4.35	-	5.88	10.71	-
Ward Sisters	-	-	-	-	3.57	-
Staff Nurses	56.52	34.78	60.00	41.18	28.57	34.62
Staff Nurse/Midwives	21.74	13.04	15.00	17.65	21.43	15.38
Nursing Assistants	-	4.35	5.00	11.76	7.14	7.69
Single Trained/Midwives	4.35	8.70	5.00	5.88	21.43	38.46
Medical Rangers	-	4.35	-	11.76	-	-
Others	4.35	-	5.00	-	3.57	-

MEDEX TRAINING PROGRAMME

Conducted by MEDEX, Ministry of Health, and Certified by the University of Guyana.

APPLICATION FORM FOR ADMISSION IN 1983

Fill in TRIPLICATE and return to the MEDEX TRAINING CENTRE by 15th September, 1983, along with a recent photograph 2½"x2" affixed top right hand corner.

NAME: .....

ADDRESS: ..... CITIZENSHIP: .....

DATE OF BIRTH: ..... AGE: ..... PLACE OF BIRTH: .....

MARITAL STATUS: MARRIED ☐ SINGLE ☐ WIDOWED ☐ DIVORCED ☐

OCCUPATION: ..... PLACE OF EMPLOYMENT: .....

If you were admitted and registered at the University of Guyana before, state year ..... and course .....

1. QUALIFICATIONS:

DATE TRAINING COMMENCED	DATE GRADUATED	DATE REGISTERED
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

2. POST-QUALIFICATION EXPERIENCE:

POST	PLACE OF EMPLOYMENT	FROM	TO
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

a) Which of the above experiences did you find most satisfying? Why?

b) What aspect(s) interested you most? Why?

c) What aspect(s) bothered you, why, and what would you have liked to do about it (them) if you could?

18

3. What activities do you engage in outside of your work?

4. What does the term "Medex" mean to you? And what is your understanding of your role?

5. Why do you really want to be a Medex?

SIGNATURE OF APPLICANT: ..... DATE: .....

FOR OFFICIAL USE ONLY

ELIGIBLE ☐ NOT ELIGIBLE ☐ INTERVIEW ☐

Documents checked by ..... DATE: .....
and returned by hand/registered mail on ... TIME: .....
.....

ADMIT ☐ WAIT ☐ REJECT ☐

SIGNED: ..... DATE:.....

APPENDIX E

DIABETES

GENERAL CONSIDERATIONS:

This is a condition in which there is a chronic imbalance in the body such that glucose cannot be carried properly from within the blood to the cells of the body.
It is caused by either an absolute or relative lack of Insulin.
Diabetes is found in almost all ethnic groups in Guyana with the notable exception of the Amerindians.
Diabetes commonly occurs after age 40 years but there is a small percentage which occur in young children.
There is a tendency for Diabetes to be inherited. If both parents are diabetics there is a strong possibility that their children may be diabetics.
In adults, most diabetics are of the obese type. It is thought that in these people the pancreas is normal and produces normal amounts of Insulin but because of the increased bulk of tissue, this amount appears to be relatively too little.

In children it is believed that either the pancreas is abnormal and does not produce sufficient Insulin or that the Insulin produced is of an abnormal variety.
Whether there is an absolute or relative lack of Insulin, the effects on the body are basically the same.
Insulin is a hormone produced by the Beta Cells of the Islets of Langerhan's found in the pancreas. The hormone facilitates the transportation of glucose from within the blood - across the cell membranes - and into the cell.
With the lack of Insulin, glucose cannot get into the cell and therefore it accumulates in the blood giving rise to high blood sugar levels (HYPERGLYCAEMIA).
The Kidney in its role as a regulator attempts to maintain a balance and as a result, some glucose is passed in the urine - (GLYCOSURIA). Now this sugar is passed out in solution with water and so a lot of water is passed out - (POLYURIA).
With all this water passing out, the body tends to become a little dehydrated.

Because of the dehydration, the patient feels excessively thirsty and therefore drinks plenty fluid (POLYDIPSIA). Normally the glucose which enters the cells is burnt up to provide energy.
Since, in diabetes, the glucose present cannot be utilized, the body has to provide its energy by burning fats and proteins instead. This may lead to wasting particularly in uncontrolled juvenile type of diabetes.
Another consequence of this increased burning up of fats is the increased formation of certain by-products of fat metabolism called ketone bodies. These acidic ketone bodies eventually spill over into the urine, and the presence of this KETONURIA alerts us to the fact that there is a major derangement of glucose metabolism that may lead to confusion or coma (HYPERGLYCEMIC COMA).

The diagnosis of Diabetes must be confirmed by a GLUCOSE TOLERANCE TEST.

COMPLICATIONS:

If left untreated acute and chronic complications can occur.

A. ACUTE COMPLICATIONS:

1. When too little sugar gets into the cells, the body starts to break down its stored fatty tissue. The end products of fat metabolism are ketones. In high concentrations, the ketones cause the body fluids to become acidic. This is known as Diabetic Keto acidosis. This patient becomes nauseated and starts to vomit. He starts to breathe with deep sighs - KUSSMAUL'S Respiration. His breath smells like rotting grapefruit due to the presence of acetone (one of the ketones). This patient often is dehydrated due to excessive loss of fluid in the urine or through the vomiting. So the skin is dry, the tongue is coated and the eye balls are soft on pressure. Eventually the patient becomes drowsy and gradually slips into coma.
This is Hyperglycaemic Coma. This patient must be immediately referred, if not he will die.

2. Hypoglycaemia:

When too much of a drug is used, the blood levels of glucose drop very low (HYPOGLYCAEMIA).
This can occur especially when the drug is taken but no food follows, or when the alcohol is taken instead of food.
In this state the patient complains of weakness, palpitations, faintness and cold sweats.
Below is a brief comparison between Hypoglycaemia and Hyperglycaemia:

	Hypoglycaemia	Hyperglycaemia
Pulse	↑ & bounding	↑ & feeble
Skin	Cold & Clammy	Dry & warm
Eye ball	Normal	Soft
Urine	Blue	Brick red Acetone ++

Hypoglycaemia is an emergency.
Give the patient 50 cc. of 50% Dextrose I.V. immediately.
As the patient regains consciousness get him to drink some strong sugar water.
Caution him severely about not eating after taking his medication and about drinking alcohol in his condition.

In some cases, you will have to admit patient for over-night glucose p.o. or i.v.

51

There are a few conditions that may precipitate Diabetes in persons who are prone:

- Stress - physical or emotional
- Obesity
- Pregnancy
- Thiazide diuretics - e.g. Neo-Na-Clex
- Steroid drugs.

CLINICAL PICTURE:

This varies with the type of Diabetes.
Basically there are two types - Juvenile and Adult onset Diabetes.
Below is a summary of the basic differences between the two types:

	Juvenile Onset	Adult Onset
Onset	Sudden, possibly Hyperglycaemic coma	Gradual
Age	Less than 20 years	Usually around middle age
Body Build	Thin	Obese
Insulin Secretion	↓	Normal
Insulin Needs	+	Usually responds well to diet and/or oral hypoglycaemic agents.

Symptoms: The classical symptoms are:-

- POLYURIA with frequency and nocturia
- POLYDIPSIA
- POLYPHAGIA

Occasionally some people may present with pruritus - on the skin or in the ano-genital area.
Weakness, fatigue and weight loss are other symptoms.

Signs:

Usually there are no specific signs that are characteristic of Diabetes.
The most significant thing is the finding of SUGAR in the urine on routine urine screening for all patients attending clinics.

Suspect Diabetes in 1) Multiple abscesses
2) Poor healing of ulcers
3) History of large babies and/or a bad obstetric history.

57

B. CHRONIC COMPLICATIONS

1. A diabetic is prone to vascular problems. This is because of the development of arteriosclerosis (deposition of fat on the tunica intima of the blood vessels). This ultimately affects the size of the blood vessel lumen, such that, the artery may become narrowed or occasionally become completely obstructed.

The effect of narrowed blood vessels or obstructed blood flow to different organs in the body is summarized below:-

Brain	-	C.V.A.
Heart	-	I.H.D. and C.C.F.
Kidney	-	Hypertension and renal failure
Retina	-	Retinal damage and blindness
Skin	-	Atrophy and gangrene
Nerves	-	Peripheral neuropathy c numbness in the toes and fingers.

2. Diabetics are also prone to infection.

Abscesses and cellulitis - Minor injuries to a diabetic results in cellulitis and abscess. These take longer to heal than in the non-diabetic patient.

Pyelonephritis: Diabetics are prone to this kidney infection which can often be very severe.

Monilial infection occurs commonly in diabetic patients.

Tuberculosis seems to be more severe in diabetic patients.

Remember infection occurs quite easily in diabetic patients. Poor control makes infection harder to control.

With infection the need of Insulin increases and this makes the diabetes harder to control.

MANAGEMENT:

REFER.

In the meanwhile, tell the patient about going on a low carbohydrate diet until time of referral.
Check the patient's urine daily.
After the diagnosis has been confirmed, continue the patient on the recommended treatment:

DIET ALONE.
or DIET and DIABENESE 250-500 mg daily.
or DIET and LENTE INSULIN 10-100 units s.c. daily.

REMEMBER ⅓ of all Diabetics can be controlled on Diet alone.
⅓ of all Diabetics may have to be controlled with

53

Diet and an oral hypoglycaemic agent.
⅓ of all Diabetics have to be controlled on Diet and Insulin.

PATIENT ADVICE:

- You have a condition called DIABETES.
- You will require some form of therapy and monitoring for the rest of your life.
- This therapy may include drugs taken orally or by injection, but will require permanent readjusting of your diet.
- You will avoid sugar, and anything with sugar.
- You will cut down on all starches.
- You can eat greens in any quantity.
- You can eat fresh fruit (except bananas and pears).
- You must eat "normal" quantities of protein.
- If you are fat, you must lose weight.
- You must learn how to test your own urine and record result each time .
- You must take your drug as directed.
- Never permit your drug supply to run out.
- If ever you feel faint, very hungry or very nervous while on your drug, take something sweet, and see me at once at clinic.
- If ever you injure your skin, please seek medical assistance at once, whether or not your feet and toes are involved.

- Exercise reduces the need for drugs.
- That palpitations, nervousness, shakiness and cold sweats are signs of over-treatment (HYPOGLYCAEMIA). You must eat or drink something sweet immediately. This will prevent shock from occurring.

ALL PATIENTS ON INSULIN AND THEIR RELATIVES MUST KNOW:

- When to take the Insulin Injection - before breakfast
- How to measure Insulin in the syringe.
- How to give himself the injection.
- How to care the syringe, insulin bottle and the needles.
- How to rotate the injection sites.

) See attached sheet.

At some stage, new diabetics ought to have FBS, PPS as a routine measure with simultaneous testing of urine to assure good control.

54

FOLLOW-UP:

At each visit check the following:

- Weight, B.P., Urine for sugar and acetone.
- Ask if there is any itching, frequency, nocturia or boils on the body.
- Find out whether the patient has been sticking to the diet and has been taking the drugs as prescribed.
- Ask the patient about any faint feelings or extreme hunger (symptoms of HYPOGLYCAEMIA).
- If the urine remains persistently above green despite adequate diet, increased dosage of the drug, or there are signs of infection or there is Acetone in the urine, then REFER.

If any complications arise, then REFER.

SUMMARY OF REASONS FOR REFERRAL:

- Hyperglycaemic coma
- Severe infections
- Uncontrollable glycosuria and acetonuria.

REVIEW QUESTIONS:

1. Insulin is responsible for the _____

_____

2. The majority of diabetes is found in the _____ onset type.

3. The differences between juvenile and adult onset types are:

   Age.

   Body build

   Drug requirement

   Complication

4. What combinations of symptoms could lead you to suspect diabetes?

   1)
   2)
   3)

5. A 43-year old obese patient has obvious symptoms of diabetes and has a persistently orange coloured urine on testing for sugar. What would you do with this patient?

   1)
   2)
   3)
   4)

6. On return from hospital this patient was controlled on 20 units of Lente Insulin daily with a 1,000 calorie diet. Two months after when you checked her, her urine is brick red. What would you do?

1)

2)

3)

4)

5)

7. What advice would you give to a diabetic patient who is not feeling well this morning?

PATIENT EDUCATION FOR
THE DIABETIC USING INSULIN

Diabetic patients who are controlled with insulin must know how to give themselves injections of insulin. As part of your patient education responsibilities, you must make sure the patient understands and is capable of correctly following the procedure for injection of insulin and maintenance of equipment.

Sterilization and Assembly of Insulin Syringe

1. Place syringe (with plunger removed) and needle on folded, clean cloth on the bottom of a pan or pot. Add water and boil over fire for 5 minutes.

2. Wash hands thoroughly.

3. Remove articles from water. In assembling syringe and needle, be sure to touch only the knob of plunger, side of the syringe and the hub of the needle.

4. Fasten needle to syringe with slight twist.

5. Work plunger back and forth several times until water is completely ejected.

Preparing the Insulin Dose

1. Mix the insulin by gently rotating the vial between your hands. Remove the cap and clean the vial stopper with cotton dipped in alcohol.

2. Draw air into syringe equal to insulin dose to be withdrawn.

3. Insert needle through centre of rubber stopper. Inject air into vial.

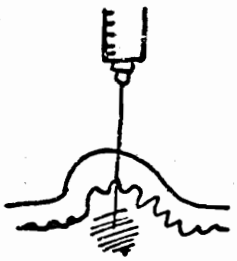
4. Turn bottle and syringe up-side-down. Withdraw specific dose. Be sure to remove any air from syringe holding the point up and depressing the plunger slightly.

Where to Inject

1. Change site of injection daily.
2. Possible sites for injections include: front thighs, upper arm, buttocks and pelvic area.

Injection of Insulin

1. Wipe site of injection with cotton swab dipped in alcohol.
2. With one hand, pinch up the skin at injection site. Place syringe perpendicularly to the skin, quickly inject needle for its entire length. The more rapidly the needle is inserted, the less will be the pain.



3. Withdraw the plunger slightly to be sure that the needle is not in a blood vessel. If blood appears, remove the needle, discard the dose and start over.
4. Inject insulin dose.

After Injection

1. Hold skin firmly near the site of injection with cotton dipped in alcohol. Withdraw needle, maintaining original position of syringe.
2. Gently wipe site of injection with alcohol.

SYSTEM FOR TEACHING ESSENTIALS TO MEDEX (STEM)

CLINICAL PRACTICE
HISTORY TAKING
&
PHYSICAL EXAMINATION

5th April, 1983

DATA BASE
PERMANENT RECORD (SUMMARY)
(6 years and older)

Name: _____ Date of Birth: _____

Sex: _____ Race: _____

Address: _____ Occupation: _____

Marital Status: _____ Case No.: _____

Date of Visit: _____

Present Complaints (if any)

History of Presenting Complaint:

Duration:

Onset:

Description of Symptoms - Severity etc.:

Alleviating Factor:

Aggravating Factor:

Associated Symptoms:

Past Medical History	Yes	No
1. T.B.		
2. Diabetes		
3. High Blood Pressure		
4. Venereal Problem		
5. Mental Disorders		
6. Skin Disease		
7. Allergies		
8. Operations		
9. Anaemia		
10. Jaundice		

Details - When?
- Hospitalization - how long?
- What treatment was used?

Immunizations

Initial and date when vaccine given.

Polio	_____	_____	_____
Tetanus (DPT or DT)	_____	_____	_____
BCG	_____		
Small pox	_____	_____	_____
Yellow Fever	_____	_____	_____
Other:			

P.S. This information is always required in paediatric history taking but not necessary in every adult.

Family History

Any member of the family suffering from any of the following diseases?

	Yes	No
1) Diabetes	_____	_____
2) Hypertension	_____	_____
3) Tuberculosis	_____	_____
4) Heart Problems	_____	_____
Other:		

Way of Life

1. **Education**

   Number of years attended school. _____

2. **Home**

	poor	fair	good
a) Water Supply	___	___	___
b) Excreta Disposal	___	___	___
c) Household Sanitation	___	___	___
d) Financial Situation	___	___	___

3. **Travel**

	Yes	No
Has patient travelled out of district recently?	___	___

4. **Job**

   See Identification Data

5. **Nutrition**

	Yes	No
Is diet a balanced one based on information given?	___	___

6. **Habits**

Is patient taking any of the following:-

	Yes	No	Amount
a) Tobacco	___	___	___
b) Alcohol	___	___	___
c) Drugs	___	___	___
d) Exercise	___	___	___

DATA BASE

PERMANENT RECORD

SYSTEMATIC REVIEW QUESTIONNAIRE

1. HEAD:
   - Trauma
   - Headaches
   - Sinusitis

2. EYES:
   - Vision
   - Pain
   - Discharge

3. EARS:
   - Hearing
   - Ringing
   - Pain
   - Discharge - colour
   - amount

4. NOSE:
   - Smell
   - Swelling
   - Trauma
   - Bleeding
   - Obstruction
   - Sneezing

5. MOUTH:
   - Teeth Problems - Holes
   - Pains
   - Lip Problems - Taste
   - Pain
   - Sore

6. THROAT:
   - Soreness
   - Hoarseness
   - Dysphagia
   - Swellings

7. RESPIRATORY: Cough
Sputum
Chest Pain
S.O.B.
D.O.E.
Orthopnoea
Haemoptysis

CARDIO-VASCULAR: Precordial Chest Pain - worse with exertion
- relieved by rest
Palpitations
Ankle Swelling

8. GASTRO INTESTINAL: Appetite
Weight Loss
Nausea/vomiting
Stool - colour
Constipation
Diarrhoea
Abdominal Pain
Haematemesis
Blood P/R
Piles
Parasites
Jaundice
Colour of Urine

9. GENITO-URINARY: Frequency Day / Night
Volume
Dysuria
Pain on Micturition
Haematuria
Cloudy Urine
Penile Sore
Penile Discharge
Impotence
Libido

10. MUSCULO-SKELETAL:
- Muscle Pains
- Joint Pains
- Muscle Wasting
- Joint Swelling
- Deformities
- Limp

11. CNS:
- Dizziness
- Vertigo
- Memory
- Speech
- Anxiety
- Depression
- Blackouts
- Fits
- Tremors
- Numbness

12. SKIN:
- Rashes
- Discolouration
- Itching

13. ENDOCRINE:
- Thirst
- Anorexia
- Undue hunger
- Sudden change in height or size of head, face or feet
- Sudden weight gain
- Mooning of the Face

14. If patient is a female enquire about:

BREAST:
- Any Lump
- Pain
- Nipple Discharge

12. FEMALE GENITALIA:

Menarche

L.M.P. - associated pain

Duration of menses - amount

Duration of cycle - passage of clots

Inter-menstrual bleeding

Post-coital Bleeding

Parity

Deliveries - normal

Any Obstetrical Problems
- Hypertension
- Abortion
- Diabetes
- Forceps
- Caesarian Sections

Any persistent vomiting

Vaginal Discharge
- colour
- smell
- irritation

ORDER OF PHYSICAL EXAMINATION

1. General Appearance
   Vital Signs
   Skin
2. Eyes
3. Ears
4. Nose
5. Throat
6. Respiratory
7. Cardiovascular
8. Breast
9. Lymphatics
10. Abdomen
11. Genitals
12. Rectal
13. Vaginal
14. Central Nervous System
15. Joint

PHYSICAL EXAMINATION - GUIDE

T _____ P _____ R _____ B.P. _____ Urine _____

Weight _____

GENERAL APPEARANCE:

HEAD:

Shape

Size

Swelling

EYES:

Eyebrows - hair distribution
Eyelids
Eyebrows
Palpebral Fissure - size
Palpebral Conjunctiva - anaemia
- inflammation

Bulbar Conjunctiva - inflammation
Sclera - jaundice
Corneal Laceration
Iris - shape
Pupil - size
- reaction to light
Visual acuity

EARS:

Shape
Position
Swellings
Discharge
Tenderness on Traction
Tenderness of the Mastoid Process
Gross Hearing Test

NOSE

Shape
Size
Discharge from Nostrils
Swellings
Septal Deviation
Nasal Obstruction

MOUTH

Lips - inflammation
- fissures
Tongue - anaemia
- cyanosis
- fissures
- colour
Fauces
Palate
Pharynx

NECK

Thyroid Gland
Thyroid Bruits
Swellings

HANDS - clubbing - cyanosis - anaemia - splinter haemorrhage

RESPIRATORY

Inspection - Rate
- Rhythm
- Expansion
- Shape
- Size
Palpation - Tracheal Position
- Tenderness
Percussion - P.N.
Auscultation- B.S.
- Adventitious Sounds - Rhonchi
- Crepitations

C.V.S.

Pulse: - R. Radial - rate
- rhythm
- volume

Pulse: - R. Femoral- present
Compare with R. radial - delayed

Pulse: - R. Doralis Pedis - present
- volume

Legs: - Temperature
Varicosities
Oedema
Colour & hair distribution

Pulse: - L. Radial - rate
- rhythm
- volume

Pulse: - L. Femoral- present
- equal

Pulse: - L. Doralis Pedis
- present
- volume

Sacrum: - Oedema

JVP

Precordial Bulges

Precordial Tenderness

AB Location ---------- L.I.C.S.

Thrills

HS 1 _____2_____1 Intensity

Murmurs

ABD
Inspection - shape
- size
- scars

Palpation - Liver
- Spleen
- Kidneys
- Bladder
- Guarding
- Tenderness
- Rebound Tenderness

Percussion - shifting dullness

Auscultation- Bowel Sounds - present
- active

HERNIAL ORIFICES

Male Genitalia

Inspection - glans
- penis
- discharge

Palpation - scrotal swelling

FEMALE GENITALIA

Inspection - vulva
- clitoris
- vaginal discharge

Palpation - cervical tenderness
- cervical os
- adnexal masses

Breast

Inspection

Palpation - Mass ----------CM----------Shape
- Tenderness
- Nipple retraction
- Nipple discharge
- Asymmetry

Lymphatic Nodes

Axillary Nodes - - - -

Cervical Nodes - - - -

Inguinal Nodes - - - -

Epitrochlear Nodes - -

Neurological - Level of consciousness grade
Memory
Orientation - place
time

Neck Stiffness
Kernig's

PHYSICAL EXAMINATION SKILLS

RESPIRATORY EXAMINATION

	1st		2nd		3rd		4th	
	+	-	+	-	+	-	+	-
Did the medex inform patient of his intention?								
Did medex expose area to be examined?								
Did medex expose area adequately?								
Did medex inspect the anterior chest?								
Did medex count the respiratory rate?								
Did medex palpate anterior chest?								
Did medex ask patient before he palpated, whether there was any pain?								
Did medex palpate all areas adequately?								
Did medex check the expansion?								
Did medex palpate the position of the trachea?								
Did medex percuss all areas?								
Did medex percuss all areas correctly?								
Did medex auscultate all areas correctly?								
Did medex ask patient to breathe deep and fast during the auscultation?								
Did medex inspect the posterior chest?								
Did medex palpate the posterior chest?								
Did medex ask patient before the palpation whether there was any pain?								
Did medex palpate all areas adequately?								
Did medex check the expansion?								
Did medex percuss all areas?								
Did medex percuss all areas correctly?								

	1st		2nd		3rd		4	
	+	-	+	-	+	-	+	
Did medex auscultate all areas correctly?								
Did medex ask patient to breathe deep and fast during the auscultation?								
Did medex examine the lateral aspect?								
Did medex percuss the lateral aspect?								
Did medex auscultate the lateral aspect?								
Was the patient comfortable during the examination?								

SUPERVISOR'S COMMENTS:

CARDIOVASCULAR SYSTEM Peripherial Cardiovascular System	1st		2nd		3rd		4	
	+	-	+	-	+	-	+	
Did medex inform patient of his intentions?								
Did medex put patient at ease?								
Did medex time the pulse rate/did medex examine for a collapsing pulse?								
Did medex palpate right femoral?								
Did medex palpate and compare right femoral with right radial?								
Did medex palpate and compare right and left femoral?								

CARDIOVASCULAR SYSTEM Peripherial Cardiovascular System (Cont'd)	1st	2nd	3rd	4th
	+ -	+ -	+ -	+ -
Did medex palpate right and left dorsalis pubis?				
Did medex inspect the legs?				
Did medex check for pitting oedema - varicose veins hair distribution and temperature of the legs?				
Did medex test for pitting oedema - sacrum?				
Did medex inspect the neck?				
Did medex palpate the neck?				
Was the patient at 45^{o}?				
Did medex obtain a B.P. measurement properly?				
Was the patient comfortable during the examination?				

SUPERVISOR'S COMMENTS:

CARDIOVASCULAR SYSTEM Heart Examination	1st	2nd	3rd	4th
	+ -	+ -	+ -	+ -
Did medex expose the precordium?				
Did medex inspect the precordium?				
Did medex palpate the precordium?				
Did medex ask the patient about pain before palpation?				
Did medex palpate the following areas: - Mitral				

CARDIOVASCULAR SYSTEM Heart Examination (Cont'd)	1st		2nd		3rd		4t
	+	-	+	-	+	-	+
- Tricuspid							
- Pulmonary							
- Aortic							
- Left para-sternal border.							
Did medex locate the apex beat correctly counting from the sternal angle?							
Did medex auscultate over the following areas: - Mitral							
- Pulmonary							
- Aortic							
- Tricuspid							
- Left para-sternal border.							

SUPERVISOR'S COMMENTS:

ABDOMINAL EXAMINATION	1st		2nd		3rd		4t
	+	-	+	-	+	-	+
Did medex tell patient of his intention?							
Did medex ask patient to pass urine before examination?							
Did medex expose the abdomen adequately?							
Did medex inspect at a tangent?							

ABDOMINAL EXAMINATION (Cont'd)	1st		2nd		3rd		4th	
	+	-	+	-	+	-	+	-
Did medex palpate the abdomen?								
Did medex ask the patient before about any pain?								
Did medex palpate abdomen lightly?								
Did medex then palpate the abdomen deeply?								
Did medex palpate the abdomen in quadrants?								
Did medex keep his eye on the patient's face?								
Did medex palpate for the following organs properly? - liver starting in the RIF?								
- spleen starting in the RIF?								
- kidneys								
- bladder								
- Did medex percuss the abdomen for shifting dullness?								
Did medex ausculate the abdomen properly?								
Did medex indicate that he ought to examine the genitals and do a rectal/vaginal examination?								
Was the patient comfortable during the examination?								

SUPERVISOR'S COMMENTS:

Skill Evaluation Sheet

MALE GENITALIA AND HERNIAS

	1st		2nd		3rd		4th	
	+	-	+	-	+	-	+	-
1. Inform patient of your intention								
2. Expose the area adequately								
3. The Penis: Inspect -								
a. The skin								
b. The prepuce or foreskin								
c. The glans								
d. The urethral meatus								
Palpate -								
a. The shaft of the penis								
b. Any abnormality								
4. The Scrotum: Inspect -								
a. The scrotum all areas								
Palpate -								
a. Testes								
b. Epididymis								
c. Spermatic Cord								
5. Hernias: Inspect -								
a. Inguinal area								
b. Femoral area								
c. Was patient asked to cough and strain down?								
Palpate -								
a. Inguinal ring								
b. Was patient asked to cough during palpation?								
6. Was patient comfortable during examination?								

FEMALE GENITALIA	1st		2nd		3rd		4th	
	+	-	+	-	+	-	+	-
Did medex tell the patient of his intention?								
Did medex ask patient to empty bladder before examination?								
Did medex expose the area properly?								
Did medex position the patient properly?								
Did medex have adequate light to see?								
Did medex inspect the vulva?								
Did medex palpate the labia?								
Did medex do a bimanual examination?								
Was the patient comfortable during examination?								

SUPERVISOR'S COMMENTS:

P/R EXAMINATION	1st		2nd		3rd		4th	
	+	-	+	-	+	-	+	-
Did medex inform patient of his intention?								
Did medex position the patient properly?								
Did medex inspect the anal verge?								
Did medex use the protoscope properly?								
Did medex palpate the anal sphincter?								
Did medex palpate the rectum properly? - Anterior								
- Posterior								
- Lateral								
Did medex look at any faeces on the glove afterwards?								
Was the patient very comfortable during the examination?								

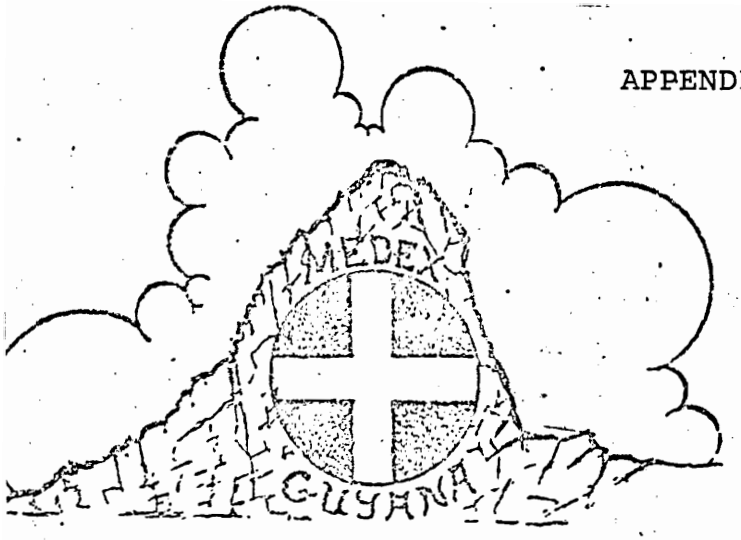
SUPERVISOR'S COMMENTS:

PRE-NATAL ABDOMINAL EXAMINATION	1st		2nd		3rd		4th	
	+	-	+	-	+	-	+	-
Did medex tell patient of his intention?								
Did medex ask patient to pass urine before?								
Did medex expose the abdomen adequately?								
Did medex inspect the abdomen?								
Did medex palpate the abdomen for: (a) Height of fundus?								
(b) Position of foetus?								
(c) Presentation?								
Did medex palpate the abdomen correctly?								
Did medex check for foetal heart?								
Did medex count the foetal heart rate?								
Did medex indicate he needs to examine the external genetalia?								
Was the patient comfortable during the examination?								

SUPERVISOR'S COMMENTS:

	1	2	3	4
naemia				
yanosis				
aundice				
oitre				
.V.P.				
reps				
honchi				
bsent B.S.				
siplaced A.B.				
lurmurs				
istended Abd.				
iver				
all Bladder				
pleen				
ibroids				
scites				
B.S.				
B.S.				
edema				
Paralysis				
Painful Joints				
Piles				
Umbilical Hernia				
Neck Stiffness				
Cellulitis				
Abscess				
Hernia				
Hydrocele				
Lymphadenopathy				
Lipoma				
Sebaceous Cyst				

APPENDIX F



NEWS LETTER

1981-09-09

Hi Medex,

May we at Headquarters greet you with the news that all students in Class IV were successful. Thanks very much for the role some of you played during their field work. After their deployment, there would be 2 (two) Medex at some sites and this will of course decrease the work load in those areas.

As the programme continues another batch of students will commence training in September 1981. The tutorial staff has been strengthened by the addition of Mr K. Davis.

Please ensure that the information contained in your clinical cards is accurate, concise and yet has all the pertinent information to make a diagnosis. Your protocol should always be used.

Have you been receiving your supply of drugs, especially those that are required for compounding? If not we will like to hear from you via mail, telephone or radio.

In the last news letter we asked about the need for the use of a microscope. However we have received no request for any. Please ensure there is a clear need if you intend to order one.

We have heard that 2 (two) Medex at a certain location have been named "El Dorado" and "X.M." Perhaps one has found the lost city; and the other is Extra Nature (well cured). It is sincerely hoped that this does not reflect their behavioural patterns in the community.

Now for some questions. The answers are attached.

1. (a) Define Health.

   (b) Explain your concept of Public Health.

   (c) You have heard of the Declaration of Alma-Ata. Could you say what it is all about?

2. Categorise the following diseases using the columns below.

Impetigo	Amoebic Dysentry	Gastroenteritis	Malaria
Hookworm	Typhoid	Cholera	Ascarias
	Scabies	Conjunctivitis	Giardiasis

Soil Transmitted	Lack of Water	Water Bourne	Water related insect vector

3. Ann Williams age 2 years, female Amerindian, was brought to your clinic by her mother with a history of swelling of the face and fever for two days.
The mother said Ann passed very little urine which was reddish in colour.
The mother further stated that before this happened Ann had "Chicken Pox" a few weeks ago.
Suddenly about 2 days ago the child's face, arms, abdomen and vulva started to swell.
The child has not been taking her feeds well.

O/E The infant was ill-looking, febrile and very irritable
T 102°F P 120 R 28 B/P $\frac{90}{60}$ Urine Protein ++

- crops of septic skin lesions.
- puffiness of the lower eyelids.
- Oedema of the face, legs, arms and abdomen.
- ↑ Respiration but not dyspoenic.
- Basal creps in both R & L bases (Lungs).
- Tachycardia.

(a) What is your diagnosis?

(b) What are the complications?

(c) This condition can be defined as mild and severe. How can you differentiate this?

(3).

(d) How would you manage a mild case?

(e) In which age group does this condition usually occur?

(f) Is there any link between the "chicken pox" and this condition?

(g) What are some of the danger signs of this condition?

4. Imagine you have recently moved to a new community. There is more than usual rainfall in the area at this time. You see an average of twenty (20) patients per day of which four to five (4-5) of them complain of the following:

Loss of appetite

"inside fever"

Feeling weak

Some state that they cannot tolerate oily foods.

Others complain of vomiting and mild diarrhoea.

Your examination reveals that in the cases seen, the sclera is yellow.

There is tenderness in the R.U.Q. and a soft tender enlarged liver.

The urine is yellow, when placed in a test tube and agitated the foam is yellow.

(a) What is your diagnosis?

(b) What is the period between the onset of vague symptoms and diagnostic clinical signs called?

(c) Discuss your management plan for an individual case.

(d) What are two early signs of impending liver failure?

(e) What is the specific drug therapy for this condition?

(f) How would you handle this problem in your community?

H. A. Holder
Deputy Training Director

ANSWERS

1. a) Health is a state of complete physical, mental and social well-being.

   b) Public Health is a complex of economic, social, educational and medical measures aimed at protecting, promoting and restoring the health of the individual and of society and extending man's creative longevity.

   c) Declaration of Alma-Ata attached.

2.

Soil Transmitted	Lack of Water	Water Bourne	Water Related Insect Vector
Hookworm	Scabies	Typhoid	Malaria
Ascarias	Conjunctivitis	Cholera	
Giardiasis	Impetigo	Amoebic Dysentry	
		Gastroenteritis	

3. Case Study

   a) Acute Glomerulo-Nephritis

   b) i) Acute Renal Failure
      ii) Hypertensive Encephalopathy
      iii) Acute Heart Failure
      15% may go on to develop Chronic Glomerulo-Nephritis or Nephrotic Syndrome later in life.

   c)

	Mild	Severe
Oedema	+ Face only	+++ Face and Feet
Proteinurea	+	++
Haematuria	-	+ Smoky urine
Hypertension (Diastolic)	< 80	+++ >85
Urinary Output	> 500 ml/day	< 500 ml/day

   d) Admit.

   Drugs: Procaine Penicillin 800,000 u i.m. daily for 1 week, if there is infection present, i.e. fever/skin sores.
   Monitor the patient's vital signs and urinary output twice daily.
   Limit the fluid intake for the day to 700 cc plus the previous day's output.

If the B/P becomes elevated or there is gross haematuria or the urine output is less than 500 cc in 24 hrs then Refer.
If not, discharge when patient is better with advice to return if there is any swelling.

e) Children mainly - Age 1-14.

f) Yes. This can be classified as septic skin lesions.

g) i) Severe headaches.
ii) Blurred vision.
iii) Elevated B/P.
iv) Decreased urine output.

4. a) An outbreak of Viral Hepatitis.

b) Prodrome.

c) Management Plan:

1. Rest.
2. Diet - Lots of fluids and sweetened drinks.
Foods high in carbohydrates.
Fats can be included in the diet except the patient cannot tolerate them.
3. Drugs - Vit B Co can be given in case where the diet is thought to be deficient.
4. Observations - a) Daily vital signs.
b) Depth of jaundice in skin and urine.
c) Colour of stool.
d) Presence of pruritis.
e) Level of consciousness.

Patient Advice on Discharge

- Do not drink alcohol for 1 year.
- Take things easy for at least six months.
- Do not exercise to the point of fatigue.

d) i) Change in the level of consciousness.
ii) Deepening jaundice.

e) None.

f) Having identified the problem inform the Ministry of Health of the outbreak. The second step would be the identification of possible sources within your community that contribute to the spread of viral hepatitis.
Since this condition tends to "flare up" during the rainy season and is spread via the oro-faecal route your attention should be focused on the environment, health and personal hygiene habits within your community.
These areas would include proper faecal disposal, hand washing and boiling drinking water.

Your final step would now be to enlist your community involvement in order to sort out preventive measures within the community.

This could be achieved through -

a) Community Education e.g. Discussions on topic
   Re Cause
      Spread
      Signs and Symptoms
      Prevention

b) School Talks.

c) Practical field work, working in collaboration with other health personnel in solving the problem e.g. Community Environmental Health Officer; G.W.A. personnel, C.H.W. and others.

d) Working in collaboration with village captains, councillors and Regional Executive Officers.

oooOooo

DECLARATION OF ALMA-ATA

The International Conference on Primary Health Care, meeting in Alma-Ata this twelfth day of September in the year Nineteen hundred and seventy-eight, expressing the need for urgent action by all governments, all health and development workers, and the world community to protect and promote the health of all the people of the world, hereby makes the following Declaration:

I

The Conference strongly reaffirms that health, which is a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity, is a fundamental human right and that the attainment of the highest possible level of health is a most important world-wide social goal whose realization requires the action of many other social and economic sectors in addition to the health sector.

II

The existing gross inequality in the health status of the people particularly between developed and developing countries as well as within countries is politically, socially and economically unacceptable and is, therefore, of common concern to all countries.

III

Economic and social development, based on a New International Economic Order, is of basic importance to the fullest attainment of health for all and to the reduction of the gap between the health status of the developing and developed countries. The promotion and protection of the health of the people is essential to sustained economic and social development and contributes to a better quality of life and to world peace.

IV

The people have the right and duty to participate individually and collectively in the planning and implementation of their health care.

V

Governments have a responsibility for the health of their people which can be fulfilled only by the provision of adequate health and social measures. A main social target of governments, international organizations and the whole world community in the coming decades should be the attainment by all peoples of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life. Primary health care is the key to attaining this target as part of development in the spirit of social justice.

VI

Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of indi-

viduals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process.

VII

Primary health care:

1. reflects and evolves from the economic conditions and socio-cultural and political characteristics of the country and its communities and is based on the application of the relevant results of social, biomedical and health services research and public health experience;

2. addresses the main health problems in the community, providing promotive, preventive, curative and rehabilitative services accordingly;

3. includes at least: education concerning prevailing health problems and the methods of preventing and controlling them; promotion of food supply and proper nutrition; an adequate supply of safe water and basic sanitation; maternal and child health care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs;

4. involves, in addition to the health sector, all related sectors and aspects of national and community development, in particular agriculture, animal husbandry, food, industry, education, housing, public works, communications and other sectors; and demands the coordinated efforts of all those sectors;

5. requires and promotes maximum community and individual self-reliance and participaton in the planning, organization, operation and control of primary health care, making fullest use of local, national and other available resources; and to this end develops through appropriate education the ability of communities to participate;

6. should be sustained by integrated, functional and mutually-supportive referral systems, leading to the progressive improvement of comprehensive health care for all, and giving priority to those most in need;

7. relies, at local and referral levels, on health workers, including physicians, nurses, midwives, auxiliaries and community workers as applicable, as well as traditional practitioners as needed, suitably trained socially and technically to work as a health team and to respond to the expressed health needs of the community.

VIII

All governments should formulate national policies, strategies and plans of action to launch and sustain primary health care as part of a comprehensive national health system and in coordination with other sectors. To this end, it will be necessary to exercise political will, to mobilize the country's resources and to use available external resources rationally.

IX

All countries should cooperate in a spirit of partnership and service to ensure primary health care for all people since the attainment of health by people in any one country directly concerns and benefits every other country. In this context the joint WHO/UNICEF report on primary health care constitutes a solid basis for the further development and operation of primary health care throughout the world.

X

An acceptable level of health for all the people of the world by the year 2000 can be attained through a fuller and better use of the world's resources, a considerable part of which is now spent on armaments and military conflicts. A genuine policy of independence, peace, détente and disarmament could and should release additional resources

that could well be devoted to peaceful aims and in particular to the acceleration of social and economic development of which primary health care, as an essential part, should be allotted its proper share.

* * *

The International Conference on Primary Health Care calls for urgent and effective national and international action to develop and implement primary health care throughout the world and particularly in developing countries in a spirit of technical cooperation and in keeping with a New International Economic Order. It urges governments, WHO and UNICEF, and other international organizations, as well as multilateral and bilateral agencies, non-governmental organizations, funding agencies, all health workers and the whole world community to support national and international commitment to primary health care and to channel increased technical and financial support to it, particularly in developing countries. The Conference calls on all the aforementioned to collaborate in introducing, developing and maintaining primary health care in accordance with the spirit and content of this Declaration.

DAVID KLAUTKY & ASSOCIATES

CONSULTING ENGINEERS

62 HADFIELD & CROSS STS.
STABROEK
GEORGETOWN.
GUYANA
TELEPHONE 72801

7 April, 1983

Mr. C. Philadelphia.
Permanent Secretary,
Ministry of Health,
Brickdam,
Georgetown.

Dear Mr. Philadelphia,

MEDEX HOUSING

REPORT & OUTLINE PROGRAMMING

1. Negotiations with Mr. M^{c} Almont are completed for Wismar & Christianburg. The Bill of Quantities submitted to Mr. L. K[illegible]ski for Wismar and awaiting response.

2. Negotiations for Mora Point and Britannia completed with Mr. Seemangal.

3. Negotiations are in progress with Mr. E. Alphonso for the sites at Crabwood Creek, Bush Lot and Brothers Village. Some delay has been experienced, but should be completed within another fortnight.

4. No Contractor yet identified for Rosignol.

5. Negotiation in progress with Wilson for the sites at Kuru Kururu and Grove. He has uplifted documents and discussions should be concluded within another four weeks.

6. It is recommended that Mr. H. Persaud be allowed to quote for the erection at Ebini. He is presently executing two contracts in that area and some advantage can be derived by engaging him at this time.

7. Documents are being prepared for Canal No. 1 & Hogg Island. It is recommended that we negotiate with Mr. Allen when the documents are ready. We plan for him to uplift documents within another two weeks.

8. The documents for the sites in the North West District i.e. Port Kaituma, Mabaruma, and Baramita should be ready within another two weeks. We expect negotiations to begin at that time.

9. The documents for the site at Cabacaburi would be completed in another five weeks when negotiations will begin. The erection of these houses would have to be phased to coincide with the dry season in that region. Erection should begin by the end of January, 1984 and will be completed by the end of June, 1984.

...../2

7 April 83

Mr. C. hiladelphia,
Permanent Secretary,
Ministry of Health.

10. Annai, Kato, Yupukarri and Aishalton sites are subject to discussions re: Materials Supply with Sister Tang. Information recently received from her indicates a certain amount of re-design to suit the materials currently available in the region.

11. The erection on sites at Kurupung and Imbaimadai should begin at the end of the rainy season when transportation costs would be least and the river levels at its highest. It is expected to commence erection by August/ September of this year.

12. It is our opinion that we should be informed of the amount of funds available for the construction of the houses. This would have some bearing in our negotiations with the various Contractors who are to be identified for the house erection.

13. As contract documents are completed and submitted to U.S.A.I.D. for approval, it may be possible to obtain approvals in a lesser time than that anticipated in our proposed programme.

14. The attached is an outline programme for the execution of the works. We expect some variations to them when circumstances which are imponderable at this stage would become apparent later.

15. We have assumed that funds would become available almost immediately after approvals have been given. We propose mobilization payments to the Contractors with interim payments in stages to be agreed with the Contractors. At the end of construction, fully auditable final accounts would be submitted by us.

16. Some saving in transportation and storage is dependant on the availability and cost of transportation of the containers. Transportation and containerizing will be discussed with John Fernandes Limited which can be responsible for all the sites with the possible exception of Ebini, Imbaimadai, Kurupung and the sites in the Rupununi.

Yours sincerely,

.....
DAVID KLAUTKY & ASSOCIATES

Enc.

cc: Miss M. Humphrey

92

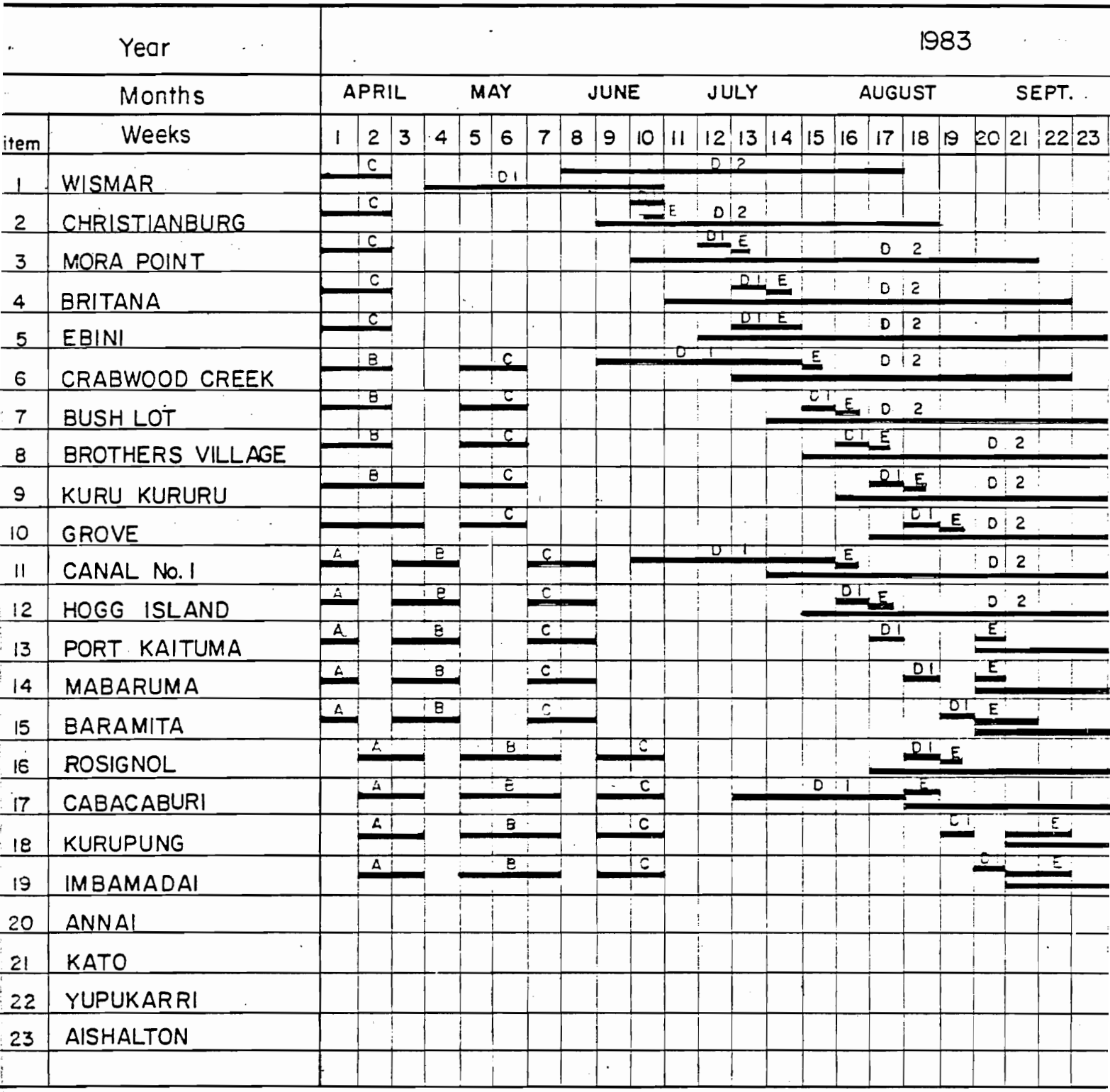
APPENDIX H

MEDEX GUYANA

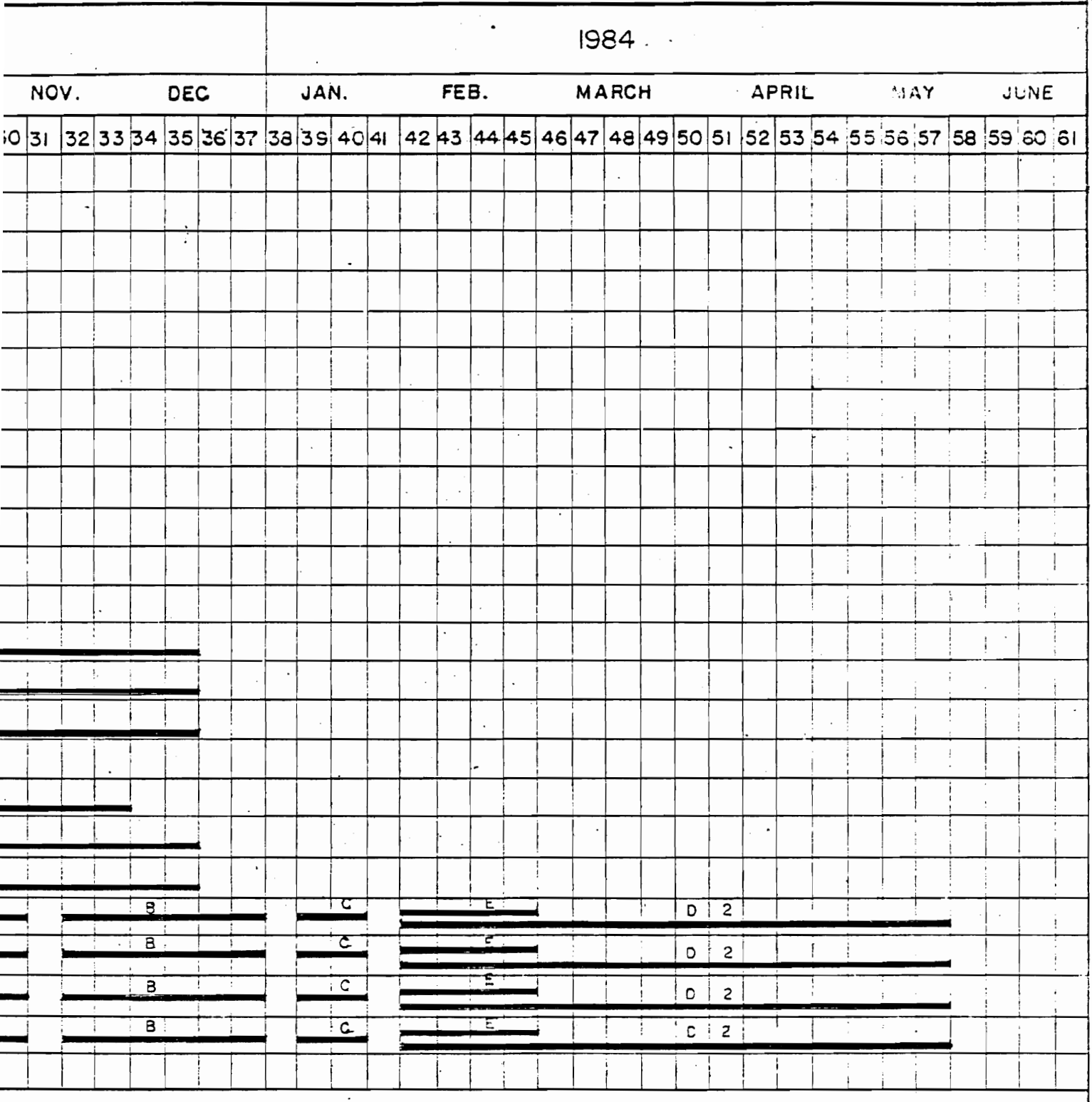
MALE/FEMALE DISTRIBUTION

	Hinterland	Rural	Riverain	Coastal	Urban
Female	5	10	3	9	10
Male	18	16	11	15	7
Total	23	26	14	24	17

MEDEX


Year
1983
Months
APRIL
MAY
JUNE
JULY
AUGUST
SEPT.
Item
Weeks
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
1 WISMAR
2 CHRISTIANBURG
3 MORA POINT
4 BRITANA
5 EBINI
6 CRABWOOD CREEK
7 BUSH LOT
8 BROTHERS VILLAGE
9 KURU KURURU
10 GROVE
11 CANAL No. 1
12 HOGG ISLAND
13 PORT KAITUMA
14 MABARUMA
15 BARAMITA
16 ROSIGNOL
17 CABACABURI
18 KURUPUNG
19 IMBAMADAI
20 ANNAI
21 KATO
22 YUPUKARRI
23 AISHALTON

NG



A — PREPARATION OF AWARDED CONTRACT DOCUMENTS

B — NEGOTIATIONS WITH CONTRACTORS

C — APPROVAL OF CONTRACT PACKAGE

D 1 — CONTRACT AWARD AND MOBILIZATION FOR PRE-CUT LUMBER

D 2 — CONTRACT AWARD AND MOBILIZATION FOR BUILDING ERECTION

E — TRANSPORTATION OF MATERIALS TO SITE

97